

# A Cross-Disciplinary Study of Evidentiality in Abstracts of English Research Articles

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Received 22 July 2015; accepted 24 August 2015; published 27 August 2015

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## Abstract

This paper is a cross-disciplinary study of evidentiality in English abstracts. The corpus consists of 200 abstracts of English RAs of four disciplines: linguistics, philosophy, computer and electronics. Firstly, our study presents the lexicogrammatical realizations of evidentiality in English abstracts of four disciplines, and then it compares the cross-disciplinary use of evidentiality from the analyses of reporting evidentials and modal verbs in inferring evidentials. The analyses show significant differences in the distribution and frequency of four evidential types in abstracts of the four disciplines and also show that different disciplinary conventions of writers may influence their choice of evidentiality in their abstracts writing. It is hoped that this study may be helpful to enrich the study of evidentiality in academic discourses. Besides, it may give implications on the learning and teaching of academic writing.

## Keywords

Evidentiality, Cross-Disciplinary Study, English Research Article Abstracts

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## 1. Introduction

Evidentiality is pervasive in almost all languages around the world. The researchers have paid much attention to the study of evidentiality from different perspectives, such as Chafe (1986), Aikhenvald (2003, 2004) and so on. As to the study of evidentiality in discourses, many researchers have devoted to many different types of discourses, such as English news reports, English research articles (RAs in the following) and so on, but evidentiality in abstracts of RAs hasn't attracted much attention of linguists, not even to say the cross-disciplinary study of evidentiality in English abstracts. Therefore, this paper aims to fill in the niche.

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This paper focuses on the use of evidentiality in English abstracts of four disciplines. It chooses English abstracts of linguistics, philosophy, computer and electronics. It shows the different use of evidentiality in English abstracts across four different disciplines to explore the influence of disciplinary background of writers on their choice of evidentiality in their abstracts writing.

## 2. Literature Review

### 2.1. Relative Studies on Evidentiality

Evidentiality has been approached from different perspectives. This section will show the relative studies of evidentiality from the perspective of typological approach, the pragmatic approach, the cognitive approach and the systemic and functional linguistic approach.

As we have indicated, [Boas \(1911\)](#) first found that a kind of grammatical realization in American Indian can be used to express the information source and the degree of commitment. And then evidentiality in other languages has attracted the attention of linguists. [Willett \(1988\)](#) studies evidentiality in thirty eight languages. [Aikhenvald and Dixon \(2003\)](#) and [Aikhenvald \(2004\)](#) also conduct typological studies of evidentiality in some lesser known languages, such as Tiariana, Turkic and so on. The typological studies of evidentiality pay much attention to the grammaticalised evidentials in different languages, but not all the languages have grammaticalised evidentials, such as English. If we just pay attention to the grammaticalised evidentials or the formal aspect of evidentiality, and then it is meaningless to study evidentiality in English. Therefore, the typological approach to evidentiality also has its limitations. Therefore, evidentiality should be considered as a semantic category and all the potential lexicogrammatical realizations of evidentiality should be considered.

The pragmatic approach to evidentiality indicates that contextual factors should be taken into consideration in the study of evidentiality. The relative studies show that the information source is not the only influencing factors that have influences on the choice of evidentiality. Sometimes, the speaker/writer chooses certain evidentials not only to show the actual information source, but also to indicate some pragmatic implications, such as downplaying his direct involvement in the proposition that he/she present. [Ifantidou \(2001\)](#) is the representative of studying evidentiality from the perspective of pragmatic approach. He studies evidentiality from the aspect of relevance theory. [Lai \(2009\)](#) studies evidentiality in Chinese verbal communication within the framework of adaptation theory. Her study shows that contextual constraints and adaptation process have influences on the choice of evidentiality in Chinese verbal communication. Pragmatic approach to evidentiality takes contexts into consideration, which is significant to the deeper understanding of evidentiality. However, studies of evidentiality from pragmatic approach are still in infant. More contextual factors, such as, disciplinary background of speaker/writer, should be considered in the future studies.

[Chafe \(1986\)](#) is the representative of studying evidentiality from the cognitive approach. He (1986) compares different use of evidentiality between spoken and written English. Based on his analysis, he finds that speakers/writers of the conversations and academic writings prefer different kinds of evidentiality. [Mushin \(2001\)](#) also studies evidentiality from the cognitive aspect. He claims that the actual source of information is not the only factor that determines the speaker/writer's choice of evidentiality, and the interaction setting, such as the concrete context may have influences on the choice of evidentiality. [Mushin \(2001\)](#) strengthens the role of the cognitive involvement of the speaker/writer in the process of evidential choice. The cognitive studies of evidentiality indicate that speakers/writers have the epistemological consideration of the information source and interaction setting before they make their final decision of the evidential choice. Cognitive approach to evidentiality is important in that it strengthens the roles of the cognitive intrusion of the speaker/writer in the process of evidential choice. However, sometimes it may cause the mismatch between the actual information sources and the chosen evidentials.

Studying evidentiality based on systemic and functional linguistics (SFL in the following) is another important approach to evidentiality. Although evidentiality is not defined and studied as an independent notion in SFL, as a sound linguistic theory, it provides an important way to interpret evidentiality. Recently, many scholars try to analyze the use of evidentiality based on SFL, such as [Tang \(2007\)](#), [Yang \(2009\)](#) and [Fang \(2012\)](#). SFL, as an important and sound linguistic theory, provides an alternative way to explore evidentiality. The study of evidentiality from SFL approach is far from enough and much more work need to be done in this aspect.

Previous studies of evidentiality show that scholars are enthusiastic about evidentiality. Although achievements have been made, there are still many works that need to be done. Many studies just pay attention to the grammatical realizations of evidentiality without taking the lexical elements into consideration, which may

hinder the study of evidentiality in languages, such as English. Previous studies also show that studies of evidentiality in discourses are far from enough. Therefore, this paper aims to explore the use of evidentiality in certain discourses-English research article abstracts, which has been ignored by scholars.

## 2.2. Relative Studies on Research Article Abstracts

Abstracts are the important parts of RAs, and they are the concentration of writers' ideas. Linguists have paid much attention to the study of abstracts, such as Graetz (1985), Swales (1990) and so on. Swales (1990) indicates that the "Introduction-Method-Results-Discussion" (IMRD) macro-structure is also suited to the abstracts. Ju (2004) compares the macro-structure of English and Chinese abstracts based on the IMRD framework. Ge (2005) not only focuses on the macro-structure of abstracts, but also the linguistic features of abstracts. She makes a cross-disciplinary study of the abstracts based on the IMRD framework. Huang (2012) studies the evidentiality in abstracts of English RAs. The study shows that writers are consciously to use evidentiality in their abstracts to show their arguments and findings. The author only chooses abstracts of English linguistics RAs as the data without considering abstracts of other disciplines.

From the previous studies of abstracts, we can see that research article abstracts have been studied from various angles. These studies not only include the macro-structure of abstracts, but also the lexicogrammatical features of abstracts. However, the study of evidentiality in abstracts has been ignored by linguists. Based on the review of relative evidential studies, only Huang (2012) has ever studied evidentiality in abstracts of English RAs. It is certain that studying abstracts from the perspective of evidentiality is a potential and new way to understand abstracts more deeply. Besides, comparative analysis of the use of evidentiality in abstracts among different disciplines is still blank. Therefore, this study explores the use of evidentiality in English abstracts of four different disciplines to show whether different disciplinary background of writers have influences on the choice of evidentiality in their abstracts writing.

## 3. Methodology and Data Collection

In this study we establish a corpus, consisting of 200 abstracts of English RAs of four disciplines: linguistics, philosophy, computer and electronics, 50 English RAs in each discipline. The total word number of each discipline is 8036, 6794, 9327, and 7750 respectively. RAs of each discipline are chosen randomly from the Internet ([www.Elsevier.com](http://www.Elsevier.com)). Each article is chosen from authoritative journals of its discipline. For example, the selected journals of linguistics are: *Journal of Pragmatics*, *Journal of English for Academic Purposes*, *Lingua* and *Journal of English for Specific Purposes* etc. The chosen journals of computer are: *Computer Communications*, *Theoretical Computer Science* and *Computer Networks* etc.

A sample study is done at the first stage in order to recognize all the potential lexicogrammatical realizations of the four evidential types in four disciplines, and lexicogrammatical realizations are classified according to their form. In the process of the identification of evidentials, it must be noticed that some evidentials are polysemous, such as, *can*, *must*, and *may*, and they do not always function as evidentials. For example, *can* in the sentence "you can go" means the permission of the speaker/writer to the hearer/reader instead of functioning as an evidential. On that kind of condition, we make decisions based on their semantics in specific contexts.

Then, different markers are chosen and used to tag the potential lexicogrammatical realizations of four evidential types in the documents. For example, R means reporting evidentials, RV reporting verbs, RJ reporting adjuncts, RN reporting nouns, RA (author + date) forms, I self-reporting evidentials and HS human specific information sources. In addition, the software Antconc 3.2.4 is used to retrieve all the markers that have been marked in the documents. In this way, the lexicogrammatical realizations and concordance patterns of different evidentials in abstracts of four disciplines are showed clearly. Finally, figures and tables based on the data are draw accordingly.

By the quantitative analysis of the data, the author shows the lexicogrammatical realizations of English abstracts of four disciplines. This is a cross-disciplinary study. Based on the data, the author shows the similarities and differences of the distribution and frequency of four types of evidentials in abstracts of English RAs of four disciplines to explore the influence of disciplinary factors on the writers' choice of evidentiality in their writing.

## 4. Evidentials in English Abstracts

Although evidentiality is a pervasive phenomenon in almost all languages, there has been no consensus on what

evidentiality is. So far, there have been two types of definition for evidentiality, that is, in the broad sense and in the narrow sense. Aikhenvald (2003, 2004) is the representative of defining evidentiality in the narrow sense. She defines evidentiality as the grammatical realization specifying the source of information. Instead, Chafe (1986) defines evidentiality in the broad sense. Evidentiality, in the broad sense, is not only used to refer to the source of information, but also refer to the speaker's attitude toward the information. In this paper, we take the view of evidentiality in its broad sense. As to the classification of evidentiality, in this paper, we accept the classification of Yang (2009) based on the characteristics of RAs. She classifies evidentials into four types: inferring evidentials, reporting evidentials, sensory evidentials and belief evidentials.

Inferring evidentials are divided into inference and assumption. They can be used to show the writer's degrees of certainty to the information he present. Different inferring evidentials can indicate different modal values and accordingly writer's different responsibility for the proposition. Modal verbs, such as, *can*, *should*, *may*, *must*, *will*, *would*, are the typical realizations of inferring evidentials. For example:

1) The real crisis of this model **may** be found in Heumann and Brücker, representatives of the anti-Wolfian German Philosophy.

2) Consequently, theories of "language", including both pragmatics and linguistics, **must** be "liberated" from the reference- or semantics-centric perspectives; instead, they **should** start from "the bottom up", from the deictic center of sociocultural interaction, i.e., "discourse".

In the above examples, writers adopt different modal verbs to indicate his attitude towards the proposition they present. Modal verbs *may*, *must*, *should* are used in the above examples, and they have different modal value. *May* in 1) has the lowest modal value among the three modal verbs, and then is *should*, and modal verbs *must* has the highest modal value. Accordingly, writer in 2) should bear higher responsibility for the truth of proposition he present than writer in 1) does.

Reporting evidentials are classified into two types: self-reporting evidentials and other-reporting evidentials. As its name indicates, self-reporting evidentials indicate information that is from the writer himself. In abstracts of English RAs, information sources of self-reporting evidentials are mainly *I*, *we*, *this article*, and *this paper* etc. Examples will be illustrated in the following.

3) **I note** that one significant related problem is that of the addressability of philosophy for it is directly consistent with the History of Philosophy as a discourse.

4) **The results obtained indicate** that the specific thermal resistance values of the as-prepared Cu stack samples, one with conductive Ag thermal grease, and one with Sn-3.5Ag solder joints and one with 25 lm thick Sn foil as TIMs are significantly lower than those of the Cu stack sample without any TIM.

In the above examples, writers use *I* and *the results* to show the information is from himself or his researches. The examples also show that information sources of self-reporting evidentials in English abstracts can be human in 3) or non-human in 4). The patterns used in the above examples are *reporting verbs plus that*, which are the typical realizations of reporting evidentials in English abstracts.

Other-reporting evidentials, opposite to self-reporting evidentials, indicate that information is from others rather than the writer himself. The typical information sources of other-reporting evidentials in English abstracts are the cited authors, their researches, arguments and so on. For example:

5) This genre was analyzed drawing on the work of **Halliday and Mathiessen (2004)**, **Martin (1992)** and **Lemke (1985, 1990)**, focusing on three aspects: the genre acts performed in the process of analyzing film; the conceptual frameworks of film studies knowledge, or "thematic formations" (**Lemke, 1993**) drawn on and re-constituted in the assignment; the particular ways that language is used to perform these acts and build these thematic formations

6) The **analyses she provides** show that in many ways French functions in a manner similar to English, with one major exception, the interpersonal metafunction.

7) **It has been reported that** the mechanical performance of a high temperature Au-Ge eutectic solder is able to fulfill the minimum interconnection properties specified by the oil and gas exploration industry.

All the examples in the above show that the information is from extra sources rather than the writer himself/herself. In 5), the writer uses (author + date) form to show the information is acquired from the authoritative rather than the writer himself. Based on the corpus, (author + date) forms are the typical realizations of other-reporting evidentials. In this way, writers just introduce the researches or arguments of other scholars without any direct subjective evaluation towards the information or the information sources, which is beneficial to increase the objectivity and persuasion of RAs. Three examples in the above also show that information sources in oth-

er-reporting evidentials can be specific human in 5), nonhuman in 6), or concealed in 7).

Sensory evidentials demonstrate that the information comes from the writer's direct first-hand experience. Based on the English abstracts of four disciplines, the most typical realization of sensory evidentials occurring in the corpus is *see*. Examples will be showed in the following.

8) **We will see then, that** one of the most important questions of philosophy of historiography is: what is philosophy? Before we start writing the history of philosophy, we should ask ourselves what is our view about the nature of philosophy.

9) **It is easy to see that** protocols can be designed for the acknowledged setting only when the underlying communication network is strongly connected.

Writers in the above two examples use *see + that* to show the information is from their visual channel. Information acquired from this kind of channel is relatively subjective, which is opposite to the objective nature of RAs. It may be the reason that the use of sensory evidentials is low in English abstracts of four disciplines.

Belief evidentials indicate that the information is acquired from the writer's own view. Writers can express their opinions toward the information either subjectively or objectively. Based on the corpus, the typical realizations of belief evidentials are: *I/we plus argue/suggest/assume that, it is argued/suggested/assumed that* etc. For example:

10) **We assume that** there are some devices acting as relaying entities, so as to allow others reaching an Access Element, in those situations in which a direct connection is not possible.

11) **It is suggested that** contemporary organizational behavior and management practice in the P. R. China tend to reflect ideologies of three cultural forces.

Writers show their own views and opinions by using belief evidentials in the above examples. In 10), the writer shows his opinion towards the proposition in a subjective way, while in 11) the writer expresses his opinion in an objective way. The objective way of expressing the writers' opinion is much more persuasive and easier to be accepted by the readers.

The above show the classification and lexicogrammatical realizations of four evidential types in English abstracts of four different disciplines. **Table 1** in the following summarizes the lexicogrammatical realizations of evidentials in English abstracts clearly.

## 5. Data Analysis and Discussion

### 5.1. Distribution of Evidentiality in Abstracts of English RAs

**Table 2** shows the distribution and frequency of evidentials in English abstracts of four disciplines. We can see that the frequency of the use of evidentiality in linguistics abstracts is the highest, and then follow philosophy, computer and electronics. Since linguistics and philosophy are in the category of soft disciplines, and computer and electronics are hard disciplines, it can be assumed that the frequency of the use of evidentiality in soft disciplines is higher than that in hard disciplines. Writers in soft disciplines tend to use more evidentials to express their information sources and their commitment toward the information.

There are similarities and differences in the use of four evidential types in English abstracts of four disciplines.

Firstly, inferring evidentials and reporting evidentials are the two evidential types most frequently used in all the four disciplines. Writers of both linguistics and philosophy tend to choose more reporting evidentials than inferring evidentials or nearly the same, while writers of computer and electronics tend to use more inferring evidentials in their writing.

Secondly, both sensory evidentials and belief evidentials occur less frequently in the English abstracts of the four disciplines. And, the frequency of the use of sensory evidentials in the disciplines of linguistics, philosophy, and computer is similar. Neither sensory evidentials nor belief evidentials occurs in the English abstracts of electronics. Therefore, evidential types in electronic abstracts are simpler than those in other three disciplines. Besides, frequency of the use of belief evidentials is higher in linguistics and philosophy than that in computer and electronics. This indicates that abstracts of soft disciplines are more personal than those of hard disciplines.

In sum, writers tend to use various evidential types to show the information sources and their attitude toward the information. The frequency of the use of evidentials in soft disciplines (linguistics and philosophy) is higher than that in hard disciplines (computer and electronics). Reporting evidentials and inferring evidentials are the most two frequently used evidential types in abstracts of four disciplines. Therefore, we will compare the use of

**Table 1.** The lexicogrammatical realizations of evidentiality in English abstracts of four disciplines.

Evidential types	Realizations	Examples
Inferring evidentials	Modal verbs	shall, should, can, may, will, might, must, shall, could, would
	Modal adjuncts	probably, possibly, perhaps, likely
	Relational process	seem to..., it (would) seems that
	Adjectives	It is possible that
	(author + date) form	Martin (1992), Lemke (1985, 1990)
Reporting evidentials	<i>verb that</i>	show that, reveal that, find that, demonstrate that, argue that, agree that
	Verbal forms <i>be verbed</i>	were shown, was found
	<i>it is verbed that</i>	it is proposed that, it has been reported that
	Nouns	claim, conclusion, finding, view, fact
Sensory evidentials	Adjuncts	according to X, in X's approach, following X
	<i>see that</i> structure	we will see that, it's easy to see that
	Belief evidentials	Subjective I/we plus mental state verb that
mental state noun plus that		my view is that
Objective it is plus mental state <i>verbed</i> that		it (will be) is argued that, it is assumed that, it is suggested that

**Table 2.** The distribution and frequency of evidentials in abstracts of English RAs.

Discipline	Inferring evidentials		Reporting evidentials		Sensory evidentials		Belief evidentials		Total	
	Raw data	Frequency per 1000 words	Raw data	Frequency per 1000 words	Raw data	Frequency per 1000 words	Raw data	Frequency per 1000 words	Raw data	Frequency per 1000 words
Linguistics	61	7.59	84	10.45	1	0.12	13	1.62	159	19.79
Philosophy	47	6.92	46	6.77	1	0.15	7	1.03	101	14.87
Computer	77	8.26	47	5.04	1	0.11	3	0.32	128	13.72
Electronics	53	6.84	22	2.84	0	0	0	0	75	9.68

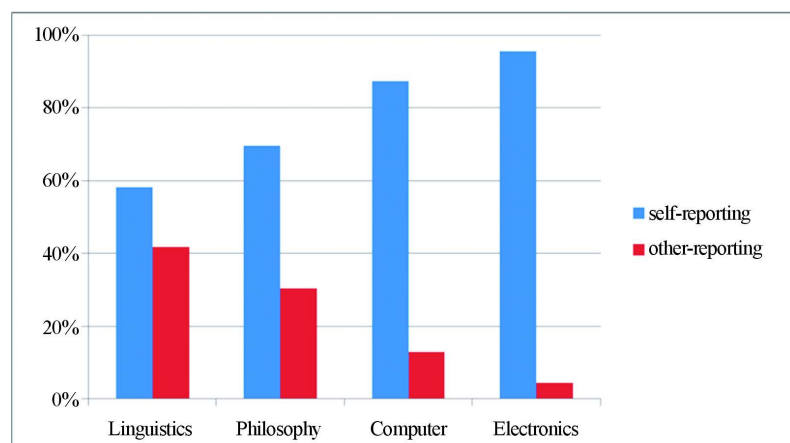
evidentiality from the analysis of these two types of evidentials in abstracts of four disciplines in the following section.

## 5.2 Reporting Evidentials in English Abstracts of Four Disciplines

Reporting evidentials are one of the most important evidential types in English abstracts of four disciplines. This section will compare the use of reporting evidentials in English abstracts of four disciplines from three aspects: self-reporting and other-reporting evidentials, information sources of reporting evidentials, and reporting verbs.

### 5.2.1. Self-Reporting and Other-Reporting Evidentials

As we have indicated, reporting evidentials are classified into self-reporting evidentials and other-reporting evidentials. Self-reporting evidentials indicate that information is from the writer himself, and the information sources of self-reporting evidentials are mainly the writer's researches, arguments and findings, while other-reporting evidentials indicate that information is acquired from others rather than the writer himself. **Figure 1** shows the use of self-reporting evidentials and other-reporting evidentials in English abstracts of four disciplines. In **Figure 1**, we can see that the use of self-reporting evidentials increases in the four disciplines while the use of other-reporting evidentials is opposite. In abstracts of linguistics, self-reporting and other-reporting evidentials occupy 58.3% and 41.7% of the total reporting evidentials respectively. In abstracts of philosophy, the proportion



**Figure 1.** The use of self-reporting and other-reporting evidentials in English abstracts.

of other-reporting evidentials is decreased, occupying 30.4% of the total reporting evidentials. In abstracts of computer, the proportion of other-reporting evidentials decrease to 12.8% and self-reporting evidentials occupy 87.2% of the total reporting evidentials. And we can see clearly in **Figure 1** that in abstracts of electronics self-reporting evidentials completely dominate, with few occurrences of other-reporting evidentials.

In sum, it is suggested that other-reporting evidentials are more preferred by writers of soft disciplines than writers of hard disciplines. This may be influenced by the nature of soft disciplines and hard disciplines. Hard knowledge tends to be more cumulative and researches are driven by the imperatives of current interests, therefore, new findings of researches come from the existing state of knowledge (Kuhn, 1970). And the findings of the researches in hard fields can be assumed from the existing knowledge (Hyland, 2008). Therefore, it is not necessary for writers in hard fields to introduce the background and context related with the current researches in detail. It may be the reason that other-reporting evidentials in computer and electronics are few. The situation is different in humanities and social sciences. Knowledge in humanities and social sciences follow more reiterative and recursive routes (Becher, 1989). Readers can't be assumed to possess the same interpretive knowledge, writers have to introduce and explain the context of the current research (Hyland, 2008). Therefore, writers of soft disciplines tend to elaborate and introduce the source and context of the information through other-reporting evidentials.

### 5.2.2. Information Sources of Reporting Evidentials in English Abstracts

**Table 3** shows the information sources of reporting evidentials in abstracts of four disciplines. We can see that specific human sources are the most frequently used information sources in English abstracts of linguistics, philosophy and computer (45.2%, 45.7% and 46.8% respectively), while non-human sources are the most frequently chosen information sources in abstracts of electronics (68.2%). Although specific human sources are the most frequently used in abstracts of linguistics, philosophy and computer, it is obvious that non-human sources also play an important role in abstracts of these three disciplines (36.9%, 45.7% and 44.7% respectively). Distribution of information sources between self-reporting and other-reporting evidentials is different in each discipline. The specific human sources are preferred by writers when presenting others' work in abstracts of linguistics, philosophy and computer, while in self-reporting evidentials of these three disciplines, non-human sources are the most frequently used information sources. The situation is different in abstracts of electronics. Non-human sources are dominated in self-reporting evidentials and only concealed information source is chosen by the writer in electronics. The distribution of information sources between self-reporting and other-reporting evidentials in four disciplines are also different. We will illustrate information sources of self-reporting and other-reporting evidentials respectively in the following.

#### Information sources of self-reporting evidentials

In this section, distribution of the different information sources of self-reporting evidentials among the four disciplines will be showed, and then the concordance patterns of information sources, including specific human sources, non-human sources and concealed sources, in four disciplines will be examined.

It can be seen clearly in **Table 3** that non-human sources are the most frequently used information sources

**Table 3.** Information sources of reporting evidentials in abstracts of English research articles.

Discipline	Information sources	Other-reporting	Self-reporting	Total				
Linguistics	Human	specific	27	77.1%	11	22.4%	38	45.2%
		unspecific	2	5.7%	0	0	2	2.4%
	Non-human	3	8.6%	28	57.1%	31	36.9%	
	Concealed	3	8.6%	10	20.5%	13	15.5%	
	Total	35	100%	49	100%	84	100%	
Philosophy	Human	specific	7	50%	14	43.8%	21	45.7%
		unspecific	0	0	0	0	0	0
	Non-human	5	35.7%	16	50%	21	45.7%	
	Concealed	2	14.3%	2	6.2%	4	8.6%	
	Total	14	100%	32	100%	46	100%	
Computer	Human	specific	3	50%	19	46.3%	22	46.8%
		unspecific	0	0	0	0	0	0
	Non-human	1	16.7%	20	48.8%	21	44.7%	
	Concealed	2	33.3%	2	4.9%	4	8.5%	
	Total	6	100%	41	100%	47	100%	
Electronics	Human	specific	0	0	2	9.5%	2	9.1%
		unspecific	0	0	0	0	0	0
	Non-human	0	0	15	71.4%	15	68.2%	
	Concealed	1	100%	4	19.1%	5	22.7%	
	Total	1	100%	21	100%	22	100%	

of self-reporting evidentials in all four disciplines, with less frequently used human and concealed sources. Unspecific human sources don't occur in the four disciplines. However, the distribution of the three information sources in the four disciplines is different. In abstracts of linguistics, non-human sources are the most frequently used information sources of self-reporting evidentials (57.1%), with the nearly balanced used of specific human and concealed information (22.4%, 20.5% respectively). In abstracts of philosophy, the importance of specific human sources is strengthened, which constitute 43.8% of the total self-reporting evidentials. That means that in presenting self-reporting evidentials writers of linguistic abstracts tend to use more non-human sources while writers of philosophical abstracts also pay attention to the use more specific human sources. The condition is similar in abstracts of computer, where specific human sources constitute 46.3% of the total number and non-human sources decreases to 48.8%, while in abstracts of electronics, non-human sources are the most frequently chosen information sources, and then follow concealed and human specific sources. Human specific sources are lowest frequently chosen as information sources of self-reporting evidentials, which indicates that writers of electronic abstracts pay more attention to the findings and results of their researches rather than who did that.

As we have indicated, non-human sources are the most frequently used information sources of self-reporting evidentials in four disciplines. Non-human sources in abstracts of linguistics and philosophy tend to be *this article*, *this paper*, *it* and *this study*, and *findings and results* are used few, while *findings*, *results* and *analysis* are the most frequently used non-human sources in computer and electronics.

As for the concordance patterns of specific human sources, differences exist between the four disciplines. Specific human sources of self-reporting evidentials mean that the information is from the writer himself or herself. The way the writers express themselves is also different among disciplines. In linguistics, the author uses *I* and *we* to express himself or herself. The situation is similar in philosophy, and the author also chooses *I* and *we* to express himself or herself, while in computer and electronics, *we* occurs as the information source without the



use of *I*. As we have discussed, hard disciplines are more impersonal than soft disciplines. The use of *we* by single-authored articles in computer and electronics can reduce personal attribution and also involve the potential readers as the participants of the researches, which can increase the persuasion of the author. *I* in linguistics and philosophy are used to establish a personal stance of the author to demarcate their studies from those of others. For example:

12) Finally, I note that slurs make a good test case for expanding our semantic theories beyond the truth conditional tradition of Frege, which IV will be necessary in order to broaden the types of expressions handled by semantic theories.

13) We found that the CNTs bridged the defects in some printed silver lines, thereby lowering the electrical resistivity by 38%.

In the above examples, *I* in 12) indicates that the information is from the writer's own research or study, which helps to establish authorial personality, while *we* in 13) invites the potential readers as the participant and co-worker of the research. The fact indicates that writers of soft disciplines emphasize their own roles in their studies, while writers tend to downplay their personal roles in their researches to emphasize the replicability of their research activities and universality of the findings.

Concealed sources are less frequently used in four disciplines. The writer may conceal the information sources on purpose in self-reporting evidentials to emphasize the information itself rather than the information sources. In this way, the writer can strengthen the persuasion of his argument and research with more objectivity. The typical realizations of concealed sources are: *be verbed structure*, *it is verbed that structure* and *noun plus that* etc. There is no much difference between the forms of concealed information sources in the four disciplines.

#### Information sources of other-reporting evidentials

In the above section, information sources and concordance patterns of self-reporting evidentials are discussed. This section will firstly show the sources of other-reporting evidentials, and then introduce the concordance patterns of specific human sources.

In **Table 3**, it can be seen that specific human sources are the most frequently chosen information sources of other-reporting evidentials in disciplines of linguistics, philosophy and computer. Not any specific human source occurs in abstracts of electronics. Only two cases of unspecific human sources occur in abstracts of linguistics, and not any unspecific human sources occur in abstracts of other three disciplines. As we have indicated, the frequency of the use of other-reporting evidentials in soft disciplines is higher than that in hard disciplines. In abstracts of linguistics, specific human sources are the dominated (77.1%) information sources of other-reporting evidentials, with less use of other information sources. In abstracts of philosophy, specific human sources are still the most frequently chosen information sources (50%), but the proportion of non-human and concealed information sources are increased, constituting 35.7% and 14.3% respectively. Few other-reporting evidentials are adopted by the writers in disciplines of computer and electronics. Only 6 cases of other-reporting evidentials occur in abstracts of computer. Among these cases, 3 are from specific human sources, 2 concealed sources, and the left one non-human. Only one case of other-reporting evidentials occurs in electronics, and the concealed information source is chosen by the writer.

Specific human sources of other-reporting evidentials indicate that the information is from other authoritative scholars of the field. As we have indicated, specific human sources are most frequently chosen as the information sources of other-reporting evidentials in disciplines of linguistics, philosophy and computer. Based on the corpus, it indicates that writers in different disciplines may show the specific human sources in different way. They can be expressed by *(author + date) structure*, *according to* and *somebody verb that structure* etc. In abstracts of linguistics, the most typical forms of specific human sources are *(author + date)* forms. For example:

14) It is concluded that a Korean evidential sentence not only conveys an evidential meaning, i.e. the source of information, but also expresses the non-assertive mode, i.e. a presentative speech act (cf. **Faller, 2002**)

The writer chooses this kind of form just to show the information sources without any evaluation of the information itself. This kind of realization is objective, which contributes much to the objectivity and persuasion of the abstracts.

In philosophical abstracts, based on the data, the most frequently used specific human sources are *somebody verb that structure*. This finding is consistent with **Hyland (2008)**. He found that writers of philosophical research articles tend to include the cited author in the reporting sentence. In this way, the writer can show his evaluation toward the cited information and debate with others. All three cases of specific human sources of other-reporting evidentials in abstracts of computer are showed by footnotes. In this way, the writer downplays

the role of individual actors and emphasizes the impersonality and generality of the hard disciplines. The different ways chosen by writers to show the human sources of other-reporting evidentials in different disciplines show that disciplinary factors influence the writer's choice on the evidentiality.

### 5.3. Reporting Verbs in English Abstracts of Four Disciplines

Based on the data, reporting verbs are the most frequently used realization forms of reporting evidentials in four disciplines. This section will discuss the verbal forms in English abstracts of four disciplines.

According to the classification of Francis et al. (1996) for *V that clause*, verbs are classified into three groups: Argue group, Think group, Show and Find group. The information sources of the three groups are different. The information of Argue group is acquired from writing and other forms of communication. Information of Think group is from thinking and information of Show and Find group comes from visual channel. The three types of verbal groups not only have different information sources, but also have different degrees of reliability of the information. Generally, Information of Argue verbs have more reliability than that of Think verbs, and information of Show and Find group is more reliable than that of Argue verbs.

**Table 4** shows the distribution of reporting verbs in English abstracts of four disciplines. There are differences

**Table 4.** Distribution of reporting verbs in English abstracts of four disciplines.

Discipline	Verbal groups	Self-reporting		Other-reporting				
		% of total	The most frequent verbs	% of total	The most frequent verbs			
Linguistics	Argue group	35%	suggest	5	75%	suggest	1	
			argue	5		hypothesize	1	
			claim	2		agree	1	
	Think group	-	note	2	-	-	-	
			-	-		-	-	
	Show and Find group	65%	show	14	25%	show	1	
			demonstrate	6				
			find	4				
			indicate	2				
Philosophy	Argue group	39.1%	suggest	5	42.9%	argue	2	
			argue	2				
	Think group	4.3%	conclude	2	14.2%	suggest	1	
			aver	1		hold	1	
	Show and Find group	56.6%	show	8	42.9%	show	1	
			reveal	3		demonstrate	1	
			find	2		reveal	1	
	Computer	Argue group	7.7%	ensure	2	-	-	-
				suggest	1		-	-
Think group		-	-	-	-	-	-	
			Show	26				
Show and Find group		92.3%	Demonstrate	4	100%	show	2	
			indicate	3				
	find		3					
Electronics	Argue group	12.5%	hypothesize	1	-	-	-	
			conclude	1		-	-	
	Think group	-	-	-	-	-	-	
			show	6				
	Show and Find group	87.5%	find	3	100%	report	1	
			demonstrate	3				
			reveal	2				

in the distribution of the three verbal groups in the four disciplines and also between the self-reporting and other-reporting evidentials in the four disciplines. It shows that Think group is seldom used as the realization of reporting evidentials. In the abstracts of four disciplines, Think group only occurs in the abstracts of philosophy with low frequency. Argue group and Show and Find group are frequently used in the four disciplines to realize reporting evidentials. There are differences in the distribution of Argue group and Show and Find group between the self-reporting and other-reporting evidentials in four disciplines.

In self-reporting evidentials, Show and Find verbs are predominant in four disciplines. It indicates that the writer tends to give predominance to the studies and findings in presenting his own work. In this way, the writer lets his studies and findings speak for himself instead of his subjective demonstration. This is beneficial to improve the reliability of the proposition, which makes the argument easier to be accepted by the potential readers. Although the Show and Find verbs in the self-reporting evidentials are dominated in the four disciplines, there are differences between the distribution of Show and Find group in the four disciplines. In linguistics and philosophy, although Show and Find verbs are predominant, the Argue verbs also occupy high proportion in self-reporting evidentials (35% and 39.1% respectively). In computer and electronics, the writers use fewer Argue verbs in self-reporting evidentials than that in linguistics and electronics, which indicates that writers pay more attention to the findings and results of their researches in abstracts of computer and electronics. All show that writers put more value on the factual status of the information in hard disciplines than that in soft disciplines.

The situation is different for other-reporting evidentials in four disciplines. From **Table 4**, we can see that there are differences in the distribution of verbal groups of other-reporting evidentials in four disciplines. In linguistics and philosophy, Argue verbs are the predominant realizations of other-reporting evidentials. Show and Find verbs are also adopted by writers to realize other-reporting evidentials in linguistics and philosophy, but the proportion of Show and Find verbs in philosophy is higher than that in linguistics (42.9% and 25% respectively). The situation is quite different in disciplines of computer and electronics. In computer and electronics, not any Argue verbs occur in other-reporting evidentials. Only Show and Find verbs are used in these two disciplines, which means that in presenting others' work, writers tend to put more value on the findings and results of others' researches.

In sum, there are differences in the distribution of reporting verbs in the four disciplines. Think verbs are seldom chosen as the realizations of reporting evidentials in the four disciplines. More Show and Find verbs are adopted in abstracts of computer and electronics than that in linguistics and philosophy. Not any Argue verbs are used to realize other-reporting evidentials in computer and electronics. As we have indicated, the three groups of verbs can indicate different degrees of reliability of the information. Show and Find verbs have much more reliability than other two groups of verbs. Therefore, all the facts indicate that abstracts of computer and electronics are much more objective and impersonal than that of linguistics and philosophy.

#### 5.4. Modal Verbs in English Abstracts of Four Disciplines

According to the data, modal verbs are the most frequently chosen realizations of inferring evidentials in the four disciplines. This section will describe the modal verbs in English abstracts of four disciplines.

**Table 5** shows the distribution of modal verbs in English abstracts of four disciplines. Inferring evidentials can be realized by modal verbs, modal adjuncts, adjectives and relational process. We include other three forms in the other realizations of inferring evidentials. **Table 5** shows the proportion of modal verbs and other realizations of inferring evidentials in the four disciplines. The proportion of modal verbs in disciplines of computer and electronics is higher than that in linguistics and philosophy, which may mean that writers in hard disciplines give more prominence to the use of modal verbs in their abstracts writing than writers of soft disciplines. According to Hyland (2008), writers in the hard sciences prefer impersonal strategies and the greater use of modal verbs as hedges and boosters are often adopted. In this way, writers can downplay their personal evaluation of the information they present.

Different modal verbs have different degrees of modal value and accordingly writers may bear different degrees of responsibility for the information they present. Value of modal verbs can be classified into three types: modal verbs with high value, median value and low value. For example, *must* is a modal verb with high value, *will* with median value and *may* with low value.

**Table 6** shows the distribution of modal verbs with different modal value in English abstracts of four disciplines. There are differences in the use of modal verbs with different value in different disciplines. In abstracts of

**Table 5.** Distribution of modal verbs in English abstracts of four disciplines.

Discipline	Modal verbs		Other realizations		Total	
Linguistics	57	93.4%	4	6.6%	61	100%
Philosophy	42	89.4%	5	10.6%	47	100%
Computer	73	94.8%	4	5.2%	77	100%
Electronics	53	100%	0	0	53	100%

**Table 6.** Distribution of modal verbs with different modal value in English abstracts of four disciplines.

Discipline	Low value		Median value		High value		Total	
Linguistics	40	70.2%	11	19.3%	6	10.5%	57	100%
Philosophy	26	61.9%	15	35.7%	1	2.4%	42	100%
Computer	59	80.8%	11	15.1%	3	4.1%	73	100%
Electronics	19	35.8%	34	64.2%	0	0	53	100%

linguistics, modal verbs with low value are primary (70.2%) with less frequent use of modal verbs with median value and high value (19.3% and 10.5% respectively). Modal verbs with low value and median value allow the writers to discuss or negotiate with their readers, which can be easier to be accepted by readers. On the other hand, modal verbs with high value are also used by the writers to emphasize the strength of the writers' commitment to the information. Modal verbs with high value show that the writers are certain about the information, which is beneficial to convince the readers. In philosophy, modal verbs with low value are still dominated, but the proportion of modal verbs with median value increases to 35.7%. In philosophy, writers adopt more modal verbs with median value than that in linguistics. Besides, the proportion of the use of modal verbs with high value also decreases.

The situation is different in disciplines of computer and electronics. In computer, modal verbs with low value are primary, with median value and high value occupying 15.1% and 4.1% respectively, while in electronics, modal verbs with median value rather than low value are the most frequently used modal verbs. The most frequently used median value modal verbs are *will*. Modal verbs with low value only occupy 35.8% of the total modal verbs and high value modal verbs don't occur in the abstracts of electronics.

To sum up, modal verbs are the most typical realizations of inferring evidentials in English abstracts of four disciplines. As we have discussed, hard disciplines are more impersonal than soft disciplines. The use of modal verbs is an impersonal strategy to express subjectivity in an implicit way. It may be the reason that more modal verbs are adopted in the hard sciences than that in soft disciplines. There are also differences in the distribution of modal verbs with different modal values in the four disciplines. Modal verbs with low value, median value and high value occur in the disciplines of linguistics, philosophy and computer, with higher proportion of high value modal verbs in linguistics. However, in electronics, not any high value modal verbs are used by the writer and modal verbs with median value instead of low value are the most frequently used modal verbs.

## 6. Conclusion

This is an exploratory study based on a self-built corpus. This paper examines evidentiality in abstracts of English RAs of four disciplines. It presents the lexicogrammatical realizations of evidentiality in English abstracts firstly. The distribution of evidentiality in English abstracts of four disciplines indicates that writers in English abstracts are consciously to use various evidentials to present their information and arguments, and frequency of the use of evidentiality in abstracts of linguistics and philosophy is much higher than that in computer and electronics. By comparing the cross-disciplinary use of evidentiality in English abstracts from the analysis of reporting evidentials and modal verbs in inferring evidentials, it shows that different disciplinary backgrounds of the writers have significant influences on their choice of evidentiality in their abstracts writing. This is a cross-disciplinary study of evidentiality in English abstracts, which may enrich the study of evidentiality in academic discourses. Besides, it may increase teachers and students' awareness of discipline and give some implications on the teaching and learning of academic writing.

## Acknowledgements

This work was supported by Chinese National Social Science Grant [grant number: 13CYY087] and Program for New Century Excellent Talents [NCET grant number: NCET-13-0884].

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