An Analysis of Approximators in Abstracts from Research Articles

Jie Chen[1] and Yi Zhang[2]

[1,2]School of Foreign Studies, Northwestern Polytechnical University, City: Xi'an, China

Postal code: 710129

E-mail：chenjie810358141@163.com

Abstract

This paper tries to explore the features of approximators used in the abstractsas well as the reasons for these features.60 abstracts were chosen from the *Modern Language Journal* from 2016 to 2018 as the data source. And Prince's taxonomy of hedges was adopted as the theoretical basis. Meanwhile, with the aid of computer software AntConc 3.2.0 and manual sorting, the results presented the following features of approximators: firstly, the overall frequency of approximators is 3.9%; secondly, adaptors account for 42.4% in abstracts, and rounders take up for 57.6%, revealing that rounders occupy more proportion in approximators; thirdly, the top five adaptors are respectively *almost, sort of, kind of, relatively,* and *significantly*, and the top five rounders are *about,sth between…and,many*, *some,* and *over*. In term of the reasons for the different frequencies between adaptors and rounders, the study mainly find two reasons: the first reason is the author's intention of reducing possible errors, the second is reducing possible criticism from readers. It is expected that this research may provide a reference for the writing of an abstract.

Keywords: hedges, approximators, abstract

1. Introduction

Hedges have been given various definitions by different researchers from abroad and at home (Myers,1989; Hyland,1996; Salager-Meyer,1994; Nash, 1990) since Lakoff (1972) introduced the concept of hedges into linguistics by defining them as "words whose job is to make things fuzzier or less fuzzy." Hyland (1996) held the view that "hedging is the expression of tentativeness and possibility and it is central to academic writing where the need to present unproven propositions with caution and precision is essential." Simply speaking, hedges are the words expressing uncertainty, ambiguity and possibility. It has received great deal of attention in oral discourses in which the words such as *I believe, I think, kind of* are frequently used for they can convey purposive vagueness, show politeness and also facilitate phatic communication. In addition, hedges are also associated with the economics (Bloor 1986), political discourse (Zhuang Lili, 2008), medical discourse ((Salager-Meyer 1994), scientific research articles (Hyland, 1996), literary works (Zhang Ni, 2011), advertisements (Hu Anlin, 2013) and so on.

A great many scholars also dig into the functions of hedges in different fields. In literary works, Zhang (2011) demonstrated that hedges mainly play the role of discoursal recourse for expressing uncertainty, skepticism and open-mindedness about one's propositions. Nevertheless, in medical discourse, Myers (1994) believed that hedges can be put into a wider system of politeness which designed to reduce the possible face-threat and show author's humility and caution, and also employed to mitigate some categorical assertions and minimize some impositions. In scientific discourse, Hyland (1996) further concluded that hedges can "allow writers to anticipate possible opposition to claims by expressing statements with precision, caution and diplomatic deference to the views of colleagues."

In the meantime, abstract, as an indispensable part of research articles, also known as the summary of the content, is a brief, concise and accurate description of the important content of the academic paper without comments and supplementary explanations. It is also essential for information retrieval and exchange between authors and readers in research articles. Additionally, it is commonly held in tradition that abstract writing should be purely objective, accurate, impersonal and informational. Hedges, signifying probability and tentativeness, seem to be inappropriate and unsuitable to appear in an abstract. Moreover, hedges in the abstracts of research articles represents a little-studied area and we still know little about it, especially its sub-type, the approximators. Therefore, the research plans to describe the features of approximators in academic abstracts and tries to analyze the reasons for these different features.

2. Methodology

2.1 Research Corpus

The present corpus consists of 60 abstracts in total, amounting to 11490 English words altogether. All of the abstracts are published from 2016 to 2018, and are written according to the basic IMRD model (Bhatia, 1993), a pattern of introduction, method, result and discussion. To meet the criteria of above requirement, the abstracts are chosen from the English journal, the *Modern Language Journal,*

which enjoys 3.762 impact factor, and ranks seventh among 243 journals of Education and Educational Research, fourth in 184 linguistic journals, implying its great influence, reputation and reliability among linguistics.

2.2 Operational Definition of Hedges

Different linguistics put forward various classifications of hedges from the distinct perspectives. This research will mainly introduce Prince's model.

Prince, Frader and Bosk (1982) analyzed a corpus of dialogues between doctors and patients, and summed up two different kinds of hedges according to their different functions: approximators and shields. Approximators are the words or expressions that can affect the truth or range conditions of the information. For instance, *it is kind of awkward*. The hedge *kind of* modifies the word *awkward*, making its meaning more ambiguous and fuzzier. Approximators can be further classified into two sub-types: adaptors and rounders. Adaptors, such as *sort of, a little bit, kind of, quite, very*, can alter the truth-degree of the original statements, thus avoiding too absolute and categorical propositions. Rounders, such as *about, around, most, many, lots of*, are often used when the author thinks it is impossible to give accurate or precise number or expressions. Put it simply, the range of variation of the statement is restricted. Hence, the listeners or readers can reduce the unnecessary misunderstanding within the given range.

Shields, such as *I believe, according to, probably, maybe, based on,* in contrast, do not affect the truth or range conditions of the original propositions, but are related with the relationship between the proposition content and the speaker. Shields can also be classified into two sub-types: attribution shields and plausibility shields. Attributions, such as *based on, according to, someone says, it is said that*, indicate that the assertion the author is trying to convey is from knowledge obtained from hearsay or other related sources. Sometimes the source of information is explicitly mentioned, sometimes is not. Whatever, nothing is clearly asserted about the author's personal level of commitment. Plausibility shields, such as *I think, we suppose, we argue, probably, possible, maybe, as far as I know, as far as I can tell, I'm afraid, I suppose,* refer to the speaker's direct surmise of things, or the speaker's attitude or evaluation of things. Prince's model can be illustrated in the following Figure 1:
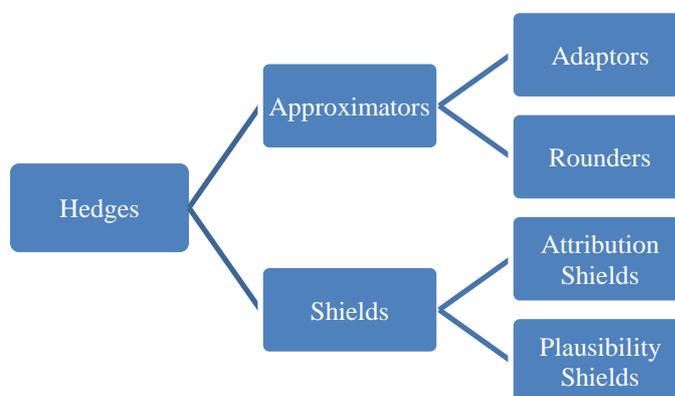

Figure 1 Classification of Hedges (Cited from Prince 1982)

2.3 Research Questions

Considering the current research gap, the study mainly deals with the following two questions:

1. What are the features of approximators in the 60 abstracts of research articles?

2. What are the reasons for the different frequencies between adaptors and rounders?

2.4 Research Instruments

The principal tool employed in the data retrieval for this study is AntConc 3.2.0. This software suit has eight major tools: Concordance, Concordance Plot, File View, Cluster, N-Grams, Collocates, Word List and Keyword List. This study employs Concordance and Concordance Plot tools to retrieve information from the corpora. As we known, it is difficult to select adaptors and rounders completely depending on the computer software for the influence of context. Therefore, manual sorting is also necessary in order to remedy the deficiency of machine operation and enhance the preciseness and accuracy of the statistics.

2.5 Research Procedures

The first step is to list the key words of approximators for AntConc 3.2.0 to scan. Table 1 illustrates the relevant adaptors and rounders.

Table 1 List of key words of adaptors and rounders

Hedges	Key Words
Adaptors	somewhat, really, almost, quite, a little bit, largely, mostly, especially, particularly, very, entirely, sort of, entirely, kind of, somehow, in a sense, more or or less, to some extent
Rounders	About, over, approximately, around, nearly, roughly, something between…and, at least, less than

Table 1 shows the relevant approximators as many as possible. Adaptors and rounders are searched in the corpora and the frequencies are counted. In the process of identifying hedging devices, the context should be taken into account firstly. Literal meaning or grammatical categories of the elements cannot be served as the only criteria for identifying approximators. It should be noted that some approximators, in spite of their identical forms of the listed approximators, cannot be classified into the group of approximators for the effect of context. Therefore, manual work is crucial and decisive in the process of data identification and collection. The results of data retrieval will be shown and analyzed in the following part.

3. Results and Discussion

3.1 The Features of Approximators used in 60 Abstracts

To acquire a fundamental knowledge about the frequencies of approximators in the 60 abstracts, the concrete situation of adaptors and rounders is illustrated in the following table 2.

Table 2: Frequencies of adaptors and rounders

Hedges		Frequency	Percentage
Approximators	Adaptors	192	42.4%
	Rounders	261	57.6%
Total		453	100%

From table 2, the first conclusion can be drawn is that the overall frequency of approximators is 3.9% (453/11490=3.9%, the total words number of the 60 abstracts is 11490). The second conclusion is that adaptors account for 42.4% in the approximators while rounders take up for 57.6%, implicating that rounders occupy more proportion than adaptors in the abstracts. And in order to grasp the specific use of adaptors and rounders in abstracts, the frequencies of the top five adaptors and rounders used in 60 abstracts are respectively shown in Table 3 and Table 4

Table 3: Frequencies of top five adaptors

Adaptors	Frequency	Percentage
Almost	21	10.9%
Sort of	17	8.9%
Kind of	14	7.3%
Relatively	10	5.2%
Significantly	7	3.6%
Other adaptors	123	64.1%
Total	192	100%

As previously shown in table 2, the adaptors account for 42.4% out of the total, occupying less than rounders. Considering the convenience of analysis, this paper selected the top five adaptors to be analyzed. They are *almost*（10.9%）, *sort of*（8.9%）, *kind of*（7.3%）, *relatively*（5.2%), and *significantly*（3.6%）.

Adaptors are words that can reveal the authenticity of the discourse. Among the top five most frequently-used hedges, *almost* means that "actions or states slightly short of or not quite accomplished;" *sort of* and *kind of* means "to some extent;" *relatively* means "in a relative manner;" *significantly* means "to an important degree." Through the detailed explanation of these hedges, it can be found that when using adaptors, authors are more inclined to use less definite words. On the contrary, words like *significantly* which stress important degree are not favored by authors. In terms of the rounders, the detailed information about the frequencies of its top five words or phrases used in 60 abstracts is displayed in Table 4.

Table 4: Frequencies of top five rounders

Rounders	Frequency	Percentage
about	37	14.2%
sth between…and	28	10.7%
many	25	9.6%
some	20	7.7%
over	13	5.0%
other rounders	138	52.8%
Total	261	100%

As mentioned in Table 2 beforehand, rounders take up 57.6% of the total. And the most frequently-used hedges are accordingly *about (14.2%),sth between…and (10.7%)*, *many (9.6%)*, *some(7.7%)* and *over(5.0%)*.

Rounders refer to the words that can affect the scope of original discourse. When using rounders, it seems that authors tend to use some kind of ambiguous words, like *about*, *sth between…and.* Words such as *some*, *over*, although it is relatively frequently-used by the author, it is not as popular as the former two.

3.2 Reasons for the Different Frequencies Between Adaptors and Rounders
3.2.1 Reducing Possible Errors
Before analyzing specific reasons, it is essential to figure out what an abstract is and what features of an abstract can influence the different frequencies between adaptors and rounders. An abstract is defined as an abbreviated, accurate representation of the contents of a document without added interpretation or evaluation(Crystal, 1997). It is an important and inseparable part of scientific research articles, chiefly endowed with three functions: firstly, it can emphasize the significant information of the paper; secondly, it can provide the framework of the paper; thirdly, it can enable readers to find relevant information as soon as possible and decide whether they need to continue reading or not (Yuan, 2006). And the most significant function of abstracts is to enable readers to catch the key information accurately, precisely and effectively within a limited time. Therefore, how to make good use of the limited space to attract the readers' attention is very crucial for the author. Indeed, adaptors and rounders both relate to the accuracy of language expressions in research articles. The major difference between adaptors and rounders is the former underscores the degree of truth while the latter highlights the range. The abstract, as a concise and essential part of the paper, emphasizes the preciseness and reliability of the words, which demands more on the truth-degree of the author's proposition and asks for the author to be responsible for his own statements. Such kind of requirement, therefore, also reflects in the use of hedges, authors are more inclined to employ rounders in order to reduce the possible errors. For example:

Example 1:

*This appearance of activity correlates **quite**(adaptor)well with...*

Example 2:

*...decreases by **approximately** (rounder)60% by employing this approach...*

By analyzing above two examples, it can be found that although using approximators at the same time, the latter is more likely to be received by the readers and seems be more convincing and persuasive. The reason is not only the use of concrete data, but also the use of rounder which tries to seek precision even though the data is not sure but implies that the author strives to convey this information to his readers and avoids the situation of being misunderstood.

As Hyland stated (1994), the writer, one the one hand, seeks to present statements with appropriate accuracy, on the other hand, to make the strongest claim possible while limiting the damage of error. Therefore, it can also explain the reason why the abstracts stress the importance of accuracy and truth value of the statements, but the distinction between these two hedges is not very palpable.

3.2.2 Reducing Possible Criticism from readers

According to the Prince' definition, adaptors are usually used when a proposition is nearly accurate but the author is still not totally confident, relating to the words that can affect the degree of truth; rounders are often employed in the description of an instance when exact information is missing or not immediately available, linking with the words which can influence the degree of range. The use of rounders allows deviations between idealized models of nature and instances of actual behavior to be accurately expressed, and indicate a discrepancy between actual results and "either an expected state or the concept routinely available to explain it, allowing a better match with familiar descriptive terms" (Channell,1990). Based on the above definition, it is possible to find that the discrepancy between different adaptors is relatively difficult to be measured and judged, such as the difference between *very, quite, somewhat, rather, pretty*, while rounders are often used as an imprecise range to embellish the author's statement, like *around, about, approximately, between…and.* Therefore when describing some ambiguous and indefinite statements, the author tends to use rounders instead of adaptors to avoid possible criticisms from readers. It may be understood better from the following examples:

Example 3:

*Notably, in 64.06% of cases when p‐values fell **between** .01 **and** .05 (rounder), the Bayesian analysis found the evidence in the primary studies to be only at an 'anecdotal' level (i.e., insufficient evidence to reject the null)...*

Example 4:

*This special issue takes a critical look at a **largely (adaptor)** uncharted area of language learning motivation: the motivation to learn languages other than English (LOTEs) in an era of globalization and multilingualism.*

Comparing example 3 and example 4, the hedge *"largely"* is more vulnerableto receive possible criticism from readers than hedge "between…and". Readers may bring out following two questions: What is the degree of "largely"? What is the range of "largely"? Simply speaking, how can be referred

to "largely". Two hedging devices undoubtedly both contribute to the writing of an abstract, but in light of readers' reaction, the author may be more inclined to use rounders to avoid making unnecessary mistakes.

As a matter of fact, adaptors and rounders both aim at reducing the risk of negation on objective grounds. The main function of these two hedges is to imply that the proposition is based on plausible reasoning in the absence of certain knowledge and used as an "important means of accurately stating uncertain scientific claims with appropriate caution" (Rounds 1982, Skelton 1988). The motivations for these two hedges fall into two overlapping categories, "concerning the writer's focus on propositional accuracy or on self-protection from the consequences of poor judgment, although there may be an element of both purposes on any particular occasion"(Hyland, 1996), from which can also explain the reason why the proportion difference between adaptors and rounders is relatively small.

4. Conclusion

Through the analysis of relevant statistics and their differences, this study finds some features of approximators firstly. The overall frequency of approximators is 3.9%. Adaptors account for 42.4%, and rounders take up for 57.6% in approximators, revealing that rounders occupy more proportion in abstracts than adaptors. With reference to the reasons for the different frequencies between adaptors and rounders, the first reason is the author's intention of reducing possible errors, the second is reducing possible criticism from readers. Because the use of rounders allows deviations between idealized models of nature and instances of actual behavior to be accurately expressed, it is hoped that in actual abstract writing, the authors can use more rounders to restrict some uncertain data and unsettled problems.

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