

A Comparative Study of Evidential Verb in Research Papers By Chinese and American Scholars: An Example of An Experimental Research Paper on Oil And Gas

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Abstract

Evidentiality refers to the speaker's attitude towards the source of information and the reliability of the information conveyed and is one of the most important micro features of academic discourse. This study compared how Chinese and American researchers differed in the use of evidential verbs in their texts, the use of evidential verbs in 200 Chinese and American oil and gas experimental research papers is compared in this study using a combination of quantitative and qualitative methodologies based on a comparative corpus. It was found that both Chinese and American students were able to learn the evidential verbs of empirical research and use more appropriate language to describe the course of the experimental research and its results, but Chinese students employed less verbs, particularly perceptual, cognitive, and verbal evidential verbs. Chinese scholars struggle to take ownership of discourse and tend to employ negative verbs less frequently and their essays use a more homogeneous vocabulary. These findings highlight some of the writing issues Chinese scholars encounter while writing papers in the English language; this paper analyzes these issues and offers suggestions for academic writing.

Keywords

Evidentiality, evidential verb, academic discourse analysis, corpus-based study.

1. Introduction

Evidentiality, which relates to the speaker's attitude toward the source of knowledge and the veracity of the information delivered, is one of the crucial micro characteristics of academic speech (Chafe, 1986)[1]. Since the English language lacks morphological cues to identify the source of information, lexico-grammatical devices are the primary means by which evidentiality is represented (i.e., "evidence"). The verb, which serves as the primary structural component of English sentences, emerges as a crucial lexical tool for expressing the information's source through verbal support. According to Yang (2015)[2], the persuasive force of academic papers comes from their "precise and unambiguous language and objective and rigorous conclusions," and evidential verb satisfies the criteria for this discourse feature of academic papers, which has been a hot subject in the current academic writing research.

The verbs employed in evidential verb are observed, counted, and analyzed in this study using the AntConc software. As the research objects, we choose oil and gas experimental research papers from Chinese and American experts, to explore the different usage of evidential verb in research papers and indicate suggestions for Chinese scholar in academic writing and education.

2. Literature Review

2.1. Previous Studies on Evidential Verb Abroad

(1) Development of Evidentiality

The concept of "evidentials" was first coined and explored by Franz Boas, who, in his seminal work, "Handbook of American Indian Languages," introduced the idea that Indian languages utilize verb suffixes to indicate evidence-based assertions (Boas, 1911)[3]. This groundbreaking notion paved the way for further academic inquiry into the semantic field of evidentiality. Subsequently, Jakobson made a pivotal distinction between "evidence" and "mood," proposing that evidentiality should be recognized as a distinct grammatical category, thereby enriching the linguistic study of evidential verbs (Jakobson, 1986)[4].

In English, the expression of evidentiality is achieved through a variety of discursive strategies. Notably, the language employs modal verbs, tense indicators such as "seem" and "appear," as well as adverbs like "plainly," "reportedly," and "undoubtedly". These elements work in concert with perceptual verbs including "say" and "hear" to articulate evidentiality, showcasing the language's rich array of mechanisms for conveying information sources (Aikhenvald & Whitt, 2003, 2009)[5, 6]. This diversity reflects English's complex approach to evidentiality, highlighting its use of linguistic resources to indicate the basis of knowledge claims.

(2) Classification of Evidential Verbs

According to the syntactic behavior and meaning of English verbs, Levin (1993) made a distinction between perceptual and communicative verbs. Perceptual verbs, which comprise words like see, sound, feel, smell, and taste, describe the meaning of sight, hearing, taste, smell, touch, and other senses. Functional grammar considers verbal verbs, such as argue, ask, email, tell, say, warn, etc., to be comparable to communicative verbs. The verbs see, feel, hear, and listen are examples of perceptive verbs[7]. Biber (1999) classed perceptive verbs as mental verbs and found 23 common mental verbs in English with word frequencies more than 300 per million words in the corpus[8]. Perceptive verbs were categorized by Whitt (2009)[6]. According to Arrese (2011), verbs like say and state may be used to represent communicative evidence, mental verbs like believe and know can be used to express cognitive evidence, and perceptual verbs like observe and witness can be used to express empirical evidence[9]. Verbs like "speak" and "state" are used as communicative speech.

(3) Empirical Study of Evidential Verbs.

Chafe (1986) contrasted and analyzed the characteristics of evidential verb use in two speech categories, academic writing and English conversation, and discovered that the report element, particularly the report verb, is the most common verb in academic writing. In his study comparing and contrasting the position-marking capabilities of evidential verb in conversational corpus of British and American English, Precht (2003) made the observation that the usage of evidential verb can reflect the status differences between interlocutors status discrepancies between the parties involved. Authors may opt to use cognitive psychological verbs as verbal proof, such as think and know, to lessen the status difference between the author and the reader. When the verb focuses on the higher status person stating a desire, it has the effect of directing the lower status person to work. Hyland (2004) discovered that biology employed the verb far more frequently than other hard sciences in doctoral dissertations, utilizing more visual perceptual verbs as a verbal device to communicate information received visually and observable facts via visual verbal proof (Aikhenvald, 2004: 373)[11].

2.2. Previous Studies on Evidential Verb at home

The study of evidential verbs was first introduced to China in three articles written by Zhuang in 1994 and 1995, although at the time, no domestic scholars were intrigued in it. Following that, Fang (2006) described the growth history and research characteristics of domestic study

on evidential verb, while Niu (2005) outlined overseas research on substantiality theory[12]. These papers gradually drew more scholars into evidential verb research. According to the classification of research verbs, cognition verbs, and discourse verbs, Chen (2008) examined the transitive verbs in English doctoral dissertations and discovered that discourse-type transitive verbs were used the most frequently[13].

Yang (2013, 2015) examined the problems and development of discourse-based research, proposed a research direction for discourse-based research, and investigated the research methods in English academic dissertations[14, 15]. She discovered that evidential verbs were most frequently used in academic dissertations in which English was the native language and most frequently in the introduction section of the dissertation, with the three par words being the most frequently used, such as suggest, show and find.

The words that state facts or objectively identify the sources of information are the ones that are most frequently used as paraphrase verbs in foreign expert linguistics papers, according to Xu and Gong (2014)[16]. Because these words are objective, readers can sense the rigorous scientific attitude of the academic paper's authors. Wang (2016) compared the evidential verb used in Chinese and American master's theses in linguistics and discovered that Chinese master's students significantly more often use sensory evidence, with visual perception verbs being the most common[17]. This finding suggests that Chinese scholars place a greater emphasis on using real-world experience as evidence and supporting claims with research data. Liu and Xu (2017) examined the evidential verb of Chinese scholars' multidisciplinary academic papers and discovered that while there were differences in the linguistic presentation of evidence across disciplines, visual evidence in both social science and natural science academic papers primarily focused on different forms of the verb show[18]. Perceptual, cognitive, emotional, volitional, and verbal verbs all play a significant part in linguistic evidence, according to Yang (2018)[19]. While cognitive, affective, and volitional verbs can project thoughts, verbal verbs can project words, perceptual verbs can portray action events and facts. Interdisciplinary comparison, English-Chinese comparison, and bilingual writing are the three main focuses of research on verbal verbs in China. Although the research corpus is more restricted to academic papers in English, such as undergraduate, master's, and doctoral theses in English (Xu&Gong 2014; Wang 2016, 2017), academic journal papers in English linguistics (Yang 2015), and so on, these studies have successfully encouraged the in-depth study of verbal verbs in the domestic academic community.

However, few researchers, meanwhile, have examined the verb tenses used in academic English publications from other disciplines. For instance, Liu and Xu (2017) examine the characteristics of the use of appropriate elements from four disciplines: linguistics, journalism and communication, biology, and chemistry. Yu (2015) develops a study of evidential verb in English abstracts of doctoral dissertations in linguistics, computer science, medicine, and economics with an interdisciplinary research tendency[20]. Yang (2018) built a corpus of physics treatises and textbooks separately, compared and analyzed the variations in verbs used as verbal means in physics treatises and textbooks, and discussed the general distribution of verbs in physics discourse as well as the tendency of verb use in verbal verbs. However, there haven't been any sizable data or cross-cultural comparative studies done on evidential verb in oil and gas experimental research publications.

In conclusion, Chinese and American academics have not conducted comparative research on verbal verbs in their oil and gas experimental research articles. In order to provide a reference for writing and teaching English academic papers in China, we build a corpus of oil and gas experimental research papers published by Chinese and American scholars from 2017 to 2021, and construct an analytical framework to statistically observe the characteristics of verbs used by Chinese and American scholars and to explore the socio-cultural factors behind them.

3. Research Content

This study is divided into two phases. Phase I: Collection and description of the corpus Writing. According to the definition of evidential verb in this paper, the evidential verb was divided into four categories: perception evidential verb, cognitive evidential verb, intentional and affective evidential verb and verbal evidential verb. Based on this understanding The English and Chinese materials were marked manually based on this understanding. In order to reduce errors, this process was repeated.

The second stage: analysis and description of the corpus data. Through the comparison and analysis of specific data, we find out the differences between English and Chinese academic discourse. In order to ensure the reliability and validity of the study, and to avoid statistical errors caused by the length of the articles, the English and Chinese data were standardized and converted into a base of 1000 words for conversion. Halliday's (2004) and (2014) classification of mental and verbal verbs is the foundation for the study that follows. The classification of cognitive and verbal verbs by Halliday is used in the study that follows because of the intricacy of speech semantics (2004, 2014).

3.1. Research Object

First of all, we take two petroleum journals with the highest impact factors, Journal of Petroleum Science and Engineering and SPE Journal, as the sources of the corpus. From these journals, we selected 200 experimental research papers published by Chinese and American scholars between 2017 and 2021 respectively; then we purified the selected corpus by excluding paper titles, abstracts, keywords, author information, references, charts, etc., and kept only the body of the papers. According to countries, two corpus—the Chinese corpus and the American corpus—were constructed. Considering the real English writing level of the student authors, only word counts were counted for direct quotations from literature and interviews in the text section, but not their verbal verbs. The purified Chinese database has 424,249 words in total, while the American database has 722,324 terms in total.

3.2. Research Method

This study adopts a corpus research paradigm and combines quantitative and qualitative research to observe the characteristics of Chinese and American scholars' use of evidential verb and to explore the implied social and cultural factors behind them by using Chinese and American oil and gas experimental research papers as the research objects and by synthesizing the relevant theories of semantics, pragmatics, systemic functional linguistics and second language acquisition, with a view to providing references for improving the quality of Chinese experimental journal papers and providing references in order to provide reference for improving the quality of our experimental journal papers and for writing and teaching English academic papers in China. The purified corpus was first imported into the data analysis tool Antconc4.2.4, and then the search was conducted according to Yang's (2018) model. After that, we manually filtered out the non-evidential verbs from the verbs the machine had counted. The verbal data had a reliability of $R = 0.943$, which is more than 0.90. As a result, there is great dependability in the verbal verbs that were tallied in this study. The frequency of occurrence and word frequency of sensory verbs (verbs per 1,000 words) were calculated using Antconc4.2.4 software, and the results were then normalized and analyzed using SPSS software to process the variations in word frequencies.

3.3. Research Questions

This study intends to adopt a corpus research paradigm, combining quantitative research with qualitative research, and take oil and gas experimental research papers as the research object to answer the following two research questions.

- (1) What are the characteristics of the frequency of evidential verb used in the papers of Chinese and American scholars?
- (2) What kind of evidential verb convey the author's position and attitude?

3.4. Research Difficulties and Innovations

3.4.1. Research Difficulties

The corpus requires selection, purification, manual retrieval and tagging in the preparation stage, which is a large amount of work - the relevant corpus collection and purification, as well as partial tagging have been completed so far.

The integration of disciplinary features and multiple theories to unfold the analysis information mining is challenging - at present, we have read the relevant literature, and initially constructed the analysis framework and determined the analysis perspective.

3.4.2. Research Innovation

- (1) Novelty in topic selection: A large sample, multi-perspective, cross-cultural comparative study of verbs in oil and gas experimental research papers by Chinese and American scholars is the first of its kind.
- (2) Research Method Innovation: This study is grounded in authentic corpus data and employs a comprehensive approach that integrates methods from literature research, corpus research, and quantitative and qualitative analysis.
- (3) Innovation in research perspective: The topic focuses on comparative analysis, emphasizes the universality of research results, and develops a panoramic study of Chinese and American scholars' experimental research papers on oil and gas from the perspectives of semantics, pragmatics, systemic functional linguistics, and second language acquisition.
- (4) Single-disciplinary study: The verbs in the oil and gas experimental papers of Chinese and American scholars are analyzed comparatively and explored in depth, with disciplinary focus.

4. Results and Discussion

4.1. Data Analysis

Figures 1 and 2 illustrate how frequently each of the five verb kinds is used as a verbal means in the respective Chinese and US corpus of oil and gas experimental publications. The four verbs of evidential verb are distributed similarly in Chinese and American corpus, with cognitive verbs being used most frequently and extensively in both countries. Verbal and perceptual verbs are utilized next, with affective verbs being used the least frequently. Chinese academics may effectively utilize evidential verbs to communicate their positions and attitudes and characterize the objectivity of the research, as shown by the fact that their use of evidential verbs in the oil and gas experimental research papers is generally consistent with that of American researchers. This shows that in their English essay writing, Chinese researchers may effectively employ linguistic evidence to explain their opinions and beliefs and to describe the objectivity of their study. Table 1 shows that Chinese scholars utilize all four varieties of evidential verbs less frequently than American scholars, which suggests that academic norms and evidential verb verb expressiveness are weak among Chinese scholars.

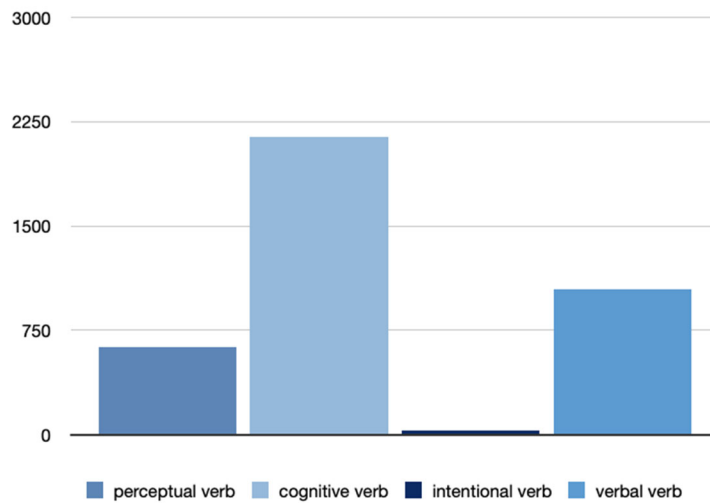


Figure 1. Chinese corpus

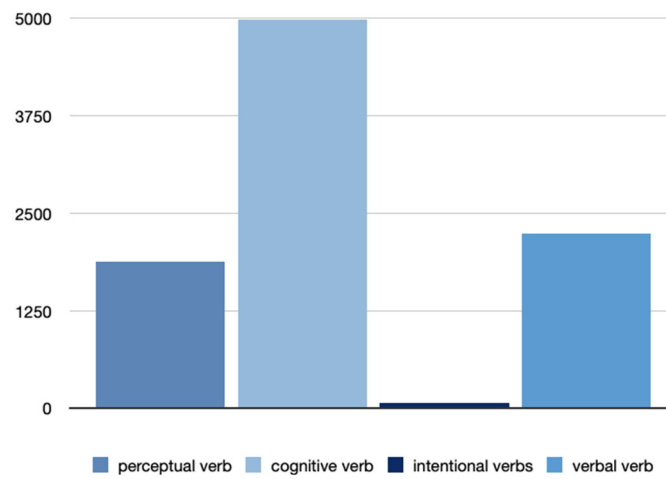


Figure 2. American corpus

Table 1. Comparison of stance markers

Feature	Chinese corpus (Normalized Frequency per 1000 words)	American corpus (Normalized Frequency per 1000 words)	p
perceptual verb	1.48262	2.60825	0.000
cognitive verb	5.04656	6.90272	0.000
intentional and affective verbs	0.07071	0.09691	0.147
verbal verb	2.45375	3.09141	0.000

4.2. Cross-corpus Comparison of Perceptual verbs

Perceptual verbs describe perceptual processes or conditions. Halliady (2014: 257) identifies 10 perceptual verbs as a class of verbs that represent mental processes. Perceptual verbs, such as see, feel, hear, and listen, are classified as mental verbs by Biber et al. (1999: 368–369), who also found 23 common mental verbs in English that occur more frequently than 300 times per million words. Based on the analysis of Han (2004, 2014), and Biber et al., we retrieve the verbs that express perceptual meanings in research papers of Chinese and American scholars' oil and gas experimental papers. Table 2 displays the outcomes of the corpus retrieval for Chinese scholar and American scholars with word frequencies higher than (or equal to)

Table 2. Distribution of perceptual verbs

Perceptual verbs	Chinese scholar		American scholar		P value
	frequency	Proportion	frequency	Proportion	
detect	42	0.099	51	0.07061	0.103
examine	36	0.08486	132	0.18274	0.000
feel	3	0.00707	2	0.00277	0.287
hear	0	0	1	0.00138	0.443
listen	4	0.00943	0	0	0.009
look	7	0.0165	39	0.05399	0.002
note	138	0.32528	350	0.48455	0.000
notice	16	0.03771	39	0.05399	0.224
observe	281	0.66235	936	1.29582	0.000
perceive	0	0	21	0.02907	0.000
see	87	0.20507	290	0.40148	0.000
sense	4	0.00943	16	0.02215	0.115
sound	11	0.02593	6	0.00831	0.018
watch	0	0	1	0.00138	0.443

(Note: Proportion refers to the number of occurrences of the verb per thousand words in the two original corpus, respectively, the same as below. Each of the comparisons between the corpus is statistically significant when the p value is less than 0.005)

The verb "observe," which appears 281 times (standard proportion 0.66235) in the Chinese corpus and 936 times (standard proportion 1.29582) in the American corpus, is the most frequently used visual perceptual verb in the oil and gas journal papers of native speakers and Chinese scholars. Auditory perceptual verbs, tactile perceptual verbs, olfactory perceptual verbs, and gustatory perceptual verbs did not appear. This finding is consistent with the results of Yang (2018) comparing the differences in the use of perceptual verbs in treatises and papers in physical discourse, for the reason that scientific and technical papers and physical discourse papers share the same characteristics of empirical processes such as hypothesis formulation, experiments, argumentative results, and summaries, which indicate that oil and gas experimental papers mainly describe phenomena perceived by the visual, auditory, and tactile senses.

However, there are differences in the use of verbs by Chinese scholars and American scholars. For example, "examine", "look", "note", "observe", "observe" and "see" all have p-values less than 0.005, which means that there is a significant difference in the use of these verbs between Chinese and American scholars in oil and gas experimental papers, and Chinese scholars are less likely to use these verbs, while American scholars use them more often.

It is worth noting that the word "perceive" was never retrieved in the Chinese database, while 21 times were retrieved in the US database, suggesting that Chinese scholars are less adept at using perceptive verbs featuring "perceive" in their scientific papers compared to their native language counterparts. The use of perceptive verbs with "perceive" characteristics is less frequent than that of native speakers.

From Table 2, first of all, visual perception verbs are used most frequently in both Chinese and American corpus, which indicates that oil and gas experimental papers mainly use visual perception verbs to indicate the author's point of view, and use experiments or directly present the results of data to achieve the effect of visual perception, and auditory verbs as a means of speech are rarely found. Therefore, visual perceptual verbs become a distinctive feature of oil and gas experimental papers. Secondly, comparing the use of perceptual verbs in Chinese and American oil and gas experimental research papers, we found that Chinese scholars differed greatly in the use of perceptual verbs compared to American scholars, and used them less frequently overall, while American scholars used more perceptual verbs as verbal means. Therefore, Chinese oil and gas scholars should pay attention to the expression of perceptual verbs as a means of evidence when publishing in English journals in order to enhance objectivity and highlight their views and arguments. The training of Chinese scholars on perceptual verbs can also be increased in the teaching of dissertation writing.

4.3. Cross-corpus Comparison of Cognitive verbs

21 cognitive verbs are listed by Halliday (2014: 517). Biber et al. (1999) include cognitive verbs under the category of mental verbs rather than making a distinction between them expressly. The distribution of cognitive verbs as verbal means in the two corpus with word frequencies larger than (or equal to) 2, as shown in Table 3, is the main focus of the following analysis, which excludes the non-evidential usage of cognitive verbs.

Table 3. Distribution of cognitive evidential verbs

Cognitive evidential verbs	Chinese scholar		American scholar		P value
	frequency	Proportion	frequency	Proportion	
assume	93	0.21921	205	0.28381	0.038
believe	10	0.02357	34	0.04707	0.050
check	14	0.033	42	0.058146	0.063
conclude	54	0.127782	147	0.203510	0.003
confirm	53	0.12493	75	0.103832	0.000
consider	262	0.61756	586	0.811270	0.000
decide	10	0.02357	19	0.026304	0.779
determine	240	0.56571	721	0.998167	0.000
discover	15	0.03536	16	0.022151	0.189
estimate	68	0.16028	467	0.646524	0.000
expect	71	0.16735	209	0.289344	0.000
find	282	0.6647	479	0.663137	0.975
imagine	0	0	2	0.002769	0.278
know	12	0.02829	21	0.029073	0.940
predict	101	0.23807	383	0.530233	0.000
realize	27	0.06354	10	0.013844	0.000
recall	39	0.09193	21	0.029073	0.000
recognize	20	0.04714	21	0.029073	0.118
remember	0	0	1	0.001384	0.443
study	642	1.51326	1317	1.823282	0.000
suppose	7	0.0165	4	0.005538	0.067
think	17	0.04007	16	0.022151	0.084
understand	104	0.24514	190	0.263040	0.563

There are multiple cognitive mental processes distributed in scientific and technical papers, and the construction of energy scientific and technical knowledge involves multiple cognitive mental activities, according to Table 3, which shows that Chinese scholars used 21 cognitive verbs in the Chinese corpus and 23 cognitive verbs in the American corpus.

However, table 3 demonstrates that the proportion of cognitive verbs is higher in the American oil and gas experimental papers than it is in the Chinese oil and gas experimental papers, and that the p-values of the verbs "assume", "believe", "conclude", "confirm", "consider", "determine", "estimate", "expect", "predict", "realize", "recall," and "study" are higher in the American oil and gas experimental papers than they are in the Chinese oil and gas experimental papers. The words "assume, believe, conclude, confirm, consider, determine, estimate, expect, predict, realize, recall, study" all had p-values less than 0.05, indicating significant differences in how Chinese scholars and native speakers used them. Chinese scholars tended to use "confirm find discover realize recall" more frequently for Chinese master's students have a propensity to perform descriptive research and present their findings in a "exhaustive" way, favoring presentation above analysis. research (Wang 2016). American scholar tend to use cognitive verbs "assume believe conclude consider estimate expect predict" more extensively, these words mostly have semantic meanings such as think, predict, and uncertainty about the outcome, which suggest that American master's students tend to be more descriptive than analytical and avoid using words to reiterate the numerical data that is clear from the graphs.

4.4. Cross-corpus Comparison of Intentional and Affective Verbs

Halliday (2014) lists 15 verbs with free will. Volitional verbs are not clearly distinguished by Biber et al. (1999), who instead classified them as psychological verbs. Using the method described above, we concentrate on how frequently volitional verbs are used in the two corpus. Table displays the usage of volitional verbs in the corpus with word frequencies greater than (or equal to) 2.

Table 4. Distribution of intentional evidential verbs

Intentional and affective verbs	Chinese scholar		American scholar		P value
	frequency	Proportion	frequency	Proportion	
agree	10	0.02357	12	0.01661	0.412
plan	15	0.03536	45	0.06230	0.054
want	4	0.00942	6	0.00831	0.844
wish	0	0	3	0.00415	0.184
would like	1	0.002357	4	0.00554	0.431

From table 4, the frequency of "agree" and "want" is slightly higher in the Chinese library than in the American library, whereas the frequency of the other three verbs is lower in the Chinese library. This suggests that affective verbs are not the primary source of evidence in scientific and technological experimental papers, but rather narrate a very small number of individual feelings.

4.5. Cross-corpus Comparison of Verbal verbs

The employment of verbal evidential verbs differs little between the American and Chinese corpus, as shown in Table 5. The Chinese corpus contains 13 verbal verbs, while the US corpus contains 15 verbal verbs. Due to the requirement for narrative and reasoning, scientific and technical experimental study papers use more verbal verbs than perceptual verbs. However, Chinese scholars utilize considerably fewer verbal verbs than American scholars in terms of frequency and the thousand-point ratio. The use of oil and gas experimental research papers

by Chinese and American researchers is significantly different, as shown by the five verbs "ask," "describe," "report," "suggest," and "propose," all of which have less than 0.05 significance levels.

Table 5. Distribution of verbal evidential verbs

Verbal verbs	Chinese scholar		American scholar		P value
	frequency	Proportion	frequency	Proportion	
argue	7	0.01650	9	0.01246	0.576
ask	0	0	9	0.01246	0.021
claim	1	0.00236	8	0.01108	0.108
describe	143	0.33707	377	0.52193	0.000
discuss	112	0.26400	229	0.31703	0.112
explain	58	0.13671	113	0.15644	0.404
mention	62	0.14614	135	0.18690	0.108
Point out	17	0.04007	31	0.04292	0.820
propose	188	0.44314	307	0.42502	0.652
remark	0	0	5	0.00692	0.087
report	151	0.35592	381	0.52746	0.000
say	8	0.01886	18	0.02492	0.510
state	221	0.52092	384	0.53162	0.810
suggest	72	0.16971	225	0.31149	0.000
tell	1	0.00236	2	0.00277	0.895

Compared to American scholars, Chinese scholars employ the words "ask," "describe," "report," and "propose" less frequently. In both Chinese and American scholars, "state" is the most commonly used verbal data verb, demonstrating that both groups of scholars are able to communicate their ideas and opinions in a realistic and objective manner while also paying attention to the variety and diversity of word choice. Most of the verbs employed in the writings of Chinese scholars are comparable neutral verbs like "respond," "describe," and "state," with little use of positive verbs like "agree" and little use of negative verbs like "claim," which convey opposing or divergent viewpoints. The use of words is comparatively concentrated and singular, which is consistent with Wang's (2016) study on the use of sensory evidence among Chinese and American scholars. Wang's study suggests that, influenced by the high-context culture of Chinese, Chinese students are used to keeping their true thoughts hidden and that, at times, it can be challenging to judge their true intentions literally, demonstrating how, in an effort to maintain their credibility as much as possible, the authors make an effort to distance themselves from the interviewees, minimize their level of involvement in the evaluation, and lessen their obligation to accept responsibility for the accuracy of the interview information.

5. Conclusion

This study examines the verb usage in 200 Chinese and American oil and gas experimental research papers using a comparable corpus and discusses the verb distribution in these papers generally. It was discovered that students from both China and the United States were able to understand the evidential verbs of empirical research and were able to utilize more suitable language to explain the course and outcomes of their experimental research. Although evidential verb is rarely used in scientific and technology research publications, there is a general pattern in their utilization.

The four different verb types can be found in the Chinese database 3841 times (or 0.90535% of the Chinese corpus), and the US corpus 9173 times (or 1.2699% of the US corpus). It is clear that American academics employ more evidential verbs than Chinese academics. Chinese students, on the other hand, appear to employ less evidential verbs than their American counterparts, particularly perception verbs, cognitive verbs, and verbal verbs. Second, Chinese students' vocabulary variety needs to be increased because it is less diverse than that of American students (for example, the ratio of verb types used in oil and gas experimental research papers by Chinese and American students is 49:57). Thirdly, because of the strong contextual culture of China, which values employing more neutral verbs to convey ideas rather than taking responsibility and making them obvious, Chinese students struggle to use negative verbs in their English essays. Writing and publishing high-caliber papers in English can help China's academic discourse internationalize and eventually reduce the problem of "academic dysfluency" in the global academic community as the academic world becomes more interconnected (Wang 2016). As a result, encouraging cross-cultural understanding among students should be a primary goal of academic writing instruction for postgraduate students. Teachers of academic essay writing are urged to concentrate on helping students develop their language and learn how to adhere strictly to the linguistic conventions of academic discourse, master the proper style to articulate the research process and findings, and incorporate their own academic voices. To develop their academic writing skills, appropriately communicate their perspectives and attitudes, and accurately describe their research findings, students should be taught to take into account the language and cultural distinctions between Chinese and English when writing.

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