A Corpus Analysis of Stance Markers in Review Articles: Variation and Uniformity between Hard and Soft Disciplines

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Abstract

There has been growing interest in investigating stance markers in academic writing genres recently. However, little research has been carried out on the stance markers in review articles. This study adopts a corpus linguistic approach to explore the characteristics of stance markers in review articles between hard and soft science disciplines. Using a modified framework, we explore epistemic, attitudinal, and the stance markers of style of speaking in a self-compiled corpus approximately 404,000 words of published review articles from eight disciplines. The results show that review articles are heavily stance-laden and epistemic markers are most commonly used stance adverbials in this academic written genre. In another two semantic subcategories, attitudinal markers are much more common than style markers. This study confirms the complex association between linguistic expressions and disciplinary variation. The findings in this study provide a new understanding of disciplinary variation in academic writing.

Keywords

Stance Markers; Review Articles; Disciplinary Variation; Corpus Linguistics.

1. Introduction

Stance markers have received considerable scholarly attention in recent years. They can be generally defined as expressions expressing speaker's or writer's feelings, attitudes, value judgments, or assessments [2]. These markers can be classified into three semantic categories: epistemic, attitudinal, and style of speaking. Most research on stance markers has been carried out in the field of academic communication in scholarly writing and presentation [2, 3, 4, 5, 6, 7, 8]. However, little attempt was made to quantify the degree of difference and similarity between hard and soft disciplines, i.e., the natural and social sciences, based on stance markers in review articles. The review article, an essential sub-category of review genres, can be broadly defined as a literature survey from experts on a specific question or area of research focusing on the cutting-edge studies and exhibiting a re-investigation of the question based on the reviewer's reading of the new academic publications in the field [9]. One of the primary functions of review articles is to identify relations, contradictions, gaps, and inconsistencies in the existing literature to suggest potentially viable solutions to addressing the problem [10]. This study seeks to gain further understanding of how academic scholars in different fields employ stance markers in published English review articles. In this investigation, the Corpus of Published English Review Articles was used to address the following research questions:

(1) To what extent do academics who write review articles construct hard and soft science discipline characters as different from each other in the use of stance markers?

(2) What is the possible explanation for the differences?

This study adopts both a contrastive and a corpus-based approach to cope with this issue.

2. Literature Review

2.1. Stance Markers in Academic Writing

Over the years, an increasing number of publications have been focusing on stance markers in genre-based academic writing. Aull *et al*. [3] analyzed the use of certain indefinite pronouns (i.e. everyone, anyone, nobody) and extreme amplifiers (i.e. always, never) in new college student writing, advanced student writing, and published academic writing and found that freshmen used more generalization markers in their essay writing compared with advanced students and expert academics. Biber *et al*. [2] explored how four genres (academic prose, news, fiction, conversation) differ from one another in the stance-marking practice and pointed out that the prepositional phrases as stance markers were used most frequently in academic prose; that extraposed to-clause was remarkably common in academic prose; that stance noun + prepositional phrase (e.g. the possibility of...) constructions were reasonably common only in academic prose. Crosthwaite *et al*. [4] compared hedging, boosting, self-mention and attitude markers in learner and professional dentistry reports and the results indicated that student writers were more inclined to use a broad range of stance markers than were professional writers. Hyland [5] created a new framework for investigating how academic professionals adopted or modified a stance and how the interaction between writers and readers was facilitated in research articles and insider informant interviews. Jiang [7] examined "noun + that" structure in a corpus of 640,000 words from journal articles across six disciplines extracted from the BNC corpus. The conclusion showed that the structure functioned as another rhetorical alternative for writers to express their stance; and disciplinary variation was observed in the use of "noun + that" pattern whereby scholars constructed and disseminated knowledge in different fields.

2.2. Stance Markers in Spoken Genre

In contrast to the investigations of stance markers in written academic texts, the use of stance markers in spoken genre has hitherto received scant attention from the scholarly community. One of the most cited studies of stance markers in verbal communication was reported by Biber *et al*. [2]. Biber *et al*. [2] examined the data from the Longman Spoken and Written English Corpus and reported that stance markers were substantially more common in conversation than in the written genre, i.e., fiction, news and academic prose; and that conversations were characterized by the prominent use of modals and semi-modals as stance markers and adverbial stance markers. Biber [1] compared and contrasted the use of a wide range of stance-marking expressions and described key patterns of register variation within spoken university registers (classroom teaching and management) and written university registers (textbooks and course management). The findings revealed that there were significant register differences in the particular kinds of stance markers, i.e., the epistemic and attitudinal stance expressions of the spoken registers were considerably more than they were in the written registers. Yang [11] compared the different use of stance and engagement across hard and soft science disciplines based on the corpus of British Academic Spoken serving as the study corpus, and The London-Lund Corpus of Spoken English operating as the reference corpus. The results showed that there was a noticeable discrepancy between written and spoken discourse in the use of hedges, boosters, self-mention and pronouns. Those stance and engagement expressions referring to speakers and audience are less diverse across disciplines in spoken discourse. Gablasova *et al*. [12] examined three types of stance expressions: adverbial, adjectival, and verbal expressions in the speech of 132 advanced L2 speakers participating in a monologic presentation task and three interactive tasks. The results exhibited that there was a noticeably systematic variation in L2 speakers' stance expressions across the four tasks and also revealed the presence of individual speakers' recognizably differentiating styles in the use of epistemic

markers. Hyland and Zou [6] explored junior academics' interactional and evaluative positions in a corpus of 140 three-minute thesis (3MT) presentations from the physical and social sciences. They found that this new spoken genre was remarkably stance-laden and speakers from the hard and social sciences used different stance expressions, i.e., students from hard sciences were more likely to express doubt or claim certainty in the reliability of information whereas students from soft sciences tended to maintain a more affective and visible stance through greater expression of attitude. Qiu and Jiang [8] analyzed the stance and engagement in a 3MT corpus of 80 presentations from six disciplines and found that stance markers (e.g., self mentions, attitude markers, hedges, boosters) were more often used than listener engagement markers (e.g., listener mentions, questions, directives, appeals to knowledge). The results also showed that interactional features were much more commonly seen in the hard sciences while rhetorical questions were more frequently employed in the soft sciences.

2.3. Previous Studies of Review Genre

Academic communities carry a long tradition of reviewing the work of others [13], while modern review genres were not recognized until in the mid seventeenth century. Review genres were defined by Hyland and Diani [9, p.1] as "texts and part texts that are written with the explicit purpose of evaluating the research, the texts and the contributions of fellow academics and include book reviews, book review articles, review articles, book blurbs and literature reviews". Review genres play an indispensable role in academic studies, benefiting the construction of the knowledge of various disciplines as well as facilitating the social cohesiveness of scholarly communities [14]. So far, the review genre has attracted researchers' attention from different perspectives. One study entitled "The Use of Review Articles in the Analysis of a Research Area" is that of Bastide *et al.* [15], who explored review articles in the field of polymer science with an aim of describing the development of the field. Also, Bem [10] investigated the guidelines and techniques for writing a Psychological Bulletin review article. However, the scope of these studies was relatively narrow, being primarily concerned with a particular field.

Another trend of review genre studies is the investigation of the verbal or non-verbal features in book reviews and book review articles of different disciplines. For example, Diani [17] explored the use of reporting clauses with a that-clause complement in the book review articles of linguistics, history and economics and found that all three disciplines featured frequent use of reporting verbs and there were no significant differences among them in terms of reporting clauses. Tse and Hyland [18] examined how male and female reviewers constructed their academic identity in the fields of philosophy and biology and pointed out that the ways in which men and women used linguistic resources were context-dependent and gender-independent. Besides, Moreno and Suárez [19] studied the rhetorical moves of academic book reviews in English and Spanish. This cross-linguistic investigation showed that genre-based academic writing was highly culture-specific; and Moves 3 (highlighting parts of the book) and Move 4 (providing a closing evaluation of the book) were more likely to be affected by cross-cultural variation.

This section has attempted to provide a brief summary of the literature relating to the research on review genre. The previous literature has shown that while the review genre is receiving an increasing amount of attention in previous research, there remain few of publications on the exploration of the difference between stance markers in hard science discipline review articles and those in soft science discipline review articles. This work aims at contributing to the growing area of research by investigating the features of the stance expressions between natural and social science discipline review articles. It is hoped that this study will enhance our understanding of how researchers in hard and soft science disciplines construct the discipline

variance and shape their academic identities by employing stance markers to convey their epistemic, attitudinal, and commentary information in review articles.

3. A Framework for the Analysis of Stance Markers

Stance is marked prominently by linguistic expressions, which can either present the stance or present a proposition framed by that stance [2]. These linguistic devices can be examined both grammatically and semantically. Grammatically, stance can be presented by stance adverbials, stance complement clauses, modals and semi-modals, stance noun + preposition phrase, and premodifying stance adverb [2, 1999, pp. 969-970]. Semantically, stance markers can be classified into three major semantic categories: epistemic, attitudinal, and style of speaking [2, 1999, pp. 972-975]. Each of them can be expressed by distinct grammatical devices.

Stance markers have been widely investigated from many perspectives for many years. One of the most influential frameworks used for the analysis is from Biber [1], whose framework was developed for examining spoken and written discourses. The framework provides direction in how to understand the lexico-grammatical features that facilitate the expression of the personal stance of the speaker or writer by focusing on three major structural categories: modal verbs (and semi-modals), stance adverbs, and stance complement clauses. This investigation attempts to adopt a new framework based on Biber's framework [1] and the semantic classification of stance markers [2, 1999, pp. 972-975] to approach the questions. The major grammatical and semantic categories, subcategories and examples in the framework are listed as following:

1. Epistemic Stance

    1.1 Adverbials:

        Likelihood: e.g., *perhaps, possibly*

        Certainty: e.g., *certainly, definitely, undoubtedly*

        Actuality: e.g., *actually, for a fact, in fact*

        Source of Knowledge: e.g., *evidently, apparently, reportedly*

        Limitation: e.g., *in most cases, mainly, typically*

        Viewpoint: e.g., *in one's view, in one's opinion*

        Imprecision: e.g., *be like, kind of, sort of*

    1.2 Complement Clauses:

        1.2.1 Verb + (that):

        1.2.1.1 Likelihood: e.g., *we believe (that), we doubt (that), we think (that)*

        1.2.1.2 Certainty: e.g., *we conclude (that), we determine (that), we know (that)*

        1.2.2 Verb+ to clause: *Likelihood: e.g., appear to, seem to, tend to*

        1.2.3 Adjective + (that):

        1.2.3.1 Likelihood: e.g., *we are likely (that), we are not sure (that)*

        1.2.3.2 Certainty: e.g., *we are certain (that), we are sure (that)*

        1.2.4 Adjective + to clause:

        1.2.4.1 Likelihood: e.g., *we are likely to*

        1.2.4.2 Certainty: e.g., *we are certain to, we are sure to*

        1.2.5 Verb/Adjective +extraposed (that):

        1.2.5.1 Likelihood: e.g., *it is possible (that), it seems (that), it is unlikely (that)*

        1.2.5.2 Certainty: e.g., *it is certain (that), it is sure (that), it is true (that)*

        1.2.6 Noun that:

   1.2.6.1 Likelihood: e.g., *an assumption that, a claim that, a suggestion that*

   1.2.6.2 Certainty: e.g., *the conclusion that, the fact that, the observation that*

  1.3 Noun Phrase: **Likelihood**: e.g., *the possibility of*

  1.4 Modal Verb: **Likelihood**: e.g., *could be, may be, might be*

2. Attitudinal Stance

  2.1 Adverbial: e.g., *interestingly, surprisingly*

  2.2. Verb + (that): e.g., *we expect (that), we hope (that), we wish (that)*

  2.3 Adjective + (that): e.g., *we are surprised (that)*

  2.4 Adjective+ to clause: e.g., *we are glad to, we are happy to*

  2.5 Verb/Adjective +extraposed (that): e.g., *it is interesting to*

  2.6 Noun that: e.g., *an expectation that, our expectation that*

3. Style of Speaking Stance

  3.1 Adverbial: e.g., *generally (speaking), properly (speaking), to speak frankly*

  3.2 Verb + (that): e.g., *we argue (that)*

This study presents the analyses of stance expressions containing all-controlling words that demonstrate these features based on the previous investigations [1, pp. 101-102; 2, chapter 10 and 12].

4. Research Methodology

4.1. The Corpus

An available corpus is generally required to perform a discourse analysis with a corpus linguistic approach. A corpus can be defined as a collection of linguistic texts or audio-visual materials representing a language or some part of language [20]. The study corpus answering the research questions must be compiled, since no available corpus can be used in this study. The corpus compilation usually consists of three phases: corpus design, text collection, and text encoding [21]. Each of these stages requires meticulous planning and a sustained effort at maintaining encouraging results.

4.1.1. Corpus Design

It is unanimously agreed that corpus design is the first important step to the compilation. The design is concerned with the planning of compiling a corpus which highly depends upon research aims. Fastidious planning is beneficial to the reliability of research results. Kennedy [21] stated that to be fully aware of what kinds of analyses are going to be conducted is the compiler's primary focus of corpus design. Thus, the corpus's purpose, type, structure, and size would be taken into careful consideration in the study.

The current investigation attempts to reveal the variation and uniformity between hard and soft science disciplines by examining stance markers in review articles, so the corpus has a clear contrastive purpose. Hence the corpus is supposed to be composed of review articles from hard and soft science disciplines, which can be further divided into two sub-corpora. Besides, the corpus type is monolingual, compiled for the specialized contrastive purpose. The corpus is a collection of published review articles from eight disciplines and it is named the Corpus of Published English Review Articles (henceforth CPERA). CPERA is divided into two sub-corpora: the corpus of review articles from hard sciences (henceforth shortened as C-H), and the corpus of review articles from soft sciences (henceforth shortened as C-S). The division of CPERA renders possible the contrastive analysis of stance markers between hard and soft science review articles.

4.1.2. Text Collection

Text collection requires compilers to focus on the availability of electronic texts, representativeness, and balance of data. In this section, the criterion of review article selection for the corpus will be discussed. The criteria for compiling CPERA are listed as following: review articles must be complete; review articles must be written in English; review articles are chosen from peer-reviewed leading journals; the tokens in C-H and C-S should be as nearly equal as possible. Given the criteria, CPERA is composed of review articles from hard sciences (*chemistry, earth & environment, genetics and physics*) and review articles from soft sciences (*anthropology, education, linguistics and sociology*). All texts are stored in the code form of Unicode and UTF-8 for the convenience of the procedure of extraction and tagging.

4.2.   Research Procedures

WordSmith Tools version 7 [22] was used to produce the corpus statistics and search for the stance markers mentioned above based on its default setting. The basic statistics of the corpora are presented in Table 1. In Table 1, the Type-Token ratio of C-H is slightly lower than the ratio of C-S. This indicates that review articles in hard sciences are less lexically rich than these in soft sciences.

Finishing the concordancing search, we manually checked the concordance lines containing every occurrence of these items to ensure that they served as stance markers and excluded extraneous examples. This process allowed us to avoid double coding if an expression could have more than one function in context. Then the results were normalized to 1000 words to allow comparison across the two corpora, and to determine statistical significances, the log-likelihood (LL) test was run by Chi-square and Log-Likelihood Calculator(http: //corpus. bfsu. edu. cn/ LLX2.zip) [23].

Table 1. Basic corpus information

Corpus	Tokens	Types	TTR	STTR	MWL
CPERA	404,730	21,080	5.21	40.13	5.42
C-H	200,514	12,476	6.22	39.40	5.38
C-S	204,216	13,773	6.74	40.87	5.46

Note: CPERA, C-H and C-S refer to the Corpus of Published English Review Articles, the corpus of review articles from hard sciences and the corpus of review articles from soft sciences, respectively. Also, TTR, STTR and MWL refer to type/token ratio, standardized type/token ratio (per 1000 words) and mean word length (in characters), respectively.

5.   Results and Analysis

5.1.   The Overall Distribution of Stance Markers in Two Corpora

Stance markers could be semantically subcategorized into three subtypes: epistemic, attitudinal and style of speaking. In Table 2, it is evident that no significant differences were found between the overall number of stance markers in hard and soft science discipline review articles (log-likelihood=2.58, p >0.05). This finding indicates that the overall distribution of stance markers in review articles across hard and soft sciences is similar. However, it is noteworthy that in terms of subcategories, i.e., epistemic and attitudinal stance markers, the differences between hard and soft science review articles were significant (log-likelihood=9.18, p <0.01; log-likelihood=6.75, p <0.01). This suggests that epistemic stance markers in hard science review articles are less common than those in soft science review articles while

attitudinal stance markers in hard science review articles are more common than those in soft science review articles.

Table 2. The semantic distribution of stance markers across the two corpora

Semantic Category	Freq. in C-H	Freq. in C-S	LL	Sig. (*P*)		
Epistemic Stance	1,208	1,386	9.18	0.002	**	-
Attitudinal Stance	377	315	6.75	0.009	**	+
Style of Speaking Stance	15	22	1.21	0.272		
Total	1,600	1,723	2.58	0.108		

Note: C-H and C-S refer to the corpus of review articles from hard sciences and the corpus of review articles from soft sciences, respectively. LL refers to the value calculated in log-likelihood. The asterisks (*) indicate significance level: (*), statistically significant at the 0.05 level; (**), statistically significant at the 0.01 level; (***), statistically significant at the 0.001 level. The "+" and "-" signs on the right side indicate "overuse" and "underuse".

5.2. Epistemic Stance Markers

5.2.1. Epistemic Stance Markers: Adverbials

As Table 3 shows, there is no statistically significant difference between the overall frequency of epistemic adverbials in C-H and C-F (log-likelihood=2.06, *p* >0.05). However, considerable variations were found in the use of epistemic adverbials to convey different semantic meanings in the two corpora, with the differences in CERTAINTY being statistically significant (log-likelihood=16.85, p<0.001), in ACTUALITY being statistically significant (log-likelihood=15.09, p<0.001) and in LIMITATION being statistically significant (log-likelihood=36.65, p<0.001). This indicates that researchers in hard sciences are less likely to show certainty (1) and present comments (2) on the status of the proposition as real life fact than academic review writers in soft sciences. Interestingly, epistemic adverbials serving as marking the limitation of the proposition (3) are much significantly frequently used in hard science review papers. For example:

(1) VQAs will ***certainly*** benefit from such improved hardware. Moreover, VQAs will play a central role in benchmarking the capabilities of these new platforms.

(Nature Reviews | Physics)

(2) Powell *et al*.'s (2016) study suggested that providing knowledge without strategies can merely raise awareness of the need for instructional modification without equipping teachers with the skills to do so, which could ***actually*** lower self-efficacy for working with diverse students.

(Review of Educational Research)

(3) Typically, the benzylamine molecule is oxidized to $PhCH_2NH_2\bullet+$, followed by deprotonation by the reaction solvent (DMF) to get a carbon-centered benzylamine radical $(PhCHNH_2\bullet)$.

(Chemical Reviews)

Table 3. The distribution of epistemic stance adverbials across the two corpora

Semantic Categories	Freq. in C-H	Freq. in C-S	Norm. Freq. in C-H	Norm. Freq. in C-S	LL	Sig. (P)		
Likelihood	69	87	0.34	0.43	1.77	0.184		
Certainty	**8**	**34**	0.04	0.17	**16.85**	**0.000**	***	-
Actuality and Reality	**36**	**78**	0.18	0.38	**15.09**	**0.000**	***	-
Source of Knowledge	41	48	0.20	0.24	0.43	0.512		
Limitation	**268**	**149**	1.34	0.73	**36.65**	**0.000**	***	+
Viewpoint or Perspective	1	2	0.00	0.01	0.32	0.571		
Imprecision	88	77	0.44	0.38	0.95	0.330		
TOTAL	511	475	2.55	2.33	2.06	0.152		

5.2.2. Epistemic Stance Markers: Complement Clauses

Table 4. The distribution of complement clauses as epistemic stance markers across the two corpora

Grammatical Devices	Semantic Categories	Freq. in C-H	Freq. in C-S	Norm. Freq. in C-H	Norm. Freq. in C-S	LL	Sig. (P)		
V. + (that)	**Likelihood**	**6**	**31**	**0.03**	**0.15**	**18.04**	**0.000**	***	-
	Certainty	**3**	**22**	**0.01**	**0.11**	**15.97**	**0.000**	***	-
V. + to	**Likelihood**	**56**	**111**	**0.28**	**0.54**	**17.46**	**0.000**	***	-
	Certainty	0	0	NULL	NULL	NULL	NULL		
Adj. + (that)	Likelihood	0	0	NULL	NULL	NULL	NULL		
	Certainty	0	0	NULL	NULL	NULL	NULL		
Adj. + to	Likelihood	67	75	0.33	0.37	0.32	0.574		
	Certainty	0	0	NULL	0.00	NULL	NULL		
V./Adj. +extraposed + (that)	Likelihood	8	10	0.04	0.05	0.19	0.665		
	Certainty	7	5	0.03	0.02	0.37	0.542		
N. + that	Likelihood	7	12	0.03	0.06	1.24	0.265		
	Certainty	**36**	**19**	**0.18**	**0.09**	**5.66**	**0.017**	*	+
Complement Clauses	**Likelihood**	**144**	**239**	**0.72**	**1.17**	**22.11**	**0.000**	***	-
	Certainty	46	46	0.23	0.23	0.01	0.930		
TOTAL		190	285	0.95	1.40	17.43	0.000	***	-

The distribution in Table 4 shows that there is a significant difference between the use of complement clauses as epistemic stance in hard and soft science review papers, with the differences in overall use of complement clauses as epistemic stance being statistically significant (log-likelihood=17.43, p<0.001) and with the differences in LIKELIHOOD being

statistically significant (log-likelihood=22.11, p<0.001). This finding indicates that those academics in soft sciences are more likely to use complement clauses to demonstrate their uncertainty and doubt, especially the structures, like V. + (THAT) and V. + TO. Also, Table 4 displays that scholars in hard sciences prefer to employ N. + THAT to show their certainty about the proposition in their review articles, with the differences in CERTAINTY being statistically significant (log-likelihood=5.66, p<0.05). For example:

(4) The use of an audio recorder for formal interviews has become standard among ethnographers, and ethnographers ***seem to be*** increasingly using their smartphones to take detailed notes in real time.

(Annual Review of Sociology)

(5) This geometrical visualization, indeed, lies in ***the fact that*** the 2D polarization vector space can be mapped onto a surface of a sphere, known as a Poincaré or Bloch sphere.

(Nature Reviews | Physics)

5.2.3. Epistemic Stance Markers: Noun Phrases and Modal Verbs

Table 5 shows that there is a significant difference between modal verbs as epistemic stance across the two corpora, with the differences in LIKELIHOOD being statistically significant (log-likelihood=12.91, p<0.001). This suggests that it is less possible for people who are engaging in undertaking hard science research to use modal verbs in their published review articles to convey their uncertainty and doubt to readers. In addition, as shown in Table 5, it is apparent that there is no significant difference between noun phrases in two subcorpora (log-likelihood=3.17, p >0.05). Furthermore, from the data, we can see that while NOUN + PREPOSITIONAL PHRASEs are one of the typical grammatical devices of academic prose [2], they are scarcely functioning as epistemic stance markers in review articles.

Table 5. The distribution of noun phrases and modal verbs as epistemic stance markers across the two corpora

Grammatical Devices	Semantic Categories	Freq. in C-H	Freq. in C-S	Norm. Freq. in C-H	Norm. Freq. in C-S	LL	Sig. (P)		
N. + Prep. Phrase	Likelihood	22	12	0.11	0.06	3.17	0.075		
	Certainty	0	0	NULL	NULL	NULL	NULL		
Modal Verb	**Likelihood**	**485**	**614**	**2.42**	**3.01**	**12.91**	**0.000**	***	-
	Certainty	0	0	NULL	NULL	NULL	NULL		

5.3. Attitudinal Stance Markers

As Table 6 shows, there is a significant difference between attitudinal stance markers across the two corpora (log-likelihood=6.75, p<0.01). This data indicates that reviewers in natural science disciplines used significantly more attitudinal stance markers, especially ADVERBIALS (6) with the differences being statistically significant (log-likelihood=9.65, p<0.01). Moreover, scholars in social sciences tend to use more ADJ. + THAT patterns (7) to present their attitude towards the proposition, typically conveying an evaluation, value judgment, or assessment of expectations.

(6) Surprisingly, there is a hardware- friendly protocol to evaluate the partial derivative of $C(\theta)$ with respect to θl, often referred to as the parameter- shift rule.

(Nature Reviews | Physics)

(7) We are ***optimistic that*** Bayesian analysis will become more common in sociology over the coming decades.

(Annual Review of Sociology)

Table 6. The distribution of adverbials and complement clauses as attitudinal stance markers across the two corpora

Grammatical Devices	Freq. in C-H	Freq. in C-S	Norm. Freq. in C-H	Norm. Freq. in C-S	LL	Sig. (P)		
Adv.	**302**	**235**	**1.51**	**1.15**	**9.65**	**0.002**	**	+
V. + (that)	13	8	0.06	0.04	1.28	0.257		
Adj. + (that)	**0**	**5**	**0.00**	**0.02**	**4.91**	**0.027**	*	_
Adj. + to	53	57	0.26	0.28	0.08	0.775		
V./Adj. + extraposed + (that)	9	10	0.04	0.05	0.04	0.850		
N. + that	0	0	NULL	NULL	NULL	NULL		
TOTAL	**377**	**315**	**1.88**	**1.54**	**6.75**	**0.009**	**	+

5.4.   Style Stance Markers

Stance markers referring to style of speaking are generally used to comment on the manner of conveying the message (*e.g. generally, simply, precisely*). As we see in Table 7, there is no significant difference between style markers in C-H and C-S. However, what is striking in the table is that V. + (THAT) expressions are more frequently used in soft science review articles. For example:

(8) Generally, cyclones and associated flooding produce temporary, short-term mobility, and not permanent out-migration.

(Nature Reviews | Earth & Environment)

(9) I would ***argue that*** the ways in which this is done in online spaces give us important information about languages and speakers in our contemporary world, and that these spaces and their organizational processes are important sites for analysis.

(Annual Review of Applied Linguistics)

Table 7. The distribution of adverbials and complement clauses as style stance markers across the two corpora

Grammatical Devices	Freq. in C-H	Freq. in C-S	Norm. Freq. in C-H	Norm. Freq. in C-S	LL	Sig. (P)		
Adv.	14	11	0.07	0.05	0.42	0.518		
V. + (that)	**1**	**11**	**0.00**	**0.05**	**8.15**	**0.004**	**	-
TOTAL	15	22	0.07	0.11	1.996	0.273		

6. Conclusions and Discussion

Our research questions examined the features of stance markers in review articles in hard and soft science disciplines and the findings indicate that the overall frequency of stance markers in review articles across hard and soft sciences is nearly similar. However, regarding semantic subcategories, especially epistemic and attitudinal stance markers, subtle and obvious

differences still exist between the use of these expressions in review papers in natural and social sciences. Our findings are partially in keeping with previous studies that has revealed differences in the ways writers in different academic fields construct their academic identities and convey their information across hard and soft science disciplines. In other words, this study confirms the association between linguistic expressions and discipline variation.

Another interesting finding is that there are distinct diversities in the use of three different semantic stance markers in review discourses. Epistemic stance expressions account for the largest proportion of the total markers. This feature can be explained partly by that epistemic stance is mainly relevant to interactions in intellectual communication which aims at disseminating information and knowledge as well as maintaining the position of scholarly community in society. Epistemic linguistic expressions can primarily show how scholars investigate and interpret their research fields in an academic way. Besides, style markers make up the smallest proportion among the three. This finding corroborates the ideas of Biber *et al.*, who found that style markers were rarely used in academic prose. The higher overall frequency of epistemic markers and the lower frequency of attitudinal and style markers in review articles are consistent with the general communicative characteristics of academic prose, which attempts to present an objective, faceless and impersonal form of discourse.

The present study was subject to several limitations. The principal limitation of this analysis was that while we focused on examining the variation between hard and soft disciplines in the use of stance markers, we only examined some review articles from four hard and four soft disciplines and our data analysis relied heavily on small sample sizes. This leaves at least one question open. To what extent do those differences between them conform to disciplinary variation? It is highly recommended that further research be undertaken in the wide scope of data covering more science disciplines. Another source of limitation is originated from the absence of relevant previous investigations into published review articles directly based on the analytical framework used in this study. This means that it is unlikely to take into account the effect size of our results. So further studies considering effect size should be carried out in the future.

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