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Stance Adverbials in Engineering Thesis Abstracts

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Abstract

This paper reports a study on how L2 writers make their stance in 30 doctoral theses in the field of Engineering. The results show that adverbials are widely employed in theses abstracts and are important means for indicating the degree of writer's certainty about the presented information. We also found that writers expressed their evaluations using different adverbial stance types and at varying frequency according to the rhetorical moves commonly found in abstracts. Among these three domains, epistemic stance seemed to enjoy the highest frequency of use. This study shed some lights into how non-native writers use adverbials to mark their stance and comment on certainty and reliability of their research.

Keywords: abstracts; stance; thesis; engineering discourse

1. Introduction

An abstract is a factual summary of a much longer report. The American National Standards Institute (ANSI) defines it as “an abbreviated, accurate representation of the contents of a document, preferably prepared by its author(s) for publication with it” (ANSI, 1979, p. 1, in Bhatia [1]).

Found at the beginning of theses, abstracts usually communicate the significant findings of the study in order to persuade readers to accept the novelty and credibility of the accompanying research. In addition to its informative nature abstracts are actually highly evaluative as writers must include various linguistic resources to introduce the research, summarize the methodology used, highlight novel findings and promote their significance to the field. The persuasive nature of abstracts mandated the employment of evaluative language; not only that

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research writers need to situate their study, but also they must convey their stance towards prior knowledge claims made by others and display attitudes towards their own findings all within a specified word limit and restricted space.

Although there are different definitions for evaluation, it is generally considered as an umbrella term for ‘the expression of the speaker or writer’s attitude or stance towards, viewpoint on, or feelings about the entities or propositions that he or she is talking about’.[2]

From the point of view of exploring interpersonal meanings in academic texts, many scholars Hyland [3]; Thompson & Hunston [2]; Hyland & Tse [4], have recently turned their attention to that. Evaluation and stance used as linguistic resources to project writers’ attitude and reaction in texts have attracted increasing attention in the literature over the years. Analyses of personal expression of abstracts have provided new insights into the differing ways that writers use evaluative language to convey their personal feelings and assessments in relation to the content [4; 5; 6].

Earlier investigations of L2 texts have suggested possible differences in the certainty with which knowledge claims are expressed in different languages Mauranen [7]; Ahmad [8]; Bloch & Chi [9], and these variations provide support for those who look for sociological explanations. Besides, such findings has to do with the size and professional maturity of the target discourse communities, as already discussed by Ahmad [10] (1997), Fredrickson and Swales [11], Burgess [12], and Van Bonn & Swales [13].

Among the many types of stance devices, adverb and adverbials play a crucial role in discourse because they are most often employed to establish cohesive relationships between ideas and information in text and provide the indexal framework for events and actions [14].

Adverbials is one of the most common grammatical devices employed by academic writers, often exploited to express interpersonal meanings associated with the writers’ attitude, personal feelings and assessments. Despite the substantial number of investigations into the function of interpersonal features in linguistic system of abstracts, little is known about the uses of adverbial markers of stance in abstracts particularly in second language (L2) texts. As the uses and functions of stance adverbials, such as epistemic and attitudinal, in English and other languages are complex, their role in constructing L2 written texts has received little attention. Therefore, in discourse production of L2 texts identifying how nonnative speakers use stance adverbials can provide insights into the interpersonal dimensions of L2 texts that can express the writer’s intended meanings.

Since both the cohesion and the evaluative functions performed by stance adverbials are essential to successful academic writing, it is necessary to extend our knowledge of these adverbials and rhetorical functions they are used to perform. Stance adverbials, the subject of this study, constitute an important feature of stance markers, particularly with regard to their meanings associated with the writer’s attitude. In the present paper, an examination of adverbial markers of stance in all clausal positions is carried out to determine how most common adverbials of stance are employed in L2 texts.

2. Evaluation and stance

2.1 Attitudinal language as stance markers

Stance has been defined as ‘the ways authors project themselves into their texts to communicate their relationship to subject matter and the readers’, and the ways their persona is socially defined [15]. Conrad & Biber [16] used stance as a cover term for the expression of personal feelings and assessments in the above domains. Along similar lines, Hyland regards stance as comprising three components: evidentiality, affect, and relation. Evidentiality refers to the writer’s expressed commitment to the truth of propositions and their strategic manipulation for interpersonal goals. Affect includes the declaration of a range of attitudes, including emotions, perspectives and beliefs. Relation concerns the extent to which writers choose to engage with readers, and their degree of intimacy or remoteness [15].
Several studies have investigated the use of adverbials in English academic discourse. Concentrating on the cohesion in English, Halliday & Hasan [14] identify several large semantic classes of adverbs, which are further divided into subclasses based on their textual functions, e.g. emphatic, amplifying, concessive, repetitive, specific, durative, and terminal. Similarly, Croft [17] points out that in many languages other than English, temporality, intensity, causality, locationality, or direction are expressed by adverb-like structures and particles. Croft believes that adverbs and various adverbials provide linguistically universal means of marking textual and contextual deixis. In many languages, including English, adverbs and other forms of adverbials often function as the discourse frame for the temporality, locationality, and tone of text and context.

Previous studies of L2 writer’s uses of epistemic stance adverbials indicated as emphatics and amplifiers, as well as other expressions of certainty (modal verbs and universal pronouns), found that NNS writers tend to use more limited lexical and syntactic range of these devices and employ them with higher frequencies than NS writers [18;19]. Similarly, Hinkel [20] found that NNS students employed markedly higher rates of emphatics than NS did and the rates of manner adverbs differed significantly in L1 and L2 prose.

2.2. The study

2.2.1. Corpus

The corpus consists of 30 abstracts of doctoral theses produced by research students from one of the major research universities in Malaysia, concentrating in science and engineering fields. The abstracts were retrieved from the doctoral thesis collections of the university library and they were from the fields of Civil Engineering (CE), Electrical Engineering (EE), Mechanical Engineering (ME) and Chemical Engineering (CHE), written during the years from 2000 to 2010. All theses were written by Malaysian students of which most of them are native Malay speakers. The entire corpus contains 9196 words in total, with an average of 306 words per abstract. Table 1 shows the details of the corpus used in this study.

| Fields of study       | No. of texts | No. of words | Average length |
|-----------------------|--------------|--------------|----------------|
| Mechanical engineering| 12           | 3560         | 340.4          |
| Electrical engineering| 8            | 2271         | 304.3          |
| Chemical engineering  | 7            | 2300         | 298.7          |
| Civil engineering     | 3            | 1065         | 285.5          |
| Total                 | 30           | 9196         | 306.7          |

2.2.2. Methodology

Stance adverbials were analyzed in the following ways. First, adverbial markers signaling writers’ stance over entire propositions were identified and coded using Conrad & Biber [16]’s categorization: epistemic (commenting on certainty, reliability, and limitations of propositions), attitudinal (conveying attitudes, feelings, or value judgments) and style (commenting on the manner of presenting information). Second, they were mapped onto rhetorical moves of the genre.

Each abstract was initially studied to identify the frequency and type of stance adverbials. To facilitate identification of distribution of stance adverbials throughout the texts, the occurrences of adverbials of stance in abstracts were counted separately for each stance type. To determine whether stance types were used similarly in different moves of abstracts, a genre analysis has been done. We followed I-M-R-D structure of abstracts as the guidelines provided by international abstracting standards [American National Standards for Writing Abstracts...
(1979) New York: American Standards Institute]. Distribution of stance adverbials was then compared in abstract moves.

2.3. Categories of stance adverbials

2.3.1. Epistemic stance

Adverbial markers of epistemic, e.g. probably, noticeably, certainly, undoubtedly, apparently, most cases, actually, always and really indicate the certainty or doubt, reality or actuality, imprecision of the proposition, source of information concerning the proposition and the perspective from which the information is true. For example, Machining of hard and brittle materials always pose problems such as rough surface, cracks, and subsurface damage. (ME)

The function of epistemic stance markers indicated as amplifiers is to increase the scalar lexical intensity of gradable adjectives or adverbs [21], and they have the textual functions of intensifiers, exaggeratives, and overstatements. Such extreme markers of time continuum as always and never usually mark exaggerations in academic texts in English [20].

2.3.2. Attitudinal stance

Attitudinal stance adverbials, e.g. fortunately, sensibly, amazingly, conveniently, hopefully, importantly, sadly, unbelievably, wisely, rightly, regrettably, astonishingly, curiously, ironically, disturbingly, include a wide range of meanings, indicating the writer’s attitudes, feelings, or value judgements about what is said or written.

Attitudinal values can be managed and negotiated interpersonally, and constitute the means by which writers vary and negotiate arguability by adjusting the dialogic status of propositions. These negotiations of arguability are referred to in the Appraisal framework as engagement (http://www.grammatics.com/appraisal/stage5-Engagement.htm). Authors can engage with alternative positions by ‘acknowledging’ and ‘entertaining’, ‘disclaiming’ (‘denying’ and ‘counter-expecting’), and ‘proclaiming’ (‘concurring’ and ‘pronouncing’) propositions [22].

2.3.3. Style stance

Adverbials of style stance include such adverbs as: generally, frankly, mainly, strictly, typically, usually, confidently, according to. For example, This research work is mainly concentrated on precise ductile-mode grinding of flat surfaces of silicon. (ME)

Style stance adverbials are employed to comment on the manner of presenting information. Hinkel [20] in his categorization explains that such these adverbs are usually derived from adjectives and their purpose in text and discourse is to strengthen the truth-value of a proposition or claim.

2.4. Results

2.4.1. Frequencies and distributions of stance adverbials in abstracts

Once moves in the corpus have been coded, the overall frequency of occurrence of each move in the corpus and the average length in words of each move were counted. Table 1 provides information about the moves in this corpus of 30 abstracts, including, the number of abstracts that contained each move, and the average number of words per move. Not surprisingly, the most common moves in all of these abstracts were method and result moves which occurred in all the abstracts. This represents 96% of all four moves occurring in this corpus. Most of the abstracts in our corpus followed an Introduction-Method-Results-Discussion /Conclusion (IMRD) structure.
It is also possible to compare the lengths of each of these moves. Move method averaging 127 words per occurrence is the longest move in this genre. Move result is the second longest move at 66 words per occurrence. Move discussion and introduction with averaging 35 and 47 per occurrence are the shortest.

Table 2. Move totals and percentages

|               | Introduction | Method | Result | Discussion |
|---------------|--------------|--------|--------|------------|
| Moves total number | 19           | 29     | 29     | 21         |
| % of total moves | 63%          | 96%    | 96%    | 70%        |
| Words/Move average | 35           | 127    | 88     | 47         |

The results of this study indicate that epistemic stance adverbials representing 57% of all stances are much more common than other types in abstracts. As can be seen from Table 3, attitudinal stance adverbial markers are not particularly popular in the abstracts written by L2 writers. Attitudinal stance comprised 8 per cent of all adverbial stance markers and they often occurred to introduce the study, as illustrated by the following example:

(1) *Hardened steel is widely used in the manufacture of dies, mould and automotive components such as bearings, gears and shafts.* (ME)

(2) *High cutting temperature strongly affects chip formation mechanism which influenced chip morphology.* (ME)

Table 3 shows the frequency of each of the stance types. As the data show, epistemic stance adverbials are common in the abstracts in this study. However, there are few stance adverbials in this semantic class which are notably common. That is, only two adverbial markers of epistemic stance are more frequent in our data, each occurring more than three times: *probably, strongly*.

(3) *The NWN is nonblocking in the wide sense while the others are strictly nonblocking.* (EE)

(4) *In general, the mechanical strength either dynamic or static conditions was improved by incorporating compatibiliser into the PA6/ABS blends.* (CHE)

Style stance adverbials are much less common than epistemic stance adverbials in our corpus (13%). It is used to emphasize that the writer is being ‘strict’ or mark the limitation of proposition.

(5) *The NWN is nonblocking in the wide sense while the others are strictly nonblocking.* (EE)

As introduced in the previous segment, adverbials appear in different clause positions: initial, pre-verbal, post-verbal, and final. The analysis showed that pre-verbal position is much more common than the other clause positions, whereas final position rarely occurred (see Table 5). From a processing perspective, as Conrad & Biber [16] point out stance adverbials in pre-verbal and initial positions often provide a frame for a proposition before author actually presents the proposition, as shown in the following examples:
(5) An image processing procedure has been successfully developed to quantify the fraction of ductile.

(6) The overall proposed control system essentially comprises four feedback control loops.

Table 5. Clausal position of stance adverbials

| Clause positions | Epistemic | Attitudinal | Style | Overall |
|------------------|-----------|-------------|-------|---------|
| Initial          | 0         | 4           | 3     | 7       |
| Pre-verbal       | 30        | 2           | 10    | 44      |
| Post-verbal      | 12        | 0           | 0     | 12      |
| Final            | 0         | 0           | 0     | 0       |

On the other hand, stance adverbials in initial position often act as linking adverbials. In our corpus this is particularly true for the style stance adverbials, as in the following:

(8) In detail, the behavior of TWF is more subtle than standard laminated composites, as in single-ply woven many of the local, three dimensional degrees of freedom remain unconstrained.

In addition to provide the author’s framing for a proposition, stance adverbials such as these serve to establish a cohesive link to the previous discourse. This was more obvious in method move where such these adverbials are employed to condense earlier statements.

As illustrated in examples, single adverbs form the most common grammatical structure of stance adverbials in all abstract moves. Although stance adverbials are distinguished by different grammatical structures including single adverb, adverb phrase, noun phrase, prepositional phrase, non-subordinate clause, and finite subordinate clause [16], only single adverbs are commonly used in our corpus.

The analysis allows comparisons across moves of abstracts to establish the predominance of stance adverbials in each move. A summary of the differences in the frequency of each stance type in the research thesis abstract moves is shown in Table 4.

Table 4. Position of stance types in abstracts

|                | Introduction | Method | Results | Discussion |
|----------------|--------------|--------|---------|------------|
| Epistemic      | 0            | 12     | 18      | 11         | 13.3%      |
| Attitudinal    | 4            | 5.4%   | 1       | 2          | 1.3%       |
| Style          | 2            | 2.6%   | 3       | 2          | 2.6%       |
| Total          | 6            | 10%    | 16      | 23         | 30%        | 14        | 19.6%    |

As the data in Table 4 show, in the abstract texts in this study, the distribution of attitudinal and style stance adverbials did not differ significantly in all moves. The only exception were the adverbials of epistemic stance which move result included these stance markers substantially more frequently than other moves did (frequency rates of 24%).

That the epistemic stance adverbials are more common in the results section of abstracts than other abstract moves is not surprising since epistemic stance adverbials were most commonly employed to indicate the certainty of a finding. Nevertheless, stance adverbials such as successfully, apparently, and probably were also found in method and discussion moves.

(9) High cutting temperature strongly affects chip formation mechanism which influenced chip morphology such as segmentation distance and thickness of the chip.
Epistemic stance adverbials are also moderately common in move method (14%) where the function of the move is largely to ‘provide information on procedures and approach behind the study’ Hyland [23], but rare in introduction move.

Since most abstracts in this study begin with such promotional statements, it is not surprising that attitudinal adverbials are common in this move. There are eight instances of these stance types in the abstracts; two mark the limitation of propositions and the other four indicate the ‘main’ focus of the study, the ‘importance’ of the research or the ‘wide’ use of the methodology.

The presence of author in discussion move was sometimes indicated by the use of epistemic adverbials of stance (e.g. probably, apparently). For example,

(10) Flank and end clearance wear probably occur by both abrasive and adhesive wear mechanisms with abrasive wear being the major source of material removal. (ME)

The aim set for the present paper was to provide some support for the idea that stance adverbials plays an important role in construction of knowledge claims and the writer’s persona. The results illustrate that all three stance types (epistemic, attitudinal and style) are a part of post-graduate writers’ repertoire of interpersonal interaction skills, although it is immediately apparent that the epistemic stance markers of adverbial are more frequent than style and attitudinal adverbials and attitudinal stance markers are the least frequent in the abstracts analyzed.

The results of analysis of stance adverbials in thesis abstracts supports Conrad & Biber [16]’s findings that epistemic stance adverbials are much more common than other types in academic prose. Similarly, Hyland [24] found epistemic adverbs commonly used in academic journal articles, and most of these adverbs can be highly mobile within the clause structure. Other investigations of written academic corpora (Biber et al. [25]; Hoye [26], also found that such adverbs are more prevalent in written than spoken genre.

The fewer number of stance adverbials in introduction moves of abstracts can be attributed to the lower frequency of occurrence of this move comparing to other moves as well as fewer number of words average (frequency rate and words average of 63% and 35, respectively).

(11) Hardened steel is widely used in the manufacture of dies, mould and automotive components such as bearings, gears and shafts. (ME)

It should also be noted here that the discourse of abstracts allow writer who is a candidate member of the field to make much use of this condensed space in order to indicate the credibility of the study as well as positioning his/her work in relation to the other researchers.

3. Conclusion

The study reported in this paper investigated the occurrences of adverbials of stance in thesis abstracts written by research students in engineering field. We identified adverbials of stance in these abstracts using three types of stance distinguished by Conrad & Biber [16]: epistemic stance, attitudinal stance and style stance. Epistemic stance marks the certainty (or doubt), reliability, or limitations of a proposition, while attitudinal stance indicates the writer’s attitudes, feelings, or value judgements. Style stance markers describe the manner in which the information is being presented. They argue that these stance adverbials are similar in having scope over an entire clause and indicate the writer’s attitude towards the proposition in that clause.

The writers whose abstracts were analyzed in this study verifiably used stance adverbials to indicate to the reader how certain they are of what is to follow and to emphasize on the truth-value of the presented information. Besides, since the use of these adverbials enables writers to project the attitude they intend, adverbials can be used as a resource for stance construction; therefore they could present themselves as competent members of their community.
Since a small number of texts were analyzed in this study, such analyses did not provide the basis for generalizable findings regarding the typical characteristics of adverbial stance markers. However, by extending this analytical approach to a larger corpus, we are able to identify the typical linguistic patterns of variation among abstract moves. Obviously, such investigation cannot capture the full complexity of evaluation, but they do provide a useful basis for identifying dimensions of interpersonal language.

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