

## A COMPARATIVE CORPUS-BASED STUDY ON THE USE OF ENGLISH ACADEMIC VERBS (EAVS) IN LINGUISTICS RESEARCH ARTICLES ON THE PART OF NATIVE AND NON- NATIVE ENGLISH SCHOLARS

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**ABSTRACT:** Lexical verbs are crucial in English for Academic Purposes (EAP) due to their undeniable contribution to major EAP functions such as discussing, hypothesising, comparing, or reviewing literature. The present paper intends to provide a comparative corpus-based analysis of how lexical English academic verbs (EAVs) are used in linguistics research articles (RAs), by both native (N) and non-native (NN) English scholars, as well as different linguistic classifications to categorise them in a meaningful manner. The N and NN corpora of study have been exploited with WordSmith Tools, the results showing that, although no significant differences can be appreciated between Ns and NNs, the former tend to use a (slightly) wider range and larger number of EAVs. Results also shed light on usage preferences and differences as regards verb forms<sup>1</sup> and classes, as well as on frequency patterns.

**KEYWORDS:** English for Academic Purposes (EAP), English academic verbs (EAVs), (non-)native scholar, corpus, research article (RA), English as an additional language (EAL).

<sup>1</sup> Throughout this paper, the term “verb form” has been used to refer to any of the infinitive verb items appearing in the comprehensive 596-item list generated for the study. When the more general term “verb” is used, instead it refers to any of the inflected verbal forms (infinitive, conditional, past, etc.) in which a given verb can be found, for instance, in a corpus.

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*ESTUDIO COMPARATIVO BASADO EN CORPUS SOBRE EL USO DE VERBOS  
ACADÉMICOS EN INGLÉS (EAVS) EN ARTÍCULOS DE INVESTIGACIÓN SOBRE  
LINGÜÍSTICA POR PARTE DE ACADÉMICOS NATIVOS Y NO NATIVOS DEL INGLÉS*

*RESUMEN: Los verbos léxicos son cruciales en Inglés para Fines Académicos (EAP) debido a su innegable contribución a las principales funciones del EAP, como discutir, formular hipótesis, comparar o revisar la literatura. El presente artículo tiene la intención de proporcionar un análisis comparativo basado en corpus de cómo los verbos académicos léxicos en inglés (EAV) son utilizados en artículos de investigación de índole lingüística (RA), tanto por parte de académicos nativos (N) como no nativos (NN) del inglés, así como diferentes clasificaciones lingüísticas para categorizarlos de manera significativa. Los corpus de estudio N y NN han sido explotados con WordSmith Tools y los resultados muestran que, aunque no se aprecian diferencias significativas entre Ns y NNs, los primeros tienden a utilizar un rango (ligeramente) más amplio y un mayor número de EAV. Los resultados también arrojan luz sobre las preferencias de uso y las diferencias en cuanto a formas y clases verbales, así como sobre los patrones de frecuencia.*

*PALABRAS CLAVE: Inglés para Fines Académicos (EAP), verbos académicos en inglés (EAV), académico (no) nativo, corpus, artículo de investigación (RA), Inglés como lengua adicional (EAL).*

## 1. INTRODUCTION

English for Academic Purposes (EAP) is concerned with researching and teaching the English needed and used by those who perform academic tasks through language. Accordingly, familiarisation and the subsequent –and progressive– mastery of the language (English), register –academic, formal– and genres used by and expected from the academia is critical for tertiary students, and even more so for authoring scholars in general.

English is nowadays the indisputable language of international academic communication (Swales, 2004; Hyland, 2016; among others). However, the presumed linguistic advantage of native speakers is a controversial aspect often pervading international publishing policies. On the one hand, and for some authors (Swales, 2004; Hyland, 2016), non-first-language users of English have to face an Anglophone bias when trying to publish their work; this implies, in their view, that users of English as an additional language (EAL) will face a greater challenge when writing and publishing their papers than those having it as their L1. However, also in Hyland's view, over-simplifying publication problems as a crude native (N) vs. non-native (NN) polarisation leads researchers on the topic to ignore the very real problems experienced by both EAL and L1 writers. On the other hand, Zhao's (2017) research, for instance, shows that in academic writing, writers' experience outweighs their native-speaker status, and other studies such as those of Bocanegra-Valle (2014) and Ferguson *et al.* (2011) also reveal that the non-native status may not be such a disadvantage for L2 writers as might be imagined.

The different aspects that determine the mastery of academic discourse include the harmonious interplay of issues such as accuracy, adequacy, objectivity and, in general, the accomplishment of the expectations of discourse communities and the conventions of academic genres. Accordingly, under the wide umbrella of EAP, this research has focused on a particular academic genre –that of the research article (RA)–, a particular aspect related to academic terminology and grammar –that of English Academic Verbs (EAVs) usage– and a particular language: English. In addition, this comparative and corpus-based study has been based on and mainly addressed to native and non-native English scholars<sup>2</sup> in the field of linguistics.

Accordingly, through the corresponding analyses and classifications, the present paper intends to provide a comparative corpus-based study and description of the use of lexical English academic verbs (EAVs) in linguistics research articles (RAs) by both native (N) and non-native (NN) English scholars. By so doing, the aim is to comparatively detect possible differences or preferences in the usage made of such verbs by Ns and NNs and to help determine whether the assumed added difficulty for NN authors when using EAL –particularly when using EAVs– in their RAs is so in reality. Providing and contrasting information as regards preferred verb classes and frequency patterns in the two groups of authors under analysis is another main objective of this study.

## 2. THEORETICAL FRAMEWORK

### 2.1. *English for Academic Purposes and corpus analysis: a focus on verbs*

Due to the aforementioned leading role of English as the language of academic knowledge dissemination, more attention is paid nowadays to what Hyland and Hamp-Lyons (2002) referred to as “advanced EAP”, such as English for research publication purposes (ERRP).

As regards EAP vocabulary teaching, on the one hand, the advocates of a common-core approach (English for General Academic Purposes – EGAP) to this teaching do not question the fact that different disciplines may show some variation, but argue that besides these discipline-specific features, a teachable common core does exist (Granger and Paquot, 2009; Coxhead, 2000). On the other hand, scholars that favour a discipline-specific approach to EAP (English for Specific Academic Purposes – ESAP) argue that, as disciplines have different views of knowledge and different research practices, vocabulary will behave differently across them (Dudley-Evans, 2000; Hyland, 2002; Hyland and Hamp-Lyons, 2002; Hyland, 2006; Radina and Chuah, 2019).

The corpus-based results of this study are focused on a particular discipline – linguistics – mainly due to the author’s interests and familiarity with this area. However, it is also the author’s belief that there are “general” EAVs –such as *describe*, *analyse* or *characterise*– that, in spite of being able to behave and collocate differently depending

<sup>2</sup> Scholars who are native (N) and non-native (NN) speakers of English.

on the context in which they are used, are shared in almost every discipline, and that coexist with other more “discipline-specific” verbs such as *oxidise* or *amalgamate*. In fact, authors such as Schutz (2017) contend that as far as verbs are concerned, there is room for general EAP courses (or EGAP courses). Her study demonstrates the salience of shared academic verbs, as they (1) show a very wide coverage, (2) are very often used in a core academic meaning, and (3) are used in frequent shared phraseological patterns.

The focus of this study is on general lexical EAVs firstly approached individually (in isolation) and then analysed in-context in the field of linguistics, this being the reason why linguistics-specific verbs such as *conjugate* or *lemmatise* have not been considered here. This study can thus be replicated with the same general EAVs analysed here in any other field of knowledge in which an adequate discipline-specific corpus has been compiled for analysis.

The crucial role of lexical EAVs in academic discourse is undeniable because of their critical contribution to major EAP functions such as expressing causality and consequence, discussing, hypothesising, comparing, contrasting, quoting, reviewing literature or expressing personal stance. In fact, as Granger and Paquot (2009: 11) contend, verbs “enable writers to modulate their ideas and position their work in relation to other members of the discipline”. In Levin’s (1993: 2) words, “verbs, as argument-taking elements, show especially complex sets of properties”, and these properties and features can only be meaningfully determined by observing and analysing their behaviour in use, for instance with a corpus.

As highlighted by Lee and Swales (2006), the position of corpus linguistics as a powerful methodology-technology is, in many ways, well established. It is an important tool for determining the linguistic features of registers and genres (Biber, 1988; Lee, 2000) and, in this respect, corpus investigation enables evidence-based descriptions of academic registers by allowing for the observation of repeated patterns in large amounts of data (Charles, 2013). In the case of EAP, corpus linguistics is a valuable tool for elucidating and comparing how language is used in the major genres of some disciplines (Bernardini, 2002; Gavioli, 2002; Ghadessy *et al.*, 2001; Hyland, 2000; Hyland, 2003; Luzón-Marco, 2000; Ma and Qian, 2020). As Charles (2013) suggests, corpora compilation and analysis have been valuable, among other areas, in the design of appropriate corpus-informed pedagogical materials for EAP (in the case of learners’ corpora), in describing the specific features of academic discourse and its phraseology, in revealing the characteristics of different disciplines and genres (e.g. Hyland, 2000), in establishing differences between L1 and L2 production or in analysing specialist lexis.

## 2.2. Lists and taxonomies of EAVs

The most popular list of EAP verbs is probably Coxhead’s (2000) Academic Word List (AWL), which, despite its evident contribution to EAP, presents certain shortcomings that subsequent literature on the topic has made apparent, such as the fact that it contains instances that can be both nouns and verbs or that it excludes the top 2,000

words in the language. Consequently, several high frequency verbs (such as *find* or *show*) with a major role in EAP are not considered in Coxhead's AWL even when "there are in fact several high frequency verbs which turn out to play a major role in EAP" (Granger and Paquot, 2009: 194). In Meyer's (1997) opinion, for example, high-frequency verbs such as *find* and *show* need to be granted the academic importance they have, since they show "all the vagueness, polysemies, and ambiguities of everyday language", but, at the same time, "are used to discuss matters lying at the very heart of the scholarly process" (368). As a result, and with the aim of giving these verbs their deserved coverage in EAP, Paquot (2007) created her own Academic Keyword List (AKL), incorporating instances, such as *claim* or *argue*, that should definitely be part of any list of English academic verbs.

However, lists can be tough to manage without being further classified or categorised. In this respect, lexical classes can be defined in terms of similar (morpho-) syntactic behaviour of words and shared meaning components. These lexical classes can capture generalisations about a range of (cross-)linguistic properties and are useful precisely because of that (Kipper *et al.*, 2008). From a pedagogic or didactic perspective, they help clarify and organise knowledge in a meaningful way and they contribute to the clarity of thought of users. As Kipper *et al.* (2008) and Korhonen (2009) went on to claim, despite the normally imperfect correspondence between the syntactic and semantic properties of words and the impossibility for these classes to provide a means for full semantic inferencing, their predictive and abstracting power is undeniable and worth considering.

The analysis of EAVs in use, together with their categorisation and classification (according to different criteria) that allow for native and non-native comparison, are keystones of this study. Special attention should be given to verb classifications such as those of Biber *et al.* (1999) and Hinkel (2004). However, in Granger and Paquot's (2015) view, in general, EAP studies have focused on one specific category of verbs rather than providing a general overview of the use of lexical verbs in academic discourse. Indeed, reporting verbs have traditionally been the preferred class for analysis (Charles, 2006; Zhang, 2008; Bloch, 2010; Luzón-Marco, 2018) due to their relevance in academic discourse. This study attempts to provide a wider and more comprehensive perspective in this respect.

The EAVs analysed here have been classified according to Levin's (1993) and the VerbNet 3.3 (VN) (Kipper, Dang and Palmer, 2000; Kipper-Schuler, 2005) taxonomies. On the one hand, Levin's (1993) taxonomy classifies 3,024 English verbs according to shared meaning and behaviour. This taxonomy is organised into 48 broad and 192 fine-grained classes. Levin's classification is based on the premise that identifying verbs that display a similar syntactic behaviour provides an effective means of distinguishing semantically coherent verb classes. In addition, although "alternations are chosen as the primary means for identifying verb classes, additional properties related to subcategorisation, morphology, and extended meanings of verbs are taken into account as well" (Kipper-Schuler *et al.*, 2008: 23). On the other hand, VN (Kipper-Schuler *et al.*, 2000; Kipper-Schuler, 2005) is an extensive lexicon of English verbs grouped upon shared syntactic behaviour on the basis of Levin classes and a series of extensions. It

is the largest on-line verb lexicon currently available for English, with 5,800 verbs and 270 verb classes and it provides detailed syntactic-semantic descriptions of Levin's classes (Kipper-Schuler *et al.*, 2008). Levin's classification (with its 48 classes) was thus extended for VN with Korhonen and Briscoe's (2004) incorporation of 57 novel classes for verbs not covered (comprehensively) by Levin, and 106 new diathesis alternations for verbs. Subsequently, Korhonen and Ryant (2005) further extended VN by including 53 additional verb classes dealing with a wide range of different complements.

Accordingly, VN is a comprehensive Levin-style classification for English verbs extended with both Korhonen and Briscoe and Korhonen and Ryant classes and covering over 90 % of the tokens in the Proposition Bank<sup>3</sup> data (Palmer *et al.*, 2005). As is explained in the method, the search for verbs in VN so that they can subsequently be classified has been undertaken in this study with the Unified Verb Index<sup>4</sup>, a system which merges links and websites from four different natural language processing projects: VerbNet (currently in its 3.3 version), PropBank, FrameNet and OntoNotes Sense. The author's search for EAVs was undertaken –through this Unified Verb Index platform– focusing on the VerbNet 3.3 classification/categorisation of verbs but also taking into consideration that of Levin due to the nature and objectives of the study.

### 3. METHODOLOGY

The following subsections explain the different stages of the method, which are summarised in Table 2.

STAGES	SUBSTAGES
3.1 Generation of an extensive list of EAVs and preliminary approach to preferred categories.	3.1.1 Generation of an extensive list of EAVs. 3.1.2 Preliminary approach to preferred EAV categories based on the number of integrating items.
3.2 Corpora compilation	
3.3 Corpus-based comparative (N/NN) analyses of the EAVs under study.	3.3.1 Descriptive analysis: generation of EAVs frequency list and frequency-based classification. 3.3.2 Bivariate analysis 3.3.2.1 Bivariate analysis of the frequency of use of EAVs. 3.3.2.2 Bivariate analysis of the frequency of use of a series of randomly selected EAVs.

Table 2. Stages and substages of the method.

<sup>3</sup> [PropBank](#): It comprehends a corpus of one million words of English text, annotated with argument role labels for verbs, and a lexicon defining those argument roles on a per-verb basis.

<sup>4</sup> <http://verbs.colorado.edu/verb-index/vn3.3/index.php>

### 3.1. Generation of an extensive list of EAVs and preliminary approach to preferred categories

The comprehensive list of EAVs under study was created *ad hoc* and preliminarily classified according to the procedures explained in subsections 3.1.1 and 3.1.2.

#### 3.1.1. Generation of an extensive list of EAVs

The comprehensive list of EAVs compiled for this study –possibly the most extensive list of EGAP lexical verbs obtained so far– was generated *ad hoc* by resorting to different academic sources and existing lists.

Firstly, the most popular EAP wordlist –Coxhead’s (2000) High-Incidence Academic Word List (AWL)– was used as a starting point. In accordance with the main purpose of the study, only those lexical units corresponding to the verbal category were manually selected from the AWL and considered in this research, although those lexical units that can perform a double function –for instance, as both verbs and nouns (*focus*, *approach*, etc.)– were also considered.

However, as mentioned in the introductory lines of this study, Coxhead’s AWL excludes the top 2,000 words in the language, which led to Paquot’s (2007) Academic Keyword List (AKL), aimed at giving these “neglected” but academically-relevant instances the coverage they really deserved. Therefore, in the second phase of the compilation of the list of EAVs, those verbs appearing in the AKL (but disregarded in the AWL) were also incorporated into the list.

Additionally, in the third phase of the process of list compilation, other reliable sources of EAVs were consulted and the items from these lists that were also considered to be academically relevant but still missing in our compendium at this stage were also incorporated. These sources were:

- The tailored academic editing service Tweed, which provides an ever-expanding compendium of academic verbs<sup>5</sup>.
- The list drawn up by Dr Elaine Khoo’s (2005), from The Writing Centre, University of Toronto Scarborough<sup>6</sup>.

As a result, a highly comprehensive, extensive list of 596 EAVs created *ad hoc* from different reliable sources was compiled for its subsequent classification and for the comparative corpus-based analysis of its items.

<sup>5</sup> [http://tweedediting.com/wp-content/uploads/2010/11/Academic\\_Verbs.pdf](http://tweedediting.com/wp-content/uploads/2010/11/Academic_Verbs.pdf) (last accessed: 15/03/2019)

<sup>6</sup> <https://www.utoronto.ca/twc/sites/utoronto.ca.twc/files/resource-files/xVerbs.pdf> (last accessed: 15/03/2019)

### 3.1.2. Preliminary approach to preferred EAV categories based on the number of integrating items

As a first approach to the characterisation and comparative study of EAVs, a preliminary analysis on preferred verbal categories was undertaken. This analysis was aimed at determining which of the categories proposed by VN (as supplied by the Unified Verb Index) are “more populated” or contain more integrating EAVs. Levin’s classification has also been considered in the different categorisations of EAVs provided throughout this study. The reason is that VN includes semantic and syntactic information for classes of English verbs derived from Levin’s (1993) classification, but extended and more detailed, which, at times, makes the names of Levin’s categories more self-defining and intuitive for the reader than those of VN. Accordingly, the 596 items or EAV forms from our list were grouped into three main categories:

- Top categories (with 10 or more EAV forms from the list the makes up a VN category)
- Middle categories (with 4 to 9 EAV forms from the list that makes up a VN category),
- Low categories (with 1 to 3 EAV forms that make up a VN category).

The underlying reason for this preliminary approach to preferred categories was to unveil which of these categories offer wider lexical variety in the academic arena and thus which ones are, presumably, more semantically relevant for authoring scholars.

Manually, one by one, a search was conducted for each of the 596 verb forms under study in the Unified Verb Index and they were then classified according to the VN codes retrieved. Those verbs that, according to VN, could belong to more than one category –such as “follow” (see Figure 2)– were highlighted in **bold** in our resulting classification included in Appendix B.

fold.n	(GROUPING)
foliate	ENTITY_SPECIFIC_COS-45.5; (PROP BANK); (GROUPING)
follow	CHASE-51.6, COMPREHEND-87.2-1, CONTIGUOUS_LOCATION-47.8, OCCURRENCE-48.3, (PROP BANK); (FN RELATIVE_TIME); (FN COMPLIANCE); (FN COTHEME); (GROUPING)
following.n	(GROUPING)

Figure 2. Screenshot of the Unified Verb Index search for “follow” and its resulting VN codes.

A problem that had to be dealt with throughout the study was the fact that 102 of the 596 EAV forms under study (in the list) were not classified by VN in the Unified Verb Index or by Levin. These verb forms are those shown in Figure 3. As subsequent analyses showed, 26 of these 102 unclassified verbs (in bold) had null frequency in our corpora.

Access, account, advocate, allude, amend, attribute, automate, challenge, complement, conflict, contact, **contest**, contradict, coordinate, **disestablish**, displace, **dissect**, **dramatise/ize**, edit, **effect**, embrace, enable, entitle, equate, **excoriate**, exemplify, **externalise/ize**, facilitate, **factor**, feature, **finalise/ize**, finance, foster, fund, govern, hypothesise/ize, **immigrate**, impact, impart, implicate, **incapacitate**, input, **instance**, internalise/ize, intervene, invoke, isolate, lack, **layer**, **levy**, limn, locate, maximise/ize, mediate, migrate, negate, offset, optimise/ize, orient, **orientate**, **output**, parallel, phase, philosophise/ize, postulate, prioritise/ize, problematise/ize, process, query, **reactivate**, reassess, recapitulate, reconcile, reconstruct, **redistribute**, reference, refute, regulate, **reinvest**, relocate, **reschedule**, **resource**, restate, restructure, retain, revolutionise/ize, **route**, schedule, simplify, structure, **subordinate**, **subsidise/ize**, substantiate, supplement, **task**, **transgress**, uncover, undergo, undermine, uphold, validate, violate.

Figure 3. Verbs from our list that were not classified by VerbNet 3.3.

For practical reasons these verbs were simply ignored in this preliminary classification but they have been considered in the rest of the corpus-based analyses carried out.

### 3.2. Corpora compilation

The second main stage of the method involved the compilation of two *ad hoc* corpora of RAs written in English by Ns and NNs. The NN corpus was made up of 37 original RAs, whereas the N corpus consisted of 34. The English RAs for both the N and NN corpora were retrieved from top-ranked linguistics journals published in English (although some of them accept other languages of publication as well), such as *Journal of English for Academic Purposes*, *Ibérica*, *ELT journal*, *Miscelánea*, *Applied Linguistics*, *Language Teaching Research*, *Journal of English Linguistics* and *System*.

As regards the final statistical composition of the data on the corpora, a series of significant parameters, as provided by the concordance software program WordSmith Tools<sup>7</sup> 5.5 (WST), can be observed. As shown in Table 5, the number of texts (RAs) in both corpora is very similar (37 NN vs. 34N) and the same occurs with the number of tokens (running words), with a difference of just 67 words between the two corpora.

	SNN	SN
<b>No. of texts/RA</b>	37	34
<b>Tokens (running words) in text</b>	326,375	326,442
<b>Types (distinct words)</b>	17,362	15,658

Table 5. N and NN corpora statistical data.

<sup>7</sup> Scott, M., 2008, *WordSmith Tools* version 5, Liverpool: Lexical Analysis Software.

Together with representativeness and comparability, the initial selection criteria when choosing the RAs for the corpora consisted of text quality, author reputation, single authorship, similar length, field of knowledge (linguistics) and, obviously, author's L1 and the language of the RA (English). Every section of the RAs compiled, from the title to the conclusion, was included as part of the corpus except for the references and appendix sections which, due to their special features, were considered as not relevant to this study.

Authorship was a critical aspect to consider since faithfully determining authors' native or non-native condition as English speakers was a foremost premise for the quality and reliability of the results to be obtained. Only RAs by authors whose L1 could be established without any trace of doubt –because of their being well known or after an in-depth reliable search– were considered in this study.

Avoiding biases in the corpus originated by NN authors' L1 was also a critical premise. Accordingly, in order to obtain a more globally-representative sample of “non-nativeness”, a language-balanced compilation of RAs by authors with a “major” romance language –Spanish, French, Italian, Portuguese and Romanian– as their L1 were chosen for the NN corpus in the following proportion: 27 % (10 texts): French; 27 % (10 texts): Italian, 27 % (10 texts): Spanish; 10.8 % (4 texts): Romanian; 8.1 % (3 texts): Portuguese.

As in any corpus compilation, a foremost premise that determined the meticulous process of author and RA selection was that both corpora should be representative and comparable, thus ensuring the reliability of the sources employed. Once the corpora had been compiled, the real in-text usage of the 596 verbs under scrutiny was analysed also from a comparative perspective, as shown in forthcoming sections.

### 3.3. *Corpus-based comparative (N/NN) analyses of the EAVs under study*

In the third big stage of the method, the EAVs from our list were classified and analysed according to corpus data (ESAP approach). The two *ad hoc* corpora compiled were used to obtain relevant and comparable data as regards academic verbs usage by N and NN linguistics scholars in their English RAs. With this aim, firstly a descriptive analysis and subsequently a bivariate analysis were carried out to retrieve meaningful statistical and quantitative information.

#### 3.3.1. Descriptive analysis: EAVs frequency list generation and frequency-based classification

For the descriptive analysis of the 596 EAVs under study, the frequency of use of each of them was first calculated in both corpora (N and NN). In order to generate the frequency lists needed to start the analysis, the concordance software program WordSmith Tools 5.5 (WST) was used. Of the three main tools included in WST (Wordlist, Concord and Keywords), in this case the author chose to use Concord because it allows for a more refined/detailed search. In this study, verbs needed to be,

at least in part, selected “manually” in order not to miss any inflected verbal form but also with the aim of not including –and thus misleadingly counting– any “intruding” verbal form (e.g. the form “focus” used as a N and not as a V).

The method used to count the number of times a specific verb from the list appeared (in any of its possible inflected forms) in each corpus was as follows: for instance, in the case of the verb *communicate*, the search form “communicat\*” was introduced in Concord, which allowed the program to retrieve the inflected forms *communicate*, *communicated*, *communicating* and *communicates*, which are the ones that needed to be considered in this study. However, the syntax of our search also made the program retrieve lemma-sharing instances such as *communication(s)*, *communicative* or *communicator(s)*, which had to be discarded (see Figure 5) because of their “intruding” noun/adjective condition. Therefore, the process of retrieving the frequency of use of each of the 596 verbs under study (with all their inflected forms), manually and also individually, for each of the 37 texts that made up the NN corpus and the 34 texts included in the N corpus was highly time-consuming. Even though the process was very much reliant on technology, it was also highly dependent on a necessary manual selection and careful revision on the part of the author. Each verb had to be treated individually because each of them presented its own particularities and a careful counting of frequencies was crucial for the study. With some verbs, mostly irregular ones, more than one search was needed due to the syntax of the search and the features of the verb: for instance, for the verb “say”, two different searches were necessary: *say\** (in order to obtain *say*, *says* and *saying*) and *said*.

N	Concordance	Set	Tag	Word #	Sen	Sen	Para	Para	lead	lead	Sec	Sec	File	%
1	experience in terms of communication purposes since the			7,554	31646%			077%			077%		T9.txt	76%
2	. Basque and Spanish are everyday communication languages outside the			8,130	33347%			032%			032%		T9.txt	82%
3	all aspects of this language 4. I like to communicate with people who speak			9,622	57345%			098%			098%		T9.txt	98%
4	may follow different organizational and communicative strategies (Hyland, 2004:			1,617	5531%			013%			013%		T8.txt	13%
5	. either to facilitate information communication and knowledge sharing,			2,429	9036%			019%			019%		T8.txt	20%
6	limited to date in spite of their important communicative role. This study			1,549	5295%			012%			012%		T8.txt	12%
7	chapters as a series of strategies for communicating scientific findings and			1,592	5475%			012%			012%		T8.txt	13%
8	(1995). Genre Knowledge in Disciplinary Communication: Cognition/Culture/			11,152	46896%			036%			036%		T8.txt	85%
9	/ Specialised Language in Global Communication. Series Sprache in der			11,816	60100%			031%			031%		T8.txt	90%
10	Development of Signal Processing and Communications Systems on			12,706	79876%			038%			038%		T8.txt	98%
11	: An inquiry into doctoral students' communicative resources in language			11,596	56057%			030%			030%		T8.txt	89%
12	21: 125-143. Peacock, M. (2002). 'Communicative moves in the			11,699	57927%			031%			031%		T8.txt	90%
13	form and a conceptual nature but a communicative purpose. In that case			2,169	6896%			026%			026%		T7.txt	26%
14	for persuasive reasons. Hence, this communicative aspect of metaphor will			2,211	7021%			027%			027%		T7.txt	26%
15	and also be acquired through communication with our peers (ritchie,			1,639	5131%			020%			020%		T7.txt	20%
16	or not, which emphasizes the communicative dimension of metaphor			2,116	6631%			025%			025%		T7.txt	25%
17	- in trying to maximize their potential as communicators - tend to rely on			2,317	7356%			028%			028%		T7.txt	28%
18	, M <sup>a</sup> .E. (2010). 'Cognitive devices to communicate the economic crisis: An			6,518	25438%			078%			078%		T7.txt	76%
19	. Lakoff, G. (2006). Thinking Points. Communicating our American Values			6,927	34329%			033%			033%		T7.txt	82%
20	attention on certain elements of a communicative situation while ignoring			6,007	20834%			072%			072%		T7.txt	70%

Figure 5. Sample of some concordance lines obtained with the search form “communicat\*”.

Frequencies were then gathered in two Excel documents, one for each corpus, in which the 596 verbs under analysis were ordered alphabetically in the left-hand

column of the table. The identifying code (T1, T2, T3, T4...) of the different texts comprised in each corpus was included in the first line of the document (see Figure 6), thus allowing for the quick and individual identification of the frequency of each verb in each specific text (RA). Total frequencies were then calculated by Excel for each verb form so that two total frequency lists with items arranged in decreasing order of frequency were generated for analysis and comparison.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1		SN	Frec. Total	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19	T20
2		abandon		1															1				
3		abstract																					
4		accept		1	2	2	2		2	1	2	21		2	1		1	3	1	1	2	1	
5		access							2								5	1	2				1
6		accommodate		1											1								
7		accompany		1				2	1		1		2		1			2	1			1	1
8		account (for)				1				1				3	1	13		1	1	1		8	1
9		accumulate																					
10		achieve		2	1	4		5	1	7			2	2	1		1				4	1	3
11		acknowledge		1		1		2	1	1			2	1	3		1			4			3
12		acquire			2		6		1	1			1	3	2		1	1				3	
13		act			2		1	2	4	1	1		2	1	2				1		2	1	3
14		adapt		1											3			2			3	6	1
15		address		6		6		4	2	1				9	4		7	1	5	1	4	12	
16		admit												1									
17		adopt			1	5		3			1			3	3				4		3		2
18		adjust									1							1	1				
19		administer							1		1	1	1					1				4	
20		advance					2			3					1			1					

Figure 6. Sample section of the Excel document with N corpus verb-counts.

In addition, due to the phrasal and textual nature of language, a simple cluster analysis was conducted with the five top-frequent EAVs in the corpora with the help of *WordSmith Tools-Concord-Clusters*. Clusters are words which are repeatedly found together in each others' company, in sequence, representing a tighter relationship than collocates, more like multi-word units or groups or phrases, and play a key role in highly conventionalised written discourse such as the academic case.

Finally, the 50 top-frequent EAVs in each corpus were classified, once again, according to VN (and Levin's) classifications. Both frequency lists and classifications of top-frequent EAVs were compared in order to establish preferred verbs and categories in linguistics RA among Ns and NNs.

### 3.3.2. Bivariate analyses

In a second substage of the method, a series of bivariate (this implying the simultaneous analysis of two variables) corpus-based analyses were conducted.

#### 3.3.2.1. Bivariate analysis of the frequency of use of EAVs

In the bivariate analysis of the frequency of use of EAVs, a twofold analysis was performed:

- a. the number of EAVs used in each corpus with respect to the total number of 596 EAVs under study was compared between the two corpora.
- b. Then, the frequency of use in the corpora of the EAVs under study in relation to the total number of words in each of the corpora was also calculated and compared.

### 3.3.2.2. *Bivariate analysis of the frequency of use of a series of randomly selected EAVs*

Finally, as regards the method, the frequency of appearance of each of a series of 100 randomly-selected EAVs was compared between the two corpora. A random sample of EAVs was chosen to add to the feasibility of the study and because this is the regular procedure when bivariate analyses of large samples (in this case of verbs) need to be performed. Following the habitual statistical analysis protocols, in order to select the random sample of EAVs, firstly, a corpus was chosen as a reference: in this case the NN corpus, since it is the one in which fewer EAV forms are used (464) of the 596 under study. Then, the 464 verb forms from the list used in the NN corpus were arranged in decreasing order of frequency of appearance in the corpus. The total number of EAV forms was divided into four equal strata of 116 verbs each and 25 verb forms were selected at random in each of the four strata. The selection of the random sample was performed using the statistical software R Studio version 1.0.34. Thus, the same 100 randomly selected verbs were analysed in both corpora in order to detect specific differences in the use of particular verbs and they were subsequently classified according to linguistic criteria in order to complete the study.

With these final calculations and statistical measures, and with the classifications provided, enough data were gathered to be able to depict, analyse, compare and better understand the use made of English academic lexical verbs on the part of both N and NN scholars, as shown in the results and discussion section below.

## 4. RESULTS AND DISCUSSION

For the sake of greater clarity, the results obtained are presented in the same order and organised in the same subsections as their corresponding stages in the method.

### 4.1. *Resulting extensive list of EAVs and preliminary approach to preferred categories*

The following subsections account for the resulting comprehensive list of EAVs generated and for the preliminary approach to preferred EAV categories based on the number of integrating verb forms.

#### 4.1.1. Resulting extensive list of EAVs

The resulting list itself, with 596 academically-relevant (but not discipline-specific) lexical verbs in their infinitive forms and ordered alphabetically, can be consulted in Appendix A (Table 17). This list may be very useful for authoring scholars and may have highly positive didactic implications and applications in English writing courses in general and in Academic English writing courses in particular.

#### 4.1.2. Resulting preliminary approach to preferred EAV categories based on the number of integrating items

As explained in the Method section, offering a preliminary approach to preferred EAV categories based on the number of integrating items that each of these categories contain seemed a convenient starting point for this study aimed at showing which EAV categories or classes are presumably favoured in EAP. The reason for this classification was to reveal which categories offer a wider lexical variety, since it is assumed that these most “populated” categories are semantically or cognitively more relevant and, therefore, represent privileged language functions in academic contexts. The more a writer needs to resort to a specific language function, the more variation this function will (at least presumably) have, in this case, in terms of related verb forms and associated categories.

Detailed results are presented in Appendix B (see Tables 18 to 20). Table 18 in the Appendix comprises Top categories (with 10 or more EAV forms from the list making up a VN category), Table 15 gathers Middle categories (with 4 to 9 EAV forms from the list making up a VN category), and Table 16 compiles Low categories (with 1 to 3 EAV forms integrating a VN category).

Table 7 summarises those privileged Top categories, that is, those comprising more integrating EAV forms based on Levin’s but more especially on VerbNet 3.3 categories (VN categories were the ones considered for the counts). Related language functions in academic written discourse have also been included in an additional column to offer a more meaningful overview of preferred categories. Results show that the dominant or preferred verbal categories as regards number of different integrating verb forms are, mainly: “characterise” (with verbs such as *define*, *describe*, *classify* or *represent*), “assessment” (with verbs such as *analyse*, *evaluate*, *examine* or *investigate*), “say” or “communication” (with verbs such as *allege*, *claim*, *state* or *suggest*), “change of state” (with verbs such as *reproduce*, *revise*, *strengthen* or *broaden*) and “indicate” categories (with verbs such as *affirm*, *demonstrate*, *denote* or *establish*).

<b>Top VN and Levin’s categories (with 10 or more EAV-forms making up the VN category)</b>		<b>Related academic language functions</b>
<i>LEVIN</i>	<b>VERBNET 3.3</b>	
<i>Verbs of change of possession</i>	13.3: future_having	Justifying Explaining Quoting Evaluating
<i>Verbs of combining and attaching</i>	22.2: amalgamate	Comparing/contrasting Expressing cause/effect
<i>Verbs of creation and transformation</i>	26.4: create	Expressing cause/effect Justifying Explaining Describing
<i>Verbs with predicative complements</i>	29.2: characterise	Explaining Describing Comparing/contrasting
	29.5: conjecture	Hypothesising Expressing stance Discussing Evaluating
<i>Psych-verbs (verbs of psychological state)</i>	31.1: amuse	Expressing stance Discussing
<i>Verbs of assessment</i>	34.1: assessment	Assessing Discussing Evaluating Reviewing
<i>Verbs of social interaction</i>	36.1.1: correspond	Discussing Expressing stance Comparing/contrasting
	36.1.2: settle	Discussing Expressing stance Comparing/contrasting
<i>Verbs of communication</i>	37.1.1: transfer_mesg	Explaining Describing Comparing/contrasting Exemplifying Quoting Reviewing
	37.7: say	Explaining Describing Comparing Discussing Quoting Reviewing
<i>Verbs of change of state</i>	45.4: other_cos	Hypothesising Expressing cause/effect Sequencing

<i>Verbs of appearance, disappearance and occurrence</i>	48.1.2: reflexive appearance	Expressing stance Discussing Evaluating Justifying
<i>Aspectual verbs</i>	55.5: establish	Justifying Explaining Describing
-----	78: indicate	Explaining Describing Discussing Hypothesising

Table 7. Top categories (according to Levin and VerbNet 3.3 classifications) and related academic language functions.

Table 7 provides general information on preferred categories. In addition, if correctly interpreted and understood, the results in Appendix B can provide relevant information on specific (and categorised) EAVs to be used in academic writing. For instance, comparing or contrasting functions can be performed with verbs from the VN category “(22.2) Amalgamate” –or from Levin’s category “Combining and attaching”– such as *associate, coincide, compare, contrast, correlate, couple, figure, incorporate, integrate, overlap, team, unify*, etc. This kind of results (and the search tool that Appendix B can be considered to be) may thus be useful in order to enrich the lexical repertoire of scholars in general, to help authors avoid idiosyncratic (over-) use of certain forms and, in general, to improve their RAs.

#### 4.2. *N and NN linguistics RA corpora*

The outcome of the second big stage of this study is the *ad hoc* corpora of study themselves.

According to the selection criteria adopted (see Method, section 3) and to the composition data obtained (see Table 4), the corpora can be considered representative, balanced and, therefore, suitable for this study.

#### 4.3. *Corpus-based comparative (N/NN) results of the EAVs under study*

Throughout this section, the resulting corpus-based data obtained in the analysis of the EAVs from the list is presented. At this stage, the focus has been discipline-centred, that is, EAVs usage has been analysed within the particular field of linguistics RAs written in English, so that the results and pedagogical implications obtained are, at this point, more accurately associated with an ESAP approach.

### 4.3.1 Descriptive analysis results: top-frequent EAVs and their frequency-based classification

Table 8 summarises in a comparative fashion the 50 top-frequent verbs in each corpus. The 5 top-frequent academic verbs in the two corpora do coincide (although not all of them coincide in their order), which reveals a significant similar preference for particular verbs on the part of both Ns and NNs: the most frequent verb in both corpora is *use*, whereas the rest of the top positions are occupied by (here in alphabetical order): *include*, *find*, *see* and *show*. These 5 top-frequent EAVs in the corpora of study could be considered rather general verbs but with an undeniable presence and relevance in the (very formal) academic written context. This fact supports Paquot’s (2007) views that Coxhead’s AWL (where none of these verbs appear) needed, ideally, to be completed with more general “common” verbs that also play a key role in academic discourse.

Verbs in the SN corpus			Verbs in the SNN corpus		
	Freq.	%		Freq.	%
1. Use	941	5.834	1. Use	797	5.491
2. See	460	2.852	2. Show	446	3.073
3. Include	388	2.405	3. Include	368	2.535
4. Find	362	2.244	4. Find	362	2.494
5. Show	357	2.213	5. See	262	1.805
6. Provide	355	2.201	6. Consider	246	1.695
7. Occur	258	1.600	7. Provide	231	1.592
8. Say	219	1.358	9. Present	219	1.509
10. Consider	209	1.296	8. Analyse/zye	197	1.357
11. Suggest	198	1.228	9. Follow	197	1.357
12. Follow	191	1.184	10. Say	172	1.185
13. Produce	188	1.166	11. Describe	170	1.171
14. Appear	184	1.141	12. Focus	165	1.137
15. Indicate	172	1.066	13. Suggest	164	1.130
16. Report	172	1.066	14. Identify	156	1.075
17. Identify	170	1.054	15. Compare	152	1.047
18. Describe	168	1.042	16. Observe	141	0.971
19. Focus	168	1.042	17. Involve	133	0.916
20. Base	166	1.029	18. Explain	132	0.909
21. Note	163	1.011	19. Indicate	126	0.868
22. Develop	149	0.924	23. Obtain	126	0.868
24. Examine	147	0.911	20. Examine	125	0.861
25. Involve	143	0.887	26. Illustrate	124	0.854
27. Compare	140	0.868	21. Base	119	0.820
28. Investigate	131	0.812	29. Deviate	119	0.820
30. Write	127	0.787	22. Report	119	0.820
31. Argue	125	0.775	32. Refer	118	0.813
33. Relate	124	0.769	34. Allow	115	0.792

35. Discuss	123	0.763	23. Represent	114	0.785
36. Establish	117	0.725	24. Appear	112	0.772
37. Require	117	0.725	38. Apply	110	0.758
39. Construct	104	0.645	25. Address	107	0.737
40. Analyse/yzze	103	0.639	26. Relate	105	0.723
41. Represent	101	0.626	42. Deal	102	0.703
43. Tend	101	0.626	27. Write	95	0.655
44. Reflect	97	0.601	28. Reveal	93	0.641
45. Receive	96	0.595	46. Express	87	0.599
47. Reveal	94	0.583	29. Contain	86	0.593
48. Think	94	0.583	30. Discuss	86	0.593
49. Address	92	0.570	31 . Receive	83	0.572
50. Associate	92	0.570	51. Mention	80	0.551
52. Explain	90	0.558	53. Propose	80	0.551
54. Create	89	0.552	55. Concern	77	0.531
56. Explore	89	0.552	32. Occur	76	0.524
57. Observe	86	0.533	58. Design	75	0.517
59. Define	85	0.527	33. Explore	74	0.510
60. Conduct	84	0.521	34. Create	73	0.503
61. Demonstrate	84	0.521	62. Introduce	72	0.496
63. Support	78	0.484	64. Notice	71	0.489
65. View	78	0.484	66. State	69	0.475

Table 8. 50 top-frequent EAVs (and associated statistical data) in the N and NN corpora.

Since language is phrasal and textual, a simple clusters analysis with these 5 top-frequent EAVs reveals that these verbs are necessary in order to construct frequent and highly necessary expressions in academic English such as: *were/was/is/are/be used to/for/in/as a/by the; were/was/is/are included in the; including; found in the; found to be; found that; can be found; can be seen; we can see; see (in) section/table/figure; see (+author); (as/are/is) shown in table/figure; results/research show that; [...]*

Nonetheless, despite its undeniable importance and straightforward nature in studies like this, frequency can also be a misleading measure. It is therefore “only” a relatively reliable criterion for the interpretation of results that need further analysis from other complementary perspectives, like those offered in this study.

In Table 8, those verbs that only appear among the 50 top-frequent instances in one of the corpora but not in the other) have been highlighted for a more visual representation of initial dissimilarities. It may be observed that, on the one hand, *produce, note, develop, investigate, argue, establish, require, construct, tend, reflect, think, associate, define, conduct, demonstrate, support* and *view* are among the 50 top-frequent EAVs in the N corpus but not in the NN corpus, this presumably indicating preliminary preferences or trends as regards EAVs usage on the part of native scholars. On the other hand, *present, obtain, illustrate, deviate, refer, allow, apply, deal, express,*

*mention, propose, concern, design, introduce, notice* and *state* are among the 50 top-frequent EAVs in the NN corpus but not in the N corpus, which may also indicate preferences among non-native scholars. In consequence (and disregarding specific connotations) *a priori* it seems, for instance, that native scholars prefer to *note/argue/establish* than to *mention/express/state* (as non-natives do).

To complete this initial frequency-based descriptive analysis, the 50 top-frequent verbs from the list have been classified according to linguistic (VN and Levin’s) criteria in Tables 9 (N) and 10 (NN) in order to determine which categories consist of a higher number of these top-frequent verbs. As may be observed, some verbs such as *develop* or *argue* belong to more than one category.

Levin’	VN	Top-frequent EAVs in N linguistics RAs
	13.4.1: fulfilling	provide
	13.5.1: get	find
	13.5.2: obtain	receive
	15.3: support	support
	22.2: amalgamate	compare, associate
	25.2: scribble	write
	25.3: illustrate	address
Verbs of creation and transformation	26.1: build	develop
	26.2.1: grow	develop
	26.4: create	write, create, produce, construct
Engender verbs	27.1: engender	create, produce
	29.2: characterize	describe, report, represent, reveal, identify, define, view
	29.3.2: pronounce	say
	29.4: declare	find
	29.9: consider	consider, report, think
Verbs of perception	30.1: see	see
	30.2: sight	observe, note, view
	31.2: admire	support
	31.3: marvel	reflect
	33.2: prosecute	report
Verbs of assessment	34.1: assessment	examine, analyse/yzze, follow, investigate
	35.4: investigate	examine, explore, observe, investigate
Verbs of social interaction	36.1.1: correspond	argue
	36.1.2: settle	argue
	36.4: battle	argue

Verbs of communication	37.1.1: transfer_msg	show, suggest, write, explain, demonstrate
	37.6: chit_chat	discuss, argue
	37.7: say	say, relate, reveal, observe, report, suggest, note
	37.10: confess	reveal
	37.11: lecture	write
Verbs of ingesting	39.1: eat	use
	45.7: remedy	construct
	47.8: contiguous_location	follow, support
Verbs of appearance, disappearance and occurrence	48.1.1: appear	appear, develop
	48.1.2: reflexive_appearance	show, suggest, reveal, define
	48.3: occur-	occur, follow, develop
	51.7: accompany	conduct
	55.5: establish	establish
	62: wish	think
	64.3: admit	include, receive
	66: consume	use
	72.1: help	support
	75.2: caring	tend
	78: indicate	say, suggest, indicate, reveal, explain, show, establish, demonstrate
	84: discover	see, find
	86.2: relate	involve, relate
	87.1: focus	focus, reflect, think
	87.2: comprehend	see, follow
	88.2: empathize	identify
	95.2.1: subordinate	report
	97.1: base	base, establish
	99: ensure	provide
	103: require	involve, require
	104: spend_time	use
	105.1: use	use
	107.1: involve	include, involve, relate
	109.2: seem	appear
	110.1: representation	represent
	111.1: conduct	conduct
	114: act	conduct

Table 9. Levin's and VN classification of the 50 top-frequent verbs in the N corpus.

<b>Levin</b>	<b>VN</b>	<b>Top-frequent EAVs in NN linguistics RAs</b>
Verbs of putting	9.1: put	apply
Verbs of sending and carrying	11.1: send	express
Verbs of change of possession	13.2: contribute	refer
	13.3: future_having	allow
	13.4.1: fulfilling	provide, present
	13.5.1: get	find
	13.5.2: obtain	receive, obtain
	22.2: amalgamate	compare, introduce
	23.4: differ	deviate
	25.2: scribble	write
	25.3: illustrate	address, illustrate
	26.4: create	write, create, design
Engender verbs	27.1: engender	create
	29.2: characterize	describe, report, represent, reveal, identify
	29.3.2: pronounce	say
	29.4: declare	find
	29.9: consider	consider, report
Verbs of perception	30.1: see	see, notice
	30.2: sight	observe
Psych-verbs (verbs of psychological state)	31.1: amuse	concern
	33.2: prosecute	report
Verbs of assessment	34.1: assessment	examine, analyse/yze, follow
	35.4: investigate	examine, explore, observe
Verbs of communication	37.1.1: transfer_mesg-	show, suggest, write, explain, illustrate, state
	37.6: chit_chat	discuss
	37.7: say	say, relate, reveal, observe, report, suggest, mention, propose
	37.10: confess	reveal
	37.11: lecture	write
Verbs of ingesting	39.1: eat	use
	47.8: contiguous_location	follow
Verbs of appearance, disappearance and occurrence	48.1.1: appear	appear
	48.1.2: reflexive_appearance	show, suggest, reveal, present, express, propose
	48.3: occur	occur, follow
	55.5: establish	introduce
	62: wish	propose

	64.1: allow	allow
	64.3: admit	include, receive, allow
	66: consume	use
	78: indicate	say, suggest, indicate, reveal, explain, show
	83: cope	deal
	84: discover	see, find
	86.2: relate	involve, relate, refer, concern
	87.1: focus	focus, reflect
	87.2: comprehend	see, follow
	88.2: empathize	identify
	95.2.1: subordinate	report
	97.1: base	base
	99: ensure	provide
	103: require	involve
	104: spend_time	use
	105.1: use	use, apply
	107.1: involve	include, involve, relate
	109.2: seem	appear
	110.1: representation	represent

Table 10. Levin’s and VN classification of the 50 top-frequent verbs in the NN corpus.

The preferred VN categories –in this case, those with more integrating verb forms in each category (5 or +)– of the top-frequent EAVs detected are the ones shown in a comparative fashion in Table 11. All the preferred verbal categories (in this case, in the linguistics field) are highly coincident between Ns and NNs and are coherent, once again, with main rhetorical/language functions typically associated to RAs.

<b>Preferred Categories (according to VerbNet 3.3 classification)</b>	
<b>N corpus</b>	<b>NN corpus</b>
<b>29.2 characterise</b> Describe, report, represent, reveal, identify, define, view	<b>29.2 characterise</b> Describe, report, represent, reveal, identify
<b>37.1.1 transfer_mesg</b> Show, suggest, write, explain, demonstrate	<b>37.1.1 transfer_mesg</b> Show, suggest, write, explain, illustrate, state
<b>37.7 say</b> Say, relate, reveal, observe, report, suggest, note	<b>37.7 say</b> Say, relate, reveal, observe, report, suggest, mention, propose
<b>78 indicate</b> Say, suggest, indicate, reveal, explain, show, establish, demonstrate	<b>78 indicate</b> Say, suggest, indicate, reveal, explain, show

<p><b>48.1.2 reflexive_appearance</b>                  (*although it has less than 5 integrating verbs)                  show, suggest, reveal, define</p>	<p><b>48.1.2 reflexive_appearance</b>                  show, suggest, reveal, present, express                  propose</p>
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Table 11. Preferred categories of top-frequent English academic verbs.

From the results in Table 7 –and focusing on non-coinciding top-frequent verbs (highlighted)– it can be observed that Ns tend to use the verbs *define* and *view* more frequently in order to “characterise” (cat. 29.2) (associated language functions: explain, describe, compare/contrast) and also, in the specific case of *define*, when expressing “reflexive appearance” (cat. 48.1.2). The same occurs with *demonstrate* –preferred by Ns for transferring a message (cat. 37.1.1)– and *illustrate* and *state*, preferred by NNs in the same category and for the same associated language functions such as explaining, describing, comparing/contrasting, exemplifying, quoting or reviewing. In the category “say” (37.7), the verb *note* is a more popular option among Ns, whereas *mention* and *propose* are options that are preferred by NNs for the same category and, thus, for the same language functions (mainly: explaining, describing, comparing, discussing, quoting, reviewing). In the “indicate” category (78) and for language functions such as explaining, describing, discussing and hypothesising, apart from the coincidences established, Ns seem to use a wider variety of verbal forms which include *establish* and *demonstrate* as top-frequent. Finally, *define* is a verb that is clearly preferred by Ns to show “reflexive appearance” (cat. 48.1.2), whereas *present*, *express* and *propose* are the non-coincident high-frequency options preferred by NNS.

#### 4.3.2. Bivariate analyses

To complete the study, the following subsections present the results obtained after the bivariate analyses conducted.

##### 4.3.2.1. Frequency of use of EAVs: Bivariate analysis results

Firstly, the number of EAVs used in each corpus was calculated with respect to the total number of EAVs in the list (596), and a comparison between the two corpora (N/ NN) was performed. Table 12 summarises the results obtained, which indicate that N authors seem to use a wider range of lexical EAVs (85 % of the verbs in the list have been used by Ns) than NN authors, with 78 % of the verbs in the list used in the corpus. Despite the fact that a greater lexical variety –more verbs used– would normally be assumed in native scholars, and even though results confirm the hypothesis, the difference cannot be considered significant (<0.001).

	EAVs used (%)	EAVs not used (%)	Total Verb (%)	P
Corpus SN	508 (85)	88 (15)	596 (100)	<0.001
Corpus SNN	464 (78)	132 (22)	596 (100)	

Table 12. Number of EAVs in each corpus with respect to the total number of EAVs in the list.

Secondly, the frequency of use of EAVs (from the list) in each corpus was analysed in relation to the total amount of words in each of the corpora (see Table 13).

	EAVs used (%)	Rest of words (%)	Total word Corpus (%)	P
Corpus SN	16.130 (4.9)	310.312 (95.1)	326.375 (100)	<0.001
Corpus SNN	14.514 (4.4)	311.861 (95.6)	326.442 (100)	

Table 13. Frequency of use of EAVs in relation to the total number of words in the corpora.

Results show that differences in this respect are not really significant either (<0.001), although N authors seem to use a slightly larger number of EAVs (4.9 %) in their RAs than NN authors (4.4 %). Native written academic (linguistics) discourse seems to rely on EAVs a little more than that of non-natives, but the difference is so subtle (probably due to the fact that the NN authors (scholars) participating in this study are also highly competent in English) that L1 does not seem to play a determining or differentiating role in this respect either.

#### 4.3.2.2 Frequency of use of a series of randomly selected EAVs: Bivariate analysis results

Finally, the bivariate analysis of the frequency of use of 100 randomly selected EAVs was performed in order to detect specific differences in the use of such verbs. Results in this respect are particularly interesting since they provide significant statistical evidence showing real preferences in the use of certain EAVs over others. The results obtained have been comparatively summarised in Table 14.

N	Verb	Freq. of verbs (NN corpus)	(%)	Freq. of verbs (N corpus)	(%)	p
1	Include	368	2.535	388	2.405	0.464
2	Consider	246	1.695	209	1.296	0.004
3	Describe	170	1.171	168	1.042	0.278
4	Indicate	126	0.868	172	1.066	0.077
5	Base	119	0.820	166	1.029	0.057
6	Deviate	119	0.820	6	0.037	<0.001
7	Refer	118	0.813	27	0.167	<0.001
8	Allow	115	0.792	77	0.477	<0.001
9	Appear	112	0.772	184	1.141	<0.001
10	Address	107	0.737	92	0.570	0.069

N	Verb	Freq. of verbs (NN corpus)	(%)	Freq. of verbs (N corpus)	(%)	p
11	Express	87	0.599	63	0.391	0.009
12	Concern	77	0.531	61	0.378	0.047
13	Explore	74	0.510	89	0.552	0.615
14	Achieve	64	0.441	56	0.347	0.189
15	Perceive	61	0.420	40	0.248	0.009
16	Claim	60	0.413	25	0.155	<0.001
17	Tend	60	0.413	101	0.626	0.010
18	Investigate	55	0.379	131	0.812	<0.001
19	Contribute	54	0.372	40	0.248	0.050
20	Conduct	50	0.344	84	0.521	0.020
21	Accept	46	0.317	50	0.310	0.913
22	Communicate	44	0.303	19	0.118	<0.001
23	Classify	43	0.296	48	0.298	0.983
24	Engage	40	0.276	65	0.403	0.057
25	Exploit	37	0.255	6	0.037	<0.001
26	Prove	35	0.241	18	0.112	0.006
27	Construct	31	0.214	104	0.645	<0.001
28	Choose	31	0.214	22	0.136	0.104
29	Result	31	0.214	41	0.254	0.464
30	Exist	27	0.186	51	0.316	0.024
31	Contextualise/ize	26	0.179	4	0.025	<0.001
32	Demonstrate	25	0.172	84	0.521	<0.001
33	Reinforce	25	0.172	9	0.056	0.002
34	Attempt	24	0.165	52	0.322	0.006
35	Categorize/ise	22	0.152	18	0.112	0.333
36	Pose	22	0.152	11	0.068	0.026
37	Defend	20	0.138	1	0.006	<0.001
38	Increase	19	0.131	60	0.372	<0.001
39	Denote	18	0.124	9	0.056	0.044
40	Replace	18	0.124	10	0.062	0.073
41	Range	17	0.117	24	0.149	0.449
42	Postulate	16	0.110	2	0.012	<0.001
43	Correlate	15	0.103	34	0.211	0.019
44	Fail	14	0.096	24	0.149	0.194
45	Grant	13	0.090	5	0.031	0.035
46	Operate	13	0.090	22	0.136	0.226
47	Control	12	0.083	32	0.198	0.008
48	Stimulate	12	0.083	4	0.025	0.027
49	Fund	11	0.076	8	0.050	0.358
50	Guide	11	0.076	11	0.068	0.804
51	Undergo	11	0.076	27	0.167	0.023

N	Verb	Freq. of verbs (NN corpus)	(%)	Freq. of verbs (N corpus)	(%)	p
52	Complete	10	0.069	47	0.291	<0.001
53	Eliminate	10	0.069	4	0.025	0.071
54	Impose	10	0.069	13	0.081	0.709
55	Seek	10	0.069	42	0.260	<0.001
56	Discriminate	9	0.062	3	0.019	0.055
57	Transmit	9	0.062	2	0.012	0.022
58	Compute	8	0.055	4	0.025	0.114
59	Submit	8	0.055	17	0.105	0.124
60	Direct	7	0.048	8	0.050	0.957
61	Impact	7	0.048	34	0.211	<0.001
62	Manipulate	7	0.048	6	0.037	0.640
63	Separate	7	0.048	11	0.068	0.471
64	Destroy	6	0.041	0	0	0.011
65	Tackle	6	0.041	10	0.062	0.429
66	Allocate	5	0.034	15	0.093	0.045
67	Probe	5	0.034	2	0.012	0.202
68	Question	5	0.034	11	0.068	0.197
69	Recreate	5	0.034	0	0	0.024
70	Reproduce	5	0.034	3	0.019	0.391
71	Constrain	4	0.028	13	0.081	0.049
72	Hint	4	0.028	3	0.019	0.604
73	Root	4	0.028	4	0.025	0.881
74	Rule	4	0.028	3	0.019	0.604
75	Strengthen	4	0.028	13	0.081	0.049
76	Contact	3	0.021	4	0.025	0.811
77	Discover	3	0.021	11	0.068	0.103
78	Format	3	0.021	1	0.006	0.351
79	Imagine	3	0.021	12	0.074	0.121
80	Quote	3	0.021	6	0.037	0.399
81	Suspend	3	0.021	0	0	0.106
82	Underestimate	3	0.021	2	0.012	0.673
83	Visualize/ise	3	0.021	0	0	0.106
84	Cease	2	0.014	0	0	0.224
85	Draft	2	0.014	4	0.025	0.690
86	Incline	2	0.014	4	0.025	0.690
87	Own	2	0.014	8	0.050	0.114
88	Prioritize/ise	2	0.014	4	0.025	0.690
89	Speculate	2	0.014	0	0	0.224
90	Amend	1	0.007	1	0.006	0.940
91	Contemplate	1	0.007	3	0.019	0.627
92	Develop	1	0.007	149	0.924	<0.001

N	Verb	Freq. of verbs (NN corpus)	(%)	Freq. of verbs (N corpus)	(%)	p
93	Displace	1	0.007	3	0.019	0.627
94	Finance	1	0.007	0	0	0.999
95	Insist	1	0.007	4	0.025	0.378
96	Problematize/ise	1	0.007	5	0.031	0.223
97	Reference	1	0.007	1	0.006	0.940
98	Resolve	1	0.007	4	0.025	0.378
99	Schedule	1	0.007	1	0.006	0.940
100	Utilize/ise	1	0.007	25	0.155	<0.001

Table 14. Bivariate analysis results: Comparison of the frequency of use (in N and NN corpora) of 100 randomly selected EAVs.

According to the results in Table 14, from a random sample of 100 verbs, in 43 (43 %) of them there is a significant difference ( $p > 0.005$ ) in the frequency of use (signalled in bold in the “p” column): 23 of them have a greater frequency in the NN corpus, whereas the remaining 20 appear more frequently in the N corpus. The way a (statistically significant) difference in the frequency of use of 43 verbs from the randomly selected sample has been established according to measurable objective methods should be interpreted as follows:

Table 14, row 6: verb *deviate*. The verb appears 119 times in the corpus, which implies 0.82 % of the total number of verbs (from our list of 596) used in the NN corpus; this verb is only used 6 times in the N corpus, which implies 0.037 % of the total number of verbs (from our list of 596) in this corpus. There is a difference of 0.79 % in the appearance of this verb in the two corpora, which is a difference that is found to be significant ( $p < 0.005$ ) on applying the chi-square test. Since it shows a significant difference, it appears in Table 15, in the column of verbs that are used more frequently and significantly in the NN corpus than in the N one.

In a summarising view, from the 100 EAVs randomly selected for the study, the ones in Table 15 are those with a frequency that is significant ( $p > 0.005$ ) and higher in one corpus than in the other, that is, those verbs from the random sample in which there is really a significant difference in use between N and NN scholars.

Higher frequency in NN corpus	Higher frequency in N corpus
<b>Consider</b>	Appear
<b>Deviate</b>	Tend
<b>Refer</b>	Investigate
<b>Allow</b>	Conduct
<b>Express</b>	Construct
<b>Concern</b>	Exist
<b>Perceive</b>	Demonstrate
<b>Claim</b>	Attempt
<b>Contribute</b>	Increase
<b>Communicate</b>	Correlate

<b>Exploit</b>	Control
<b>Prove</b>	Undergo
<b>Contextualise/ize</b>	Complete
<b>Reinforce</b>	Seek
<b>Pose</b>	Impact
<b>Defend</b>	Allocate
<b>Denote</b>	Constrain
<b>Postulate</b>	Strengthen
<b>Grant</b>	Develop
<b>Stimulate</b>	Utilize/ise
<b>Transmit</b>	
Destroy	
Recreate	

Table 15. EAVs from the random sample with a (significant and) higher frequency ( $p>0.005$ ) in one corpus than in the other.

These verbs have also been classified according to linguistic criteria (Levin's and VN classifications) in Table 16.

Levin	VN	NN	N
Verbs of sending and carrying	11.1: send	express, transmit	
Verbs of change of possession	<b>13.2: contribute</b>	refer, contribute	
	<b>13.3: future_having</b>	allow, grant	allocate
	<b>13.5.4: invest</b>		allocate
Hold and keep verbs	<b>15.3: support</b>	reinforce	strengthen
Verbs of combining and attaching	22.2: amalgamate		correlate
Verbs of separating and disassembling	<b>23.4: differ</b>	deviate	
Verbs of creation and transformation	26.1: build		develop
	<b>26.2.1: grow</b>		develop
	<b>26.4: create</b>		construct
Verbs with predicative complements	<b>29.2: characterize</b>	perceive	
	<b>29.4: declare</b>	prove	
	<b>29.6: masquerade</b>	pose	
	<b>29.9: consider</b>	consider	
Verbs of perception	<b>30.1: see</b>	perceive	
	<b>30.2: sight</b>	perceive	
Psych-verbs (verbs of psychological state)	<b>31.1: amuse</b>	concern	
Verbs of assessment	34.1: assessment		investigate
	<b>34.2: estimate</b>		

Verbs of searching	35.1: hunt		seek
	<b>35.4: investigate</b>		investigate
Verbs of social interaction	<b>36.1.1: correspond</b>	communicate	
	<b>36.1.2: settle</b>	communicate	
Verbs of communication	<b>37.1.1: transfer_mesg</b>	communicate, pose	demonstrate
	<b>37.7: say</b>	claim	
Destroy verbs	<b>44: destroy</b>	destroy	
Verbs of change of state	45.4: other_cos		increase, strengthen
	45.6.2: caused_calibratable_cos		increase
	<b>45.7: remedy</b>	contextualize/ise	construct
Verbs of existence	47.1: exist		exist
Verbs of appearance, disappearance and occurrence	<b>48.1.1: appear</b>	pose	appear, develop
	<b>48.1.2: reflexive_appearance</b>	express	
	48.3: occur		develop
Verbs of motion	51.7: accompany		conduct
Aspectual verbs	55.2: complete		complete
	<b>59.4: stimulate</b>	stimulate	
	61.1: try		attempt
	63: enforce		control
	<b>64.1: allow</b>	allow	
	<b>64.3: admit</b>	allow	
	<b>72.3: defend</b>	defend	
	75.2: caring		tend
	76: limit		constrain
	78: indicate	prove, denote	demonstrate
	86.1: correlate		correlate
	<b>86.2: relate</b>	refer, concern	
	<b>97.2: deduce</b>	prove	
	<b>105.1: use</b>	exploit	
	109.1: become		appear
	<b>110.1: representation</b>	denote	
	111.1: conduct		conduct
	<b>114.2: play</b>	recreate	
	114: act		conduct

Table 16. Classification according to linguistic criteria of those EAVs with a (significant and) higher frequency ( $p>0.005$ ) in one corpus than in the other.

Accordingly, from the results obtained, it might be concluded, for instance, that NNs prefer verbs such as *allow* or *grant* in order to express “future having” (Cat.13.3), whereas Ns seem to prefer *allocate*. In the same way, in order to express “support”

(Cat. 15.3), NNs seem to prefer *reinforce* whereas Ns seem to prefer *strengthen*. For “transferring a message” (Cat. 37.1.1) (or within the wider category “verbs of communication”), there is a significant difference in the use of *demonstrate* on the part of Ns and *communicate* or *pose* on the part of NNs. *Pose* is also a preferred option on the part of non-natives in the category of “appear” verbs (48.1.1), in contrast to the proven preference for *appear* or *develop* on the part of native scholars. In the “indicate” category (Cat. 78), NNs show a preference for *prove* or *denote* in contrast to the significantly preferred use, once again, of *demonstrate* by N scholars.

In the case of those verbs appearing only in the N or NN column, it can be observed, for instance, that the use of verbs of perception such as *perceive* also seems more significant among NNs, whereas verbs of searching such as *seek* and *investigate* seem more relevant among Ns.

## 5. CONCLUSION

Lexical verbs, especially, are embodiments of expressions of action, state, and meaningful predicates in texts (Crystal, 2003). As such, they play a key role in EAP functions such as “expressing personal stance, reviewing the literature, quoting, expressing cause and effects, summarising and contrasting” (Granger and Paquot, 2009: 1). Accordingly, an accurate, adequate and community-accepted academic written discourse makes the knowledge and mastery of these verbs a necessary condition for scholars. However, the comparative study of the use of EAVs by N or NN English scholars is still quite an unexplored area, which this study has tried to help unveil.

In Levin’s words (1993: 2), “native speakers can make extremely subtle judgements concerning the occurrence of verbs with a range of possible combinations of arguments and adjuncts in various syntactic expressions”. But do NNs do the same? Evidence suggests that despite the assumed “privileged” position of Ns when writing in English, the NN authors whose RA have been analysed in this study also seem to make the subtle judgements mentioned by Levin, since their actual usage of EAVs does not show significant differences with respect to that of N academic writers. The greatest differences are found in preferences for particular verbs, since real in-context use shows interesting N and NN “trends” in this respect, opening the door to further research devoted to exploring in depth the reasons underlying such a phenomenon. On the whole, however, the main conclusion to be drawn from this study is that no striking differences seem to exist between N and NN use of EAVs in linguistics Ras, probably due to the fact that the NN authors participating in this study are also highly competent in English. Therefore, the assumed added difficulty for NN authors when using EAL in their RAs (in this particular case focused on the use of EAVs) does not seem to be so in reality. Accordingly, there is no real significant impact on RA quality and no striking differences are seen between N and NN authors’ written verbal production.

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**APPENDIX A****Extensive list of EAVs**

	1. abandon	2. abstract	3. accept
4. access	5. accommodate	6. accompany	7. account (for)
8. accumulate	9. achieve	10. acknowledge	11. acquire
12. act	13. adapt	14. address	15. admit
16. adopt	17. adjust	18. administer	19. advance
20. advocate	21. affect	22. affirm	23. aggregate
24. agree	25. aid	26. aim	27. allege
28. allocate	29. allow	30. allude	31. alter
32. alternate	33. amend	34. analyse/yzze	35. announce
36. anticipate	37. appear	38. append	39. apply
40. appraise	41. appreciate	42. approach	43. approximate
44. argue	45. arise	46. ascertain	47. assay
48. assert	49. assemble	50. assess	51. assign
52. assist	53. associate	54. assume	55. assure
56. attach	57. attain	58. attempt	59. attend
60. attribute	61. author	62. automate	63. aver
64. avoid	65. avow	66. base	67. believe
68. benefit	69. bias	70. bond	71. brief
72. broaden	73. cause	74. categorize/ise	75. cease
76. challenge	77. channel	78. characterize/ise	79. chart
80. choose	81. cite	82. claim	83. clarify
84. classify	85. code	86. coincide	87. collapse
88. combine	89. commence	90. comment	91. commission
92. commit	93. communicate	94. compare	95. compensate
96. compile	97. complement	98. complete	99. compete
100. comprehend	101. compose	102. compound	103. comprise
104. compute	105. concede	106. conceive	107. concentrate
108. concern	109. concur	110. conclude	111. conduct
112. confer	113. confine	114. confirm	115. conflict
116. conform	117. conjecture	118. connect	119. consent
120. consider	121. consist	122. constitute	123. constrain
124. construct	125. consult	126. consume	127. contact
128. contain	129. contemplate	130. contend	131. contest
132. continue	133. contextualise/ize	134. contradict	135. contract
136. contrast	137. contribute	138. control	139. convene
140. convert	141. convey	142. convince	143. cooperate
144. coordinate	145. core	146. correlate	147. correspond
148. couple	149. create	150. credit	151. cycle
152. deal	153. damage	154. debate	155. decline
156. deconstruct	157. deduce	158. deduct	159. defend
160. define	161. demand	162. demonstrate	163. demur

164. denote	165. deny	166. depend	167. depress
168. derive	169. describe	170. design	171. designate
172. destroy	173. detail	174. detect	175. deteriorate
176. determine	177. deviate	178. develop	179. devote
180. differ	181. differentiate	182. diminish	183. direct
184. disclose	185. discriminate	186. discover	187. discuss
188. disestablish	189. displace	190. display	191. dispose
192. dispute	193. dissect	194. distinguish	195. distort
196. distribute	197. diverge	198. diversify	199. divide
200. document	201. domesticate	202. dominate	203. doubt
204. draft	205. dramatise/ize	206. edit /co-edit	207. effect
208. elaborate	209. eliminate	210. elucidate	211. embrace
212. emerge	213. emphasise/ize	214. employ	215. enable
216. encounter	217. encourage	218. enforce	219. engage
220. engender	221. enhance	222. enlarge	223. ensure
224. entitle	225. equate	226. equip	227. erode
228. establish	229. estimate	230. evaluate	231. evolve
232. examine	233. exceed	234. exclude	235. excoriate
236. exemplify	237. exhibit	238. exist	239. expand
240. experience	241. explain	242. exploit	243. explore
244. export	245. expose	246. expound	247. express
248. extend	249. externalise/ize	250. extract	251. facilitate
252. factor	253. fail	254. favour	255. feature
256. figure	257. file	258. finalize/ise	259. finance
260. find	261. fluctuate	262. focus	263. follow
264. form	265. format	266. formulate	267. foster
268. frame	269. function	270. fund	271. gain
272. generate	273. grade	274. grant	275. govern
276. guarantee	277. guess	278. guide	279. handle
280. highlight	281. hint	282. hold	283. hypothesize /ise
284. identify	285. ignore	286. illuminate	287. illustrate
288. imagine	289. immigrate	290. impact	291. impart
292. implement	293. implicate	294. imply	295. impose
296. improve	297. incapacitate	298. incline	299. include
300. increase	301. incorporate	302. indicate	303. induce
304. infer	305. influence	306. inhibit	307. initiate
308. innovate	309. input	310. inquire	311. insert
312. insist	313. inspect	314. instance	315. institute
316. instruct	317. integrate	318. intensify	319. interact
320. internalize/ise	321. interpret	322. intervene	323. introduce
324. invalidate	325. invest	326. investigate	327. invoke
328. involve	329. isolate	330. issue	331. judge
332. justify	333. label	334. labour	335. lack

336. layer	337. lead	338. lecture	339. legislate
340. levy	341. liberalize /ise	342. liberate	343. license
344. limn	345. link	346. limit	347. locate
348. maintain	349. manipulate	350. mature	351. maximize
352. mediate	353. measure	354. mention	355. migrate
356. mine	357. minimise/ize	358. misinterpret	359. modify
360. monitor	361. name	362. narrow	363. negate
364. negotiate	365. neglect	366. network	367. neutralize/ise
368. normalize/ise	369. notice	370. note	371. object
372. obtain	373. observe	374. occupy	375. occur
376. offer	377. offset	378. operate	379. optimise/ize
380. orient	381. orientate	382. outline	383. output
384. overestimate	385. overcome	386. overlap	387. own
388. parallel	389. participate	390. perceive	391. perform
392. persist	393. phase	394. philosophise/ize	395. permit
396. persuade	397. ponder	398. portray	399. pose
400. posit	401. possess	402. postulate	403. precede
404. predict	405. predominate	406. prefer	407. present
408. preserve	409. presume	410. prevent	411. prioritize/ise
412. probe	413. problematize/ise	414. proffer	415. proceed
416. process	417. produce	418. prohibit	419. project
420. promote	421. pronounce	422. propose	423. prove
424. provide	425. publish	426. purchase	427. pursue
428. query	429. question	430. quote	431. range
432. rank	433. rationalize/ise	434. react	435. reactivate
436. readjust	437. realise/ize	438. reason	439. reassess
440. recall	441. recap	442. recapitulate	443. receive
444. reconcile	445. reconstruct	446. record	447. recover
448. recreate	449. redistribute	450. reduce	451. refer
452. reference	453. refine	454. reflect	455. refute
456. regard	457. register	458. regulate	459. reinforce
460. reinvest	461. reject	462. relate	463. relax
464. relay	465. release	466. relocate	467. rely
468. remain	469. remark	470. remind	471. remove
472. render	473. replace	474. reply	475. report
476. represent	477. reproduce	478. request	479. require
480. reschedule	481. research	482. reside	483. resolve
484. resource	485. respond	486. restate	487. restore
488. restrain	489. restrict	490. restructure	491. result
492. retain	493. reveal	494. reverse	495. review
496. revise	497. revolutionize/ise	498. root	499. route
500. rule	501. sanction	502. say	503. scan
504. schedule	505. scheme	506. scrutinize/ise	507. section

508. secure	509. see	510. seek	511. select
512. separate	513. shift	514. show	515. sift
516. signal	517. signify	518. simplify	519. simulate
520. solve	521. source	522. specify	523. speculate
524. stabilize/ise	525. state	526. stress	527. strengthen
528. stimulate	529. study	530. structure	531. style
532. submit	533. subordinate	534. subsidize/ise	535. substantiate
536. substitute	537. suffer	538. suggest	539. sum (up)
540. summarize/ise	541. supplement	542. supply	543. support
544. suppose	545. surmise	546. survey	547. survive
548. suspend	549. sustain	550. suture	551. symbolise/ize
552. synthesise/ize	553. tackle	554. tape	555. target
556. task	557. team	558. tell	559. tend
560. term	561. terminate	562. theorize/ise	563. think
564. trace	565. transfer	566. transform	567. transgress
568. transmit	569. transport	570. treat	571. trigger
572. trust	573. underestimate	574. uncover	575. undergo
576. underlie	577. underline	578. undermine	579. underscore
580. undertake	581. unify	582. uphold	583. use
584. utilize/ise	585. validate	586. vary	587. verify
588. view	589. violate	590. visualize/ise	591. volunteer
592. weigh	593. wink	594. worsen	595. write
596. yield			

Table 17. Extensive resulting list of lexical EAVs.

## APPENDIX B

### Top, middle and bottom categories of EAVs based on the number of integrating items

Levin	VerbNet	Academic verb-forms under study integrating each category
Verbs of change of possession	<b>13.3: future_having</b>	<b>advance, allocate, allow</b> , assign, concede, <b>extend</b> , grant, <b>guarantee, issue, offer, yield</b>
Verbs of combining and attaching	<b>22.2: amalgamate</b>	<b>alternate</b> , associate, <b>coincide</b> , compare, contrast, <b>correlate, couple, engage, figure</b> , incorporate, <b>integrate, introduce</b> , overlap, team, unify
Verbs of creation and transformation	<b>26.4: create</b>	<b>author, compose</b> , compute, <b>construct, create, derive</b> , design, <b>draft, form, formulate, produce</b> , publish, <b>style, synthesize/ise, write</b>

Verbs with predicative complements	<b>29.2: characterize</b>	<b>accept, adopt</b> , characterize/ise, <b>classify, conceive</b> , define, describe, detail, <b>identify, imagine</b> , interpret, <b>perceive</b> , portray, <b>rank, regard, report, represent, reveal, select, specify, treat</b> , underestimate, view, visualize/ise
	<b>29.5: conjecture</b>	<b>admit, affirm, anticipate, assert, believe</b> , conjecture, deny, <b>determine</b> , doubt, <b>guess, hold, infer, presume</b> , surmise, <b>trust</b>
Psych-verbs (verbs of psychological state)	<b>31.1: amuse</b>	affect, <b>concern, convince</b> , depress, <b>encourage, engage</b> , occupy, relax, <b>stimulate, transport</b>
Verbs of assessment	<b>34.1: assessment</b>	analyse(yze), <b>appraise</b> , assay, <b>assess, consult</b> , evaluate, <b>examine, follow, inspect, investigate, monitor, regard</b> , research, review, <b>scan, study, survey</b>
Verbs of social interaction	<b>36.1.1: correspond</b>	<b>agree, argue, communicate, concur, confer, cooperate, correspond, debate, differ, interact</b> , negotiate
	<b>36.1.2: settle</b>	<b>agree, argue, communicate, concur, cooperate, correspond, debate, differ, interact</b> , resolve
Verbs of communication	<b>37.1.1: transfer_mesg</b>	<b>communicate, demonstrate</b> , elucidate, <b>explain</b> , expound, <b>illustrate</b> , justify, outline, <b>pose</b> , quote, recap, <b>relay, show</b> , sum (up), summarize/ise, <b>tell, verify, write</b>
	<b>37.7: say</b>	allege, <b>announce</b> , claim, <b>continue, convey, disclose</b> , hint, insist, mention, note, observe, <b>propose, relate, remark, reply, report, respond, reveal, say</b> , state, suggest, <b>volunteer</b>
Verbs of change of state	<b>45.4: other_cos</b>	alter, broaden, clarify, collapse, diversify, <b>divide</b> , enlarge, expand, improve, intensify, liberalize/ise, <b>mature</b> , modify, narrow, neutralize/ise, normalize/ise, refine, <b>reproduce</b> , reverse, revise, root, section, stabilize/ise, <b>strengthen, worsen</b>
Verbs of appearance, disappearance and occurrence	<b>48.1.2: reflexive_appearance</b>	<b>announce, assert</b> , display, exhibit, <b>expose, express, form, offer, pose, present, proffer, propose, reveal, show, suggest</b>

Aspectual verbs	<b>55.5: establish</b>	constitute, <b>establish</b> , format, implement, initiate, innovate, <b>institute, introduce</b> , simulate, <b>synthesise/ize</b>
Other (not classified by Levin)	<b>78: indicate</b>	<b>affirm, anticipate, confirm, demonstrate, denote, disclose, establish, explain, expose, imply</b> , indicate, predict, <b>prove, reveal, say, show, suggest, verify</b>

Table 18. Top-categories: 10 or more EAV forms.

Levin’s classification (just main categories)	VerbNet classification (by class number)	Academic verb-forms under study integrating each category
Verbs of removing	<b>10.1: remove</b>	abstract, deduct, <b>eliminate</b> , extract, <b>remove, render, separate</b>
Verbs of sending and carrying	<b>11.1: send</b>	<b>convey, export, express, shift, transport</b>
	<b>13.4.1: fulfilling</b>	credit, issue, <b>present, provide</b> , supply, <b>trust</b>
	<b>13.4.2: equip</b>	compensate, equip, <b>invest, treat</b>
	<b>13.5.1: get</b>	attain, choose, <b>find, gain, secure</b>
	<b>13.5.2: obtain</b>	<b>accept, accumulate</b> , acquire, obtain, purchase, <b>receive, recover, select</b> , source
	<b>13.5.3: hire</b>	<b>commission, contract, draft, employ, engage</b>
	<b>13.5.4: invest</b>	<b>allocate, commit, invest</b> , speculate
Hold and keep verbs	<b>15.3: support</b>	<b>hold</b> , reinforce, <b>strengthen, support</b>
Verbs of combining and attaching	<b>22.1: mix</b>	combine, compound, <b>connect, link</b> , network
	<b>22.4: tape</b>	<b>bond, connect, link</b> , suture, <b>tape</b>
Verbs of separating and disassembling	<b>23.4: differ</b>	deviate, <b>differ</b> , diverge, <b>vary</b>
Image creation verbs	<b>25.2: scribble</b>	<b>record</b> , trace, underline, <b>underscore, write</b>
	<b>25.3: illustrate</b>	address, illuminate, <b>illustrate, label</b>
	<b>25.4: transcribe</b>	chart, document, <b>record, tape</b>
Verbs of creation and transformation	<b>26.1: build</b>	<b>assemble</b> , compile, <b>develop, formulate</b>
	<b>26.2.1: grow</b>	<b>develop, evolve, generate, mature</b>
	<b>26.9: adjust</b>	accommodate, adapt, <b>adjust</b> , conform, readjust
Engender verbs	<b>27.1: engender</b>	<b>cause, create</b> , engender, <b>generate, produce, stimulate</b> , trigger

Verbs with predicative complements	<b>29.3.2: pronounce</b>	<b>pronounce, rule, say, style</b>
	<b>29.3: dub</b>	<b>label, name, pronounce, term</b>
	<b>29.4: declare</b>	<b>assume, avow, find, judge, maintain, prove</b>
	<b>29.6: masquerade</b>	<b>act, function, pose, rank</b>
	<b>29.9: consider</b>	<b>acknowledge, 1 consider, posit, render, report, suppose, think</b>
	<b>29.10: classify</b>	<b>categorize/ise, classify, code, grade, separate</b>
Verbs of perception	<b>30.1: see</b>	<b>detect, notice, perceive, see, tell</b>
	<b>30.2: sight</b>	<b>discover, experience, observe, perceive, view</b>
Psych-verbs (verbs of psychological state)	<b>31.2: admire</b>	<b>affirm, appreciate, believe, favour, prefer, suffer, support, trust</b>
	<b>31.3: marvel</b>	<b>react, stress, suffer, reflect</b>
Verbs of assessment	<b>34.2: estimate</b>	<b>approximate, assay, estimate, guess, judge, project</b>
Verbs of searching	<b>35.4: investigate</b>	<b>examine, explore, inspect, investigate, monitor, observe, scan, scrutinize/ise, survey</b>
Verbs of social interaction	<b>36.4: battle</b>	<b>argue, compete, contend, debate, dispute</b>
Verbs of communication	<b>37.6: chit_chat</b>	<b>argue, confer, debate, discuss</b>
	<b>37.9: advise</b>	<b>assure, brief, encourage, instruct</b>
	<b>37.11: lecture</b>	<b>comment, elaborate, lecture, remark, theorize/ise, write</b>
Verbs of change of state	<b>45.6.1: calibratable_cos</b>	<b>appreciate, decline, fluctuate, gain</b>
	<b>45.6.2: caused_calibratable_cos</b>	<b>advance, diminish, increase, reduce, shift, vary</b>
	<b>45.7: remedy</b>	<b>categorize/ise, construct, contextualize/ise, deconstruct, domesticate, enhance, grade, minimise/ize, revise</b>
Verbs of existence	<b>47.1: exist</b>	<b>exist, extend, hold, persist, predominate, remain, reside, survive</b>
	<b>47.5.2: herd</b>	<b>accumulate, aggregate, assemble, convene</b>
	<b>47.8: contiguous_location</b>	<b>dominate, follow, frame, precede, support, underlie</b>
Verbs of appearance, disappearance and occurrence	<b>48.1.1: appear</b>	<b>appear, arise, derive, develop, emerge, evolve, form, issue, result</b>
	<b>48.3: occur</b>	<b>develop, follow, occur, result</b>

Verbs of motion	<b>51.1: escape</b>	<b>advance, approach, continue, emerge, file</b>
	<b>51.7: accompany</b>	<b>accompany, conduct, guide, lead</b>
Measure verbs	<b>54.4: price</b>	<b>appraise, approximate, assess, estimate, overestimate</b>
Aspectual verbs	<b>55.6: sustain</b>	<b>continue, hold, maintain, sustain</b>
Other (not classified by Levin)	<b>58.3: order</b>	<b>announce, commission, demand, require</b>
	<b>59.1: compel</b>	<b>convince, induce, influence, lead, persuade</b>
	<b>64.3: admit</b>	<b>admit, allow, include, permit, receive</b>
	<b>64.4: forbid</b>	<b>exclude, inhibit, prevent, prohibit, restrain</b>
	<b>71: conspire</b>	<b>discriminate, legislate, scheme, scrutinize/ise</b>
	<b>76: limit</b>	<b>confine, constrain, limit, reduce, restrain, restrict</b>
	86.2: relate	<b>concern, involve, refer, relate</b>
	<b>87.1: focus</b>	<b>concentrate, contemplate, focus, ponder, reflect, think</b>
	<b>87.2: comprehend</b>	<b>comprehend, follow, misinterpret, realise/ize, see</b>
	<b>97.2: deduce</b>	<b>conceive, conclude, deduce, deduct, derive, infer, prove, rationalize/ise, reason</b>
	<b>98: confront</b>	<b>approach, handle, tackle, target, undertake</b>
	<b>99: ensure</b>	<b>ascertain, assure, ensure, guarantee, provide, secure</b>
	<b>102: promote</b>	<b>advance, emphasize/ise, encourage, promote, underscore</b>
	<b>105.1: use</b>	<b>apply, employ, exploit, use, utilize/ise</b>
	<b>107.1: involve</b>	<b>engage, include, involve, relate</b>
	<b>107.2: comprise</b>	<b>compose, comprise, consist, constitute, contain, form</b>
	<b>110.1: representation-</b>	<b>denote, represent, signify, symbolise/ize</b>
<b>111.1: conduct</b>	<b>conduct, hold, transfer, transmit</b>	
<b>114: act</b>	<b>act, cause, conduct, perform</b>	

Table 19. Middle-categories: 4-9 EAV forms.

<b>Levin's classification (just main categories)</b>	<b>VerbNet classification (by class number)</b>	<b>Academic verbs under study integrating each category</b>
Verbs of putting	<b>9.1: put</b>	<b>apply, insert</b>
	<b>9.2: put_spatial</b>	<b>suspend</b>
	<b>9.3: funnel</b>	funnel
	<b>9.8: fill</b>	<b>frame</b>
	<b>9.9: butter</b>	<b>frame, label, stress</b>
	<b>9.10: pocket</b>	<b>file</b>
Verbs of removing	<b>10.2: banish</b>	<b>recall, remove</b>
	<b>10.4.2: wipe_instr</b>	<b>file</b>
	<b>10.5: steal</b>	<b>liberate</b>
	<b>10.6.3: free</b>	<b>liberate, release</b>
	<b>10.7: pit</b>	core
	<b>10.9: mine</b>	<b>mine</b>
Verbs of change of possession	<b>13.1: give</b>	<b>deal, render</b>
	<b>13.6.2: substitute</b>	<b>replace, substitute</b>
Learn verbs	<b>14: learn</b>	<b>study</b>
Hold and keep verbs	<b>15.1: hold</b>	handle, <b>hold</b>
	<b>15.2: keep</b>	<b>hold</b>
	<b>15.4: contain</b>	<b>contain, hold</b>
Verbs of cutting	<b>21.2: carve</b>	<b>file</b>
Verbs of combining and attaching	<b>22.6: harmonize</b>	<b>alternate, couple</b>
Verbs of separating and disassembling	<b>23.1: separate</b>	<b>differentiate, divide, separate</b>
	<b>23.3: disassemble</b>	<b>sift</b>
	<b>23.5: distinguish</b>	<b>differentiate, distinguish</b>
Verbs of creation and transformation	<b>26.5: knead</b>	<b>distort</b>
	<b>26.6.1: turn</b>	<b>alter, convert, transform</b>
	<b>26.6.2: convert</b>	<b>convert, shift</b>
	<b>26.7: performance</b>	<b>direct, perform</b>
Engender verbs	<b>27.2: result</b>	<b>cause, lead, result</b>
Calve verbs	<b>28.2: birth</b>	<b>generate, reproduce</b>
Verbs with predicative complements	<b>29.1: appoint</b>	<b>adopt, designate, name</b>
	<b>29.8: captain</b>	<b>judge, volunteer</b>
Verbs of perception	<b>30.3: peer</b>	<b>attend</b>
	<b>30.5: encounter</b>	encounter
Psych-verbs (verbs of psychological state)	<b>31.3: marvel</b>	<b>react, stress, suffer</b>
Verbs of desire	<b>32.1: want</b>	<b>prefer</b>
Judgement verbs	<b>33.1: judgment</b>	<b>cite, judge</b>
	<b>33.2: prosecute</b>	<b>report, sanction</b>

Verbs of searching	<b>35.1: hunt</b>	<b>mine, seek</b>
	<b>35.2: search</b>	probe, sift
	<b>35.5: rummage</b>	<b>root</b>
Verbs of social interaction	<b>36.3: meet</b>	<b>consult, debate</b>
	<b>36.6: interact</b>	<b>interact</b>
Verbs of communication	<b>37.1.2: inquire</b>	<b>consult, inquire</b>
	<b>37.1.3: interrogate</b>	<b>question</b>
	<b>37.2: tell</b>	<b>remind</b>
	<b>37.4.1: instr_ communication</b>	relay, signal
	<b>37.8: complain</b>	object
	<b>37.10: confess</b>	<b>acknowledge, admit, reveal</b>
Verbs of ingesting	<b>37.13: promise</b>	<b>ascertain, assure, guarantee</b>
	<b>39.1: eat</b>	<b>use</b>
	<b>39.4: devour</b>	<b>consume</b>
Verbs involving the body	<b>39.6: gorge</b>	<b>exist, survive</b>
	<b>40.3.1: wink</b>	wink
Verbs of grooming and bodily care	<b>40.3.2: crane</b>	<b>show</b>
	<b>41.2.2: braid</b>	file, highlight, <b>style</b>
Verbs of killing	<b>42.1: murder</b>	<b>eliminate</b>
	<b>42.3: subjugate</b>	<b>reduce</b>
Destroy verbs	<b>44: destroy</b>	damage, destroy
Verbs of change of state	<b>45.2: bend</b>	<b>contract</b>
	<b>45.5: entity_specific_ cos</b>	deteriorate, erode
Lodge verbs	<b>46: lodge</b>	<b>reside</b>
Verbs of existence	<b>47.6: spatial_ configuration</b>	project
	<b>47.7: meander</b>	<b>emerge, range</b>
	<b>47.9: terminus</b>	<b>lead, terminate</b>
Verbs of body-internal motion	<b>49.2: body_ motion</b>	<b>extend, hold</b>
Verbs of motion	<b>51.2: leave</b>	abandon
	<b>51.4.1: vehicle</b>	cycle
	<b>51.6: chase</b>	<b>follow, pursue</b>
	<b>51.7: accompany</b>	accompany, <b>conduct, guide, lead</b>
Avoid verbs	<b>52: avoid</b>	<b>avoid</b>
Measure verbs	<b>54.1: register</b>	measure, <b>register, weigh</b>
	<b>54.3: fit</b>	<b>contain, hold</b>
Aspectual verbs	<b>55.1: begin</b>	commence, proceed, <b>undertake</b>
	<b>55.2: complete</b>	achieve, complete
	<b>55.3: continue</b>	<b>continue</b>
	<b>55.4: stop</b>	cease, <b>conclude, terminate</b>
	<b>55.7: satisfy</b>	<b>exceed</b>

Other (not classified by Levin)	<b>58.1: urge</b>	<b>encourage</b>
	<b>58.2: beg</b>	<b>request</b>
	<b>59.2: trick</b>	<b>manipulate</b>
	<b>59.4: stimulate</b>	<b>stimulate</b>
	<b>61.1: try</b>	attempt
	<b>61.2: intend</b>	<b>aim</b>
	<b>62: wish</b>	<b>aim, imagine, think</b>
	<b>63: enforce</b>	<b>control, enforce, impose</b>
	<b>64.1: allow</b>	<b>allow, permit, sanction</b>
	<b>66: consume</b>	<b>consume, use</b>
	<b>70: rely</b>	depend, <b>figure</b> , rely
	<b>72.2: benefit</b>	benefit
	<b>72.3: defend</b>	defend, preserve
	<b>73.1: cooperate</b>	<b>cooperate, labour</b> , participate
	<b>73.2: work</b>	<b>labour</b>
	<b>74: succeed</b>	<b>fail</b>
	<b>75.1: neglect</b>	<b>fail</b> , ignore, neglect
	<b>75.2: caring</b>	<b>attend</b> , tend
	<b>77.1: accept</b>	<b>accept, encourage, reject</b>
	<b>77.2: reject</b>	<b>decline, reject</b>
	<b>79: dedicate</b>	<b>commit</b> , devote
	<b>83: cope</b>	<b>deal</b>
	<b>86.1: correlate</b>	<b>alternate, coincide, correlate</b>
	<b>88.2: empathize</b>	<b>identify</b>
	<b>90: exceed</b>	<b>exceed</b> , overcome
	<b>92: confine</b>	<b>commit, confine</b>
	<b>93: adopt</b>	<b>adopt, assume, follow</b>
	<b>95.1: acquiesce</b>	consent, <b>submit, yield</b>
	<b>95.2.1: subordinate</b>	<b>report</b>
	<b>95.2.2: supervision</b>	<b>direct, lead</b>
	<b>95.4: volunteer</b>	<b>offer, proffer, volunteer</b>
	<b>96: addict</b>	bias, dispose, incline
	<b>97.1: base</b>	base, <b>establish</b>
	<b>100: own</b>	<b>hold</b> , own, possess
	<b>101: patent</b>	<b>license, verify</b>
	<b>104: spend time</b>	<b>lead, use</b>
	<b>105.2.1: function</b>	<b>function</b> , operate, <b>perform</b>
	<b>106: void</b>	avoid, invalidate
	<b>107.3: exclude</b>	<b>exclude</b>
	<b>107.4: attend</b>	<b>attend</b>
<b>108: multiply</b>	<b>deduct, divide</b>	
<b>109.2: seem</b>	<b>act, appear, remain</b>	
<b>113: respond</b>	<b>react, reply, respond</b>	
<b>114.2: play</b>	<b>recreate</b>	

Table 20. Low-categories: 1-3 EAV forms.