

More Than an Information Source: A Bibliometric Review of Evidential Studies (1992–2021)

Linxiu Yang

Foreign Languages School, Shanxi University, Taiyuan, China

Jin Han

Foreign Languages School, Shanxi University, Taiyuan, China

Abstract—As a linguistic phenomenon with information sources as its core semantic content, evidentiality has received much academic attention. Based on data from Web of Science (WOS) from 1992 to 2021, this study performed a bibliometric analysis to track the changes and characteristics of evidential studies, focusing on the number of published papers, prolific authors, journals and institutions, and highly cited literature. Our findings indicated that (1) the last 40 years have seen a significant increase in interest in evidential studies; (2) prolific authors exhibit strong connections with high-yield institutions; (3) the United States and Spain are the top two most influential contributors in evidential studies; and (4) research has mostly centred on theoretical, typological, semantic, and pragmatic studies of evidentiality. Finally, this study traced the changes in topics over the past 30 years and proposed future directions for evidential studies. This study suggested that future studies should investigate evidentiality in various languages to establish a more inclusive typology and further enrich the semantics of evidentiality as well as focus on more diversified genres and broader social contexts.

Index Terms—information source, evidentiality, evidential study, bibliometrics

I. INTRODUCTION

Evidentiality is a semantic category that primarily refers to the speaker's account of the source of the information stated. Evidential studies began when the American anthropologist Boas (1911) discovered that in some Indian languages, a linguistic phenomenon exists that expresses the source of information. This was later termed *evidentiality*, while the linguistic expressions of evidentiality were termed *evidentials*. Recently, evidentiality has become a hot research topic, with many scholars discussing its definition, linguistic realizations, and functions. Notably, there appears to be a growing trend of research in this field.

In this study, we performed a bibliometric review to track the changes and characteristics of evidential studies from 1991 to 2021. We focused on the number of published papers, prolific authors, research articles, research institutions, international collaborations, highly cited literature, and hot topics. Specifically, we aimed to address the following research questions:

- (1) What are the stage characteristics of evidential publications from 1991 to 2021?
- (2) Who are the most influential contributors in evidential studies?
- (3) What are the most prolific journals and institutions in evidential studies?
- (4) What are the most influential publications in evidential studies?
- (5) What are the most explored topics in evidential studies?
- (6) How has evidential research changed over the past 30 years? What are the future trends?

The remainder of this paper is organized as follows. Section II presents the methodology of this paper by introducing the data source and research methods. Section III displays the main part of this paper: results and discussion. Section IV excavates the topic changes and future trends of evidential studies. The final section summarizes our research findings and draws our conclusion.

II. METHODOLOGY

This section presents the methods that we employed to conduct the study. First, the data source is described, followed by a detailed description of the research methods.

A. Data Source

This study adopted the Web of Science (WOS) core collection in the Web of Science database as its data source. We used the following search terms: 'evidentiality', 'evidential', and 'evidentials'. The document type was articles, excluding book reviews, book chapters, and conference brochures, among others. The retrieval period was set from

January 1st, 1991 to December 31st, 2021. After manually excluding irrelevant documents, we obtained a total of 474 valid results. The data were saved in plain text format for the bibliometric analysis.

B. Research Methods

The bibliometric methodology is an essential means of conducting a quantitative analysis of academic publications. It is often used in library and information science to describe publication patterns within a given field or body of literature. It substantially increases the quality of a literature review by allowing for the mapping of study domains and influential work without subjectivity, which is critical for providing holistic support to the literature review process (Ellegaard & Wallin, 2015).

The Bibliometrix software package, developed by Professor Massimo Aria in 2017 based on R, is used for whole-process bibliometric analysis and the visual display of documents from the Scopus and Web of Science databases, with which statistical analysis, data pre-processing, co-occurrence matrix construction, co-citation analysis, coupling analysis, co-word analysis, and cluster analysis are also available and achievable (Aria & Cuccurullo, 2017). *Biblioshiny* is a web-based app included in the Bibliometrix 3.0 package of R-studio that is designed for noncoders, providing means for complete scientometric and bibliometric analysis. It includes the analysis of sources, documents, authors, conceptual structure, social structure, and intellectual structure, and displays multiple results in the form of tables and graphs, which are not common in other software (Moral-Muñoz et al., 2020).

To explore the number of published papers, the most prolific authors, the most cited research articles, research institutions, international collaboration, and hot research topics in evidential studies, this study used *Biblioshiny* to conduct a spectral analysis of the research articles concerning evidentiality from the Web of Science database from 1991 to 2021. Furthermore, it tracked the research trends and core issues found in evidential studies.

III. RESULTS AND DISCUSSION

This section presents the result of evidential studies abroad by analyzing the following aspects in evidential studies: 1) stage characteristics of evidential publications from 1991 to 2021; 2) most influential contributors; 3) prolific journals; 4) main affiliations/institutions and research countries/regions; 5) highly cited papers; 6) hot research topics.

A. Stage Characteristics of Evidential Publications From 1991 to 2021

We explored the characteristics of evidential publications by tracking the annual distribution of publications, which reflects the overall situation by describing different stages of development.

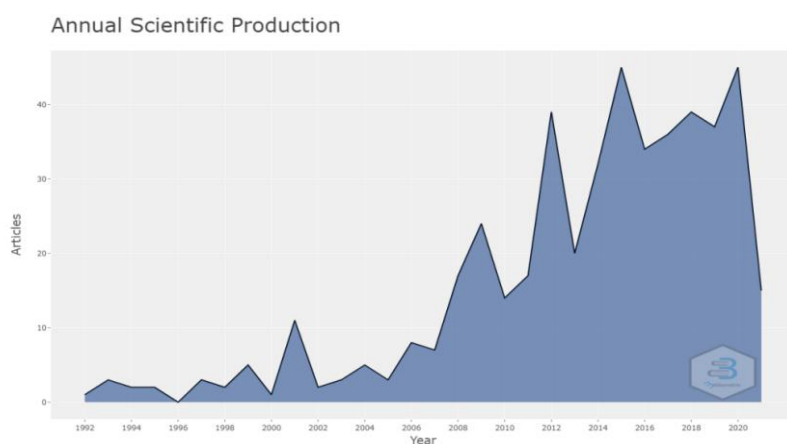


Figure 1. Annual Publications of Evidential Studies

As Figure 1 indicates, despite occasional fluctuations in the number of publications on evidentiality, the overall trend has generally grown with an annual growth rate of 10.15%. The growth can be roughly divided into the following three stages: (1) The first is the sprout stage (1991–2000), during which evidential publications were relatively sporadic, and there were no more than five papers published a year. Therefore, the study of evidentiality was in its infancy, indicating that evidentiality had not caught many scholars' attention. (2) The second stage was the exploration stage (2001–2007). In 2001, the *Journal of Pragmatics* published a series of articles on evidentiality, which confirmed the academic value of evidentiality research and stimulated the interest of linguists. From then on, research on evidentiality abroad began to heat up gradually. The overall number of documents published in this stage exhibited a slow growth trend, which represented a significant increase compared with the first stage. (3) The third stage was the rapid-development period (2008–2021). In 2008, evidentiality research entered a stage of rapid development, and the annual number of publications has remained above 30 since 2012, even reaching 45 in 2015 and 2020. The number of papers published in less than half a year in 2021 was 15, which indicates that evidentiality has remained a hot topic of foreign research in the last decade.

B. Most Influential Contributors in Evidential Studies

The main researchers do not only represent the development direction of a research field – they are also a key force in actively promoting it. Figure 2 presents the top 10 most influential contributors in evidential research:

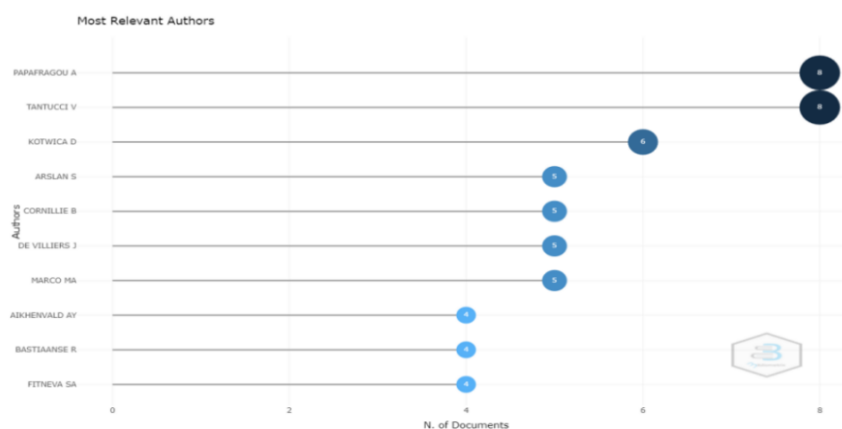


Figure 2. Top 10 Contributors in Evidential Studies

Anna Papafragou (Rank 1), a professor at the University of Delaware (America), focuses on the acquisition and development of Turkish children’s evidentiality from a cognitive perspective. In 2002, in exploring the relationship between mindreading and verbal communication, she highlighted that mindreading is heavily involved in vocabulary acquisition, including the learning of the meaning of evidentials (Papafragou, 2002). Papafragou et al. (2016) found that the semantics and pragmatics of evidential morphology in Turkish are not acquired until age 6 or 7, and that the conceptual understanding of information access develops before the corresponding concepts are linked to evidential morphemes in Turkish. In collaboration with Ünal (2016a, 2016b, 2018), she explored children’s learning process of evidentials and found that speaking a language that includes evidential resources ‘does not increase sensitivity to the distinction between perception and inference in event memory’, nor does it ease the difficulty in reasoning others’ evidentials. They also found that evidentiality is tightly relevant to, builds on, and reflects conceptual representations of sources of knowledge that are shared across speakers of different languages.

Vittorio Tantucci (Rank 2) is a senior lecturer in Linguistics and Chinese Linguistics at Lancaster University. His research on evidentiality began in 2013 and he proposed ‘interpersonal evidentiality’ based on the concept of ‘intersubjectivity’. By analysing the ‘V—过’ structure in Chinese, he highlighted that evidentiality is a nonmodal domain that primarily marks different types of ‘acquired knowledge’ rather than a ‘particular source of information’ (Tantucci, 2013). His subsequent research was based on this new concept; he discussed the relationships among epistemic modality, evidentiality, and factuality and developed a typology of constative speech acts (Tantucci, 2016).

Kotwica Dorota (Rank 3) is an important figure in evidential research from the past 10 years. She works as postdoctoral researcher at the University of Valencia (Spain), mainly discussing evidentiality and its role in the Spanish language. Dorota has investigated the evidential particles in Spanish scientific prose of the 18th, 19th, and early 20th centuries; evidential perception verbs in 19th-century scientific papers; as well as the expression of reportative evidentiality in Spanish scientific articles published between 1799 and 1920 (Kotwica, 2015, 2018a, 2018b). Moreover, she probed the relationship between evidentiality and mitigation (Kotwica, 2020).

Arslan and Bastiaanse are professors at the University of Groningen (Netherlands), who focus on how bilingual and monolingual Turkish speakers process grammatical evidentiality (Arslan et al., 2015, 2016, 2017; Arslan, 2020). Cornillie (2009) examined the relationship between evidentiality and epistemic modality, as well as the semantic and discourse functions of Spanish evidentials. De Villiers and Garfield (2009) have focused on evidentiality and language acquisition, specifically describing the nature of the evidential system in Tibetan and presenting the challenges that the system imposes on language acquisition. Marco is a professor at the University of Valencia, whose main lines of research are the pragmatic categories of mitigation and intensification as well as evidentiality (Marco, 2016, 2018, 2019). Regarding her study of evidentiality, she has mainly discussed Spanish evidentials as a mark of genre, as a mitigation of speaker commitment. Aikhenvald has investigated interactions and dependencies between evidentiality and other grammatical categories, such as mirativity, tense, and aspect. The studies of Fitneva concern evidentials in Bulgarian and their contribution to cognitive development.

C. Prolific Journals in Evidential Studies

Figure 3 presents the top 10 journals in which evidentiality research articles have been published. These are as follows: the *Journal of Pragmatics*, *Lingua*, *Discourse Studies*, *Pragmatics and Society*, *Linguistics*, *Círculo De Lingüística Aplicada a la Comunicación*, *Functions of Language*, *Intercultural Pragmatics*, *Linguistic Typology*, and *Studies in Language*. These journals are the core journals of linguistic research, which indicates that evidentiality is of high research value.

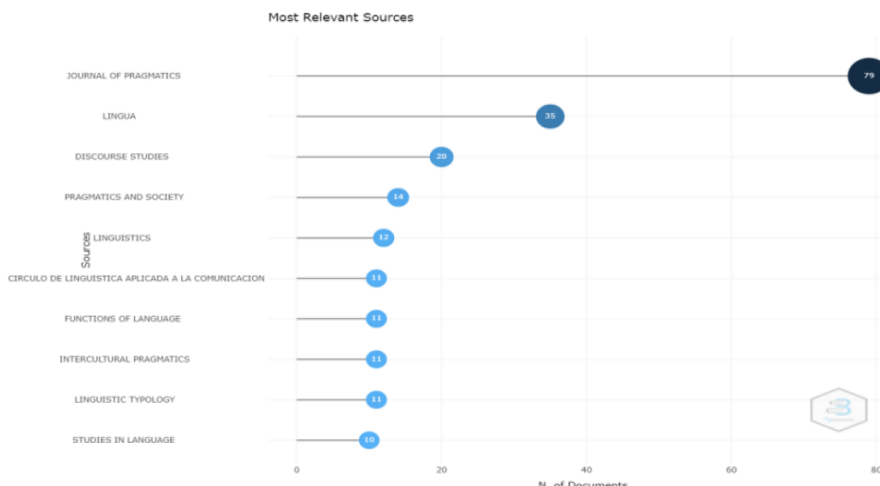


Figure 3. Top 10 Relevant Journals in the Field of Evidentiality

The *Journal of Pragmatics* is one of the core journals of linguistic research. In 2001, it published a series of evidentiality research articles, and since then it has been the main journal for evidential publications. *Lingua* and *Discourse Studies* are also the main journals that publish evidential studies. The first three journals alone account for one-third of the total number of publications, which represents a relatively concentrated territory of evidential research. In addition, it is worth mentioning that *Pragmatic and Society* published a special issue concerning evidentiality in 2013, thus becoming a main publication source of evidential research.

D. Main Affiliations/Institutions and Research Countries/Regions in Evidential Studies

Figure 4 presents the main affiliations and institutions of evidential studies. The University of Valencia ranks in first place and has provided a strong basis for research on evidentiality. This is because Kotwica (2015, 2018, 2020, 2021) and Marco (2016, 2018, 2019) are the main contributors of evidential studies, both of whom are prolific authors with an interest in Spanish evidentials.

The University of Groningen ranks second on the list of the most relevant affiliations. Arslan is the major researcher and has published five articles on evidentiality since 2011 focusing on grammatical evidentiality in Turkish. The other main affiliations include the University of Lancaster and the University of Delaware.

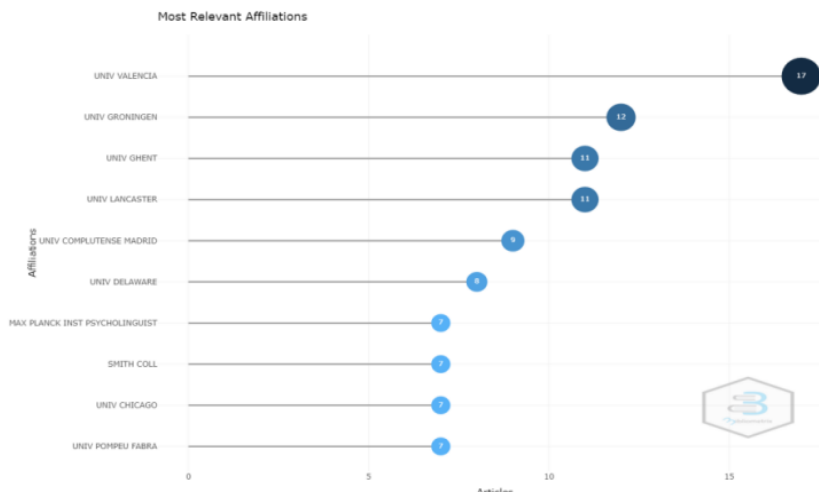


Figure 4. Top 10 Relevant Affiliations in the Field of Evidentiality

The number of publications from a country represents not only the amount of investment there in the particular subject but also the importance and influence of the country in this area to some extent. Figure 5 presents the top 10 most relevant countries in the field of evidentiality and Figure 6 shows us the collaboration network of countries in evidential studies.

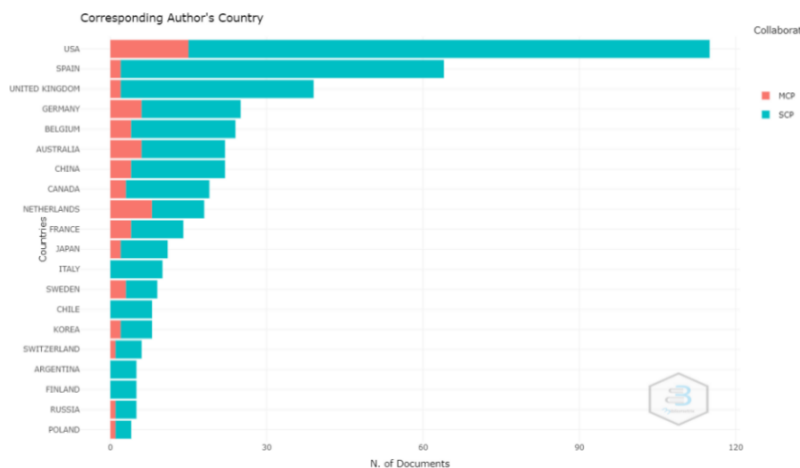


Figure 5. Top 10 Relevant Countries in the Field of Evidentiality

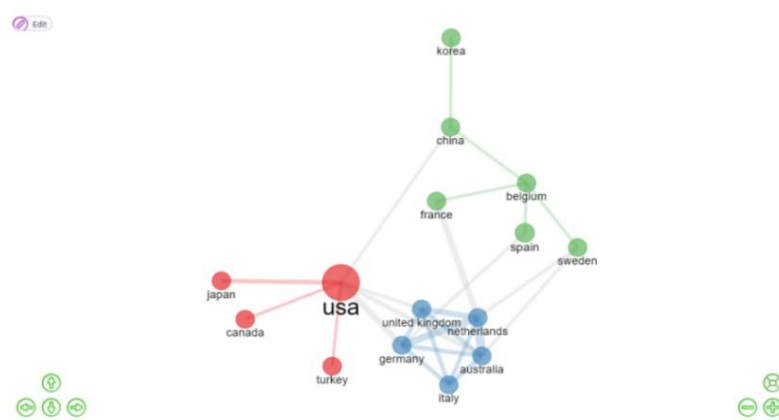


Figure 6. Collaboration Network of Countries

Figures 5 and 6 indicate that the United States and Spain are the two countries that have contributed the most to evidential research, with 115 and 64 publications, respectively, followed by the United Kingdom, Germany, Belgium, Australia, and China. From the node size and line thickness in the collaboration network map, one can intuitively see that three large national cooperation networks have been formed. Among them, scholars from Germany, the Netherlands, the United Kingdom, Italy, and Australia have cooperated closely, while the remaining countries have certain cooperative relations. For example, the United States has cooperative relations with Japan, Canada, and Turkey, but there is no cooperation among the three.

E. Highly Cited Papers

TABLE 1
TOP 10 MOST CITED ARTICLES

Paper title	Author	Journal	Publication year	Citations
The Mirative and Evidentiality	DeLancey, S	<i>Journal of Pragmatics</i>	2001	188
Toward a Pragmatics of Emotive Communication	Caffi, C	<i>Journal of Pragmatics</i>	1994	181
Subjectivity as an Evidential Dimension in Epistemic Modal Expressions	Janney, RW Nuyts, J	<i>Journal of Pragmatics</i>	2001	176
The Interface of Language and Theory of Mind	De Villiers, J	<i>Lingua</i>	2007	164
Introduction: Evidentiality and Related Notions	Dendale, P	<i>Journal of Pragmatics</i>	2001	157
Evidentiality and Epistemic modality: On the Close Relationship Between Two Different Categories	Tasmowski, L Cornillie, B	<i>Functions of Language</i>	2009	140
The Place of Evidentiality within the Universal Grammatical Space	Plungian, VA	<i>Journal of Pragmatics</i>	2001	138
Indexing stance: Reported Speech as an Interactional Evidential	Clift, R	<i>Journal of Sociolinguistics</i>	2006	119
Must ... Stay... Strong!	Von Fintel, K,	<i>Natural Language</i>	2010	115
Observations on Embedding Verbs, Evidentiality, and Presupposition	Gillies, A.S. Simons M	<i>Semantics</i> <i>Lingua</i>	2007	111

As Table 1 indicates, the paper titled *The mirative and evidentiality* is the most cited, in which DeLancey (2001)

discussed the relationship between evidentiality and mirativity, a concept he proposed in 1997. He concluded that mirativity must be recognized as a distinct semantic and grammatical category rather than part of the larger category of evidentiality based on evidence from Tibetan, Hare, and other languages. The study by Caffi and Janney (1994) is the second on the list of most highly cited articles, in which the authors proposed a brief analysis framework for studying emotive communication. They regarded evidentiality devices as one of the most ideationally oriented emotive categories. Nuyts (2001) analysed the role of subjectivity in epistemic modal expressions, interpreted it as a separate evidential qualification, and discussed its connections with some other notions of evidentiality. De Villiers (2007) explored the interface of language and Theory of Mind and held that evidential markers are one of the representations. Dendale and Tasmowski (2001) reviewed some major topics on evidentiality and its related notions – notably the semantic domain of evidentiality and its various subdomains as well as the relationship between the domain of evidentiality and the domain of modality, including their linguistic marking.

F. Hot Research Topics

Keywords represent a high generalisation of an author's article. By tracking the changes in keywords, one can grasp the main research issues in a certain research field. Table 2 lists the most frequent keywords in evidentiality studies. In addition to 'evidentiality' and 'evidential(s)', the keywords with the highest frequency include epistemic modality, modality, mirativity, grammaticalization, pragmatics, English, discourse, knowledge, and acquisition.

TABLE 2
MOST RELEVANT KEYWORDS IN THE FIELD OF EVIDENTIALITY

Words	Occurrences
Evidentiality	194
Epistemic modality	39
English	36
Discourse	31
Modality	28
Language	27
Evidential	24
Evidentials	23
Mirativity	18
Grammaticalization	17
Knowledge	15
Pragmatics	15
Semantics	14
Subjectivity	13
Acquisition	13
Information	12

Figure 7 presents a co-occurrence network of the keywords in evidential studies:

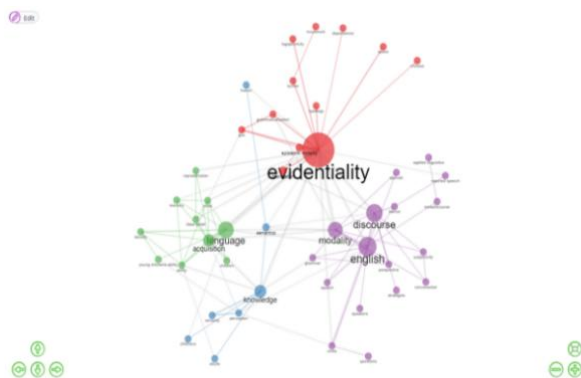


Figure 7. Co-Occurrence Network of Keywords

Based on Table 2 and Figure 7, we summarized the hot topics in evidential research as follows:

(a). *Theoretical Discussions on the Relations of Evidentiality and Other Linguistic Categories*

Since evidentiality emerged, it has been intertwined with other semantic notions, such as epistemic modality and mirativity. Many scholars have attempted to explain the terminological and conceptual confusion of evidentiality and some other notions.

The first notion is epistemic modality, which refers to the ‘evaluation of the chances that a certain hypothetical state of affairs under consideration (or some aspect of it) will occur, is occurring or has occurred in a possible world’ (Nuyts, 2001b, p. 21). As for the interaction of evidentiality and epistemic modality, attention has been focused on the question of whether one is part of the other, or whether the two are wholly separated domains. Some scholars such as Palmer and Franjzyngier have reckoned that evidentiality belongs to the category of epistemic modality. Palmer (2001) highlighted that epistemic qualification can be derived from the evidential marking by investigating evidentials in Tuyuca. Franjzyngier (1985, p. 250) believed that different methods of obtaining information will affect the degree of truth of the propositions, and that evidentiality and epistemic modality have a direct correspondence. For example, direct evidence is more credible than indirect evidence, and the degree of truth of propositions is higher. However, more scholars believe that evidentiality and epistemic modality belong to different language categories. De Haan (1999) believed that there are semantic differences between evidentiality and epistemic modality: evidentiality is the encoding of information sources from the perspective of the speaker, whereas epistemic modality is the commitment of the speaker to the information that he or she stated and the understanding of the listener. Cornelle (2009) also believed that the two notions are conceptually different because ‘evidentiality refers to the reasoning processes that lead to a proposition and epistemic modality evaluates the likelihood that this proposition is true’.

Subsequently, many scholars have also explored the relationship between evidentiality and epistemic modality in different languages through case studies. For example, Howard (2012) investigated evidentiality and epistemic modality in Quechua narrative discourse from the central highlands of Peru. Arslan (2020) studied the extent to which epistemic uncertainty influences the processing of grammatical evidentiality in Turkish native speakers and found a semantic overlap between epistemic modality and evidentiality. In sum, Western linguistics has largely seen evidentiality and epistemic modality as different semantic categories.

The second notion is mirativity. DeLancey (1997, 2001) defined mirativity as conveying new or unexpected information to the speaker, with overtones of surprise. Since the emergence of this concept, it has been closely related to evidentiality. In some languages such as Hare, morphemes that express indirect evidentiality can also be used to express mirativity. Therefore, whether it belongs to evidentiality or is an independent semantic category has always been controversial in academic circles. However, with the increase in the number of investigations of different language types (e.g., Napiorkowska, 2016), the view of mirativity as an independent semantic category seems more convincing, as represented by the research of Delancey (1997, 2001, 2012) and Aikhenvald (2012, 2015, 2018). Later, some researchers discussed this issue; for instance, Hengeveld and Olbertz (2012) highlighted that mirativity is an independent linguistic category and that mirativity should be defined in terms of newsworthiness for both the speaker and the addressee. Lau and Rooryck (2017, p. 1) also addressed the confusion of evidentiality and mirativity by proposing that ‘mirativity be redefined in terms of sudden discovery or realization’.

From the aforementioned discussion, one can see that a semantic intersection exists between evidentiality and many concepts; however, the mainstream view is that they are an independent language category, although this needs to be verified in more languages.

(b). Typological Studies of Evidentiality

The main concerns of typological studies on evidentiality (Nichols & Chafe, 1986; Willett, 1988) involve describing the evidential morphemes that express sources of knowledge, the evidential meanings that these morphemes hold, and their origins and paths of grammaticalisation (Mushin, 2013). Moreover, language typologists have devoted themselves to establishing a universal and flexible evidential classification that can be applied to the ever-changing language in the world (Plungian, 2001).

Thus, language typologists focus on different languages. Lazard (2001), Zheltova (2018), and Gonzalez-Vazquez (2021) have explored the evidential system in Southeast European and Middle Eastern languages, Latin, and Galician languages, respectively. Of course, in addition to analysing and describing the evidential resources in various languages based on the established framework, there are also scholars who are devoted to analysing the situation where evidential resources in certain languages are not applicable to the universal framework. Makartsev (2010) systematically described the evidence resources in Bulgarian and solved the problem of them not matching the general analysis framework. Thus, it can be seen that the diversification of language types provides much room for the expansion of evidential classification.

(c). Semantics Studies of Evidentiality

Linguistic typologists assume that every language contains evidential morphemes, but in fact they exist in only a quarter of the world’s languages. Therefore, it is necessary to explore the evidential resources in language from a semantic-functional perspective, which aims to discover the grammatical resources of evidentiality in different languages (e.g., auxiliary words, combined forms, special uses of tense marks, and structure) and their semantic scope of evidential meanings – that is, what constitutes the coding of the ‘source of knowledge’. As for the semantic scope of evidentiality, it seems that common understanding exists. Generally speaking, it can be divided into two camps: First, Willet (1988) and Aikhenvald (2004) are the main representatives of evidentiality in the narrow sense. They believe that evidentiality is an obligatory grammatical category that refers to the source of knowledge, mainly including ‘visual’, ‘hearsay’, and ‘inferential’. Second, evidentiality in the broad sense is mainly represented by Chafe (1986), who divides

evidentiality into different forms, such as grammar and vocabulary. He believes that evidentiality refers to the source of knowledge and the speaker's attitude towards the reliability of knowledge.

Subsequent research has also enriched the semantics of evidentiality. Tantucci (2013) investigated the Chinese 'v—过' structure in the Lancaster Corpus of Mandarin Chinese, demonstrated that this structure can be used as evidentials to express specific interpersonal meaning, and proposed the concept of 'interpersonal evidentiality'. Haßler (2015) studied the linguistic and nonverbal resources used to express the speaker's position in Romance languages and German, and Grzech (2021) studied the usage of a discourse marker =*mari*, attested in Upper Napo Kichwa (Quechuan, Ecuador). Torrent (2015) studied the use of some Spanish idioms and discussed the relationship between semantic pragmatic categories, such as evidentiality, epistemicity and intensification. The author demonstrated that evidentiality plays a crucial role in the lexicalisation and grammaticalisation of some idiomatic phraseological units. Pérez Blanco (2020) conducted a qualitative and quantitative analysis of the distribution and semantic value of adjective elements in three opinion genres (i.e., editorials, opinion columns, and review articles) in English and Spanish news discourse based on a self-built news discourse text corpus. The author believed that adjectives have the functions of evaluation and persuasion. Due to the diversity of languages in the world, much room remains for semantic research on evidentiality.

(d). *Discourse Studies of Evidentiality*

Studies of evidentiality from a discursive perspective have been one of the hotspots of evidential research and achieved fruitful results. A consensus exists that written and spoken discourse are the results of interactions between communicative participants. Evidentiality is one of linguistic resources used to express an author's stance and responsibility, and existing studies have covered different discourse domains and genres, such as academic discourse (Fetzer, 2014; Kotwica, 2018), news discourse (Bednarek, 2006; Schubert, 2015), political discourse such as election debates (Berlin & Prieto-Mendoza, 2014) and parliamentary debates (Estelles, 2018), literary discourse such as fairy tales (Florea, 2020) and narration telling (Mushin, 2001), as well as legal discourse (Greco, 2018). These studies have mostly focused on the speaker's authority over knowledge and the use of evidentials to make claims about whether one is or is not taking responsibility for the validity or factual content of what one says by analysing the forms and discursive functions of evidentiality. There are several foci in these studies: one is discourse markers or linguistic realisations of evidentiality in a certain genre and language (Cardona, 2018), while the other is the exploration of the relationship of evidentiality and other semantic notions in specific discourses, such as evidentiality and deixis (Mushin, 2000), epistemological positioning, and evidentiality (Bednarek, 2006).

(e). *Pragmatic Studies of Evidentiality*

As an indexical category, evidentiality should ultimately be approached as the actual deployment and practice of the forms under interactive circumstances (Hanks, 2012, p. 169). In 2012, a special issue of *Pragmatics and Society* titled 'Evidentiality in Interaction' was published, which proved the academic value of interactional evidentiality. According to Hanks, studying evidentials in interaction 'compels a broad perspective on evidentiality beyond discrete lexical and morphosyntactic categories to encompass evidential practices in general'. Attention to the social and cultural aspects of evidentials in use extends the range of evidentials.

Conversational analysis provides an interactive perspective for the study of evidentiality. Sidnell (2012, p. 295) stated the following: 'What conversation analysis (CA) adds to the work within linguistics on evidentiality is an explicit focus on interaction'. Language in nature is interactive and evidentials are one kind of language resource that speakers use to accomplish epistemic positioning in interaction. Kim (2005) examined Korean natural dialogue as the corpus to study how the speaker makes the choice of evidential marking or how they change evidentials according to the listener's response in interactive communication. The research revealed that in social interaction, the speaker's evidential selection is relative and interactive, rather than static and predetermined. Mushin (2013) investigated some languages, such as Quechua, Maka, Macedonian, Garrwa, and English to explore whether the evidential grammar in a specific language can affect its use. The author concluded that evidential functions and strategies are remarkably similar regardless of grammatical status.

Traditional theories of psycholinguistics hold that linguistic learners are equipped with concepts that can represent the world, and that 'the ability to map language to conceptual representations is the hallmark of language production and comprehension' (Levelt, 1989). Thus, some scholars have turned their attention to children's language acquisition, exploring its relationship with verbal resources. The key figure in this area is Papafragou, whose interest lies in the acquisition and development of Turkish children's evidentiality from a cognitive-pragmatic perspective, as discussed before. Her studies have revealed that delays exist in Turkish children's acquisition of evidentiality; that is, the development of evidential language of Turkish children presumably builds on the development of the corresponding information source concepts, and children may be delayed in understanding the correct meaning of evidentials used by others despite having underlying concepts and being able to use simple evidential morphemes (Papafragou, 2016).

Subjectivity and intersubjectivity are some of the latest hot topics in the study of evidentiality from a pragmatic perspective. Knowledge sharing is a critical factor in social communication and interaction, which can greatly affect the use of language resources by speakers and recipients. The definitions of the two notions are still divided, but the most influential have been proposed by Traugott (2010). From Traugott's perspective, the two notions are closely related, with intersubjectivity regarded as a further development of the latter. Nuyts (2012) regarded subjectivity and

intersubjectivity as two related but distinct notions, emphasizing the attitude of the speaker. Actually, the cognitive position held by the speaker/author during the discourse dynamic is a continuum that includes strong subjectivity, subjectivity, and intersubjectivity. Linguistic subjectivity indicates that the speaker’s/author’s view and evaluation of the proposition remains within the speaker’s/author’s subject domain, while intersubjectivity indicates that the speaker/author has turned his or her perspective to the listener/reader. Gonzalez (2014) explored the evidentiality and significance of the pragmatic markers *claro/clarand* and *(la)verdad/veritat* in Spanish and Catalan from the perspective of interaction, especially their intersubjectivity. However, generally speaking, relatively few studies have been conducted on evidentiality from this perspective, although a gradually increasing trend can be observed over recent years.

IV. TOPIC CHANGES AND FUTURE TRENDS OF EVIDENTIAL STUDIES

This section attempts to keep the track of the changes of the research topic over the last 30 years and to determine the future trends of evidential studies.

A. Topic Changes of Evidential Studies

To trace the changes in evidential studies over the past 30 years, we collated the high-frequency topics across three periods, as presented in Figure 8. As the figure indicates, the studies on these topics exhibit a significant upward trend in these three periods, which indicates that evidentiality-based research remains a hot issue with much to explore.

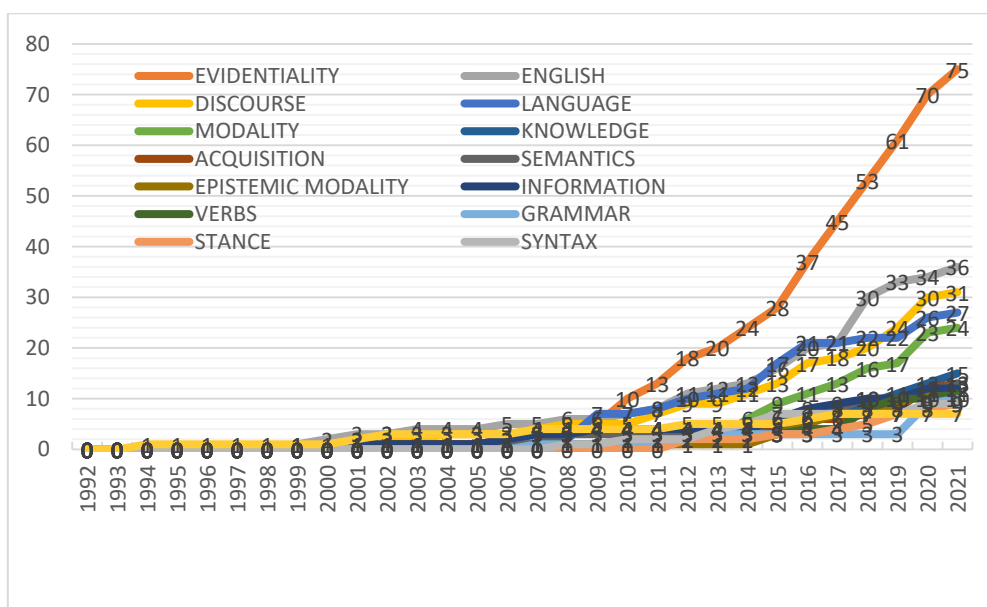


Figure 8. Trends of Hot Topics in the Three Research Periods

It is mentioned that 2008–2021 was a booming period in evidential research, accounting for approximately 80% of the total literature. To explore the research trend in this period in more detail, we roughly divided this period into four parts to explore the nuances of discursive research over these years. Table 3 presents some of the changes in the focus of evidential research in this area. The emerging topics are epistemic modality, knowledge, subjectivity, stance, and acquisition.

TABLE 3
TOP 10 TOPICS OF EACH PERIOD DURING 2008–2021

Rank	2008–2012	2013–2015	2016–2018	2019–2021
1	Evidentiality	Evidentiality	Evidentiality	Evidentiality
2	Language	Language	English	Discourse
3	English	Modality	Discourse	Modality
4	Discourse	Conversation	Modality	Grammar
5	Space	English	Grammaticalisation	Knowledge
6	Ability	Syntax	Language	Acquisition
7	Semantics	Discourse	Verbs	English
8	Syntax	Subjectivity	Semantics	Language
9	Modality	Tense	Knowledge	Epistemic modality
10	False belief	Epistemic modality	Epistemic modality	Stance

From Figure 8 and Table 3, it can be summarised that studies on evidentiality over the past 30 years mainly centered on certain classical research topics, such as evidentiality, discourse, modality, and English; however, there are still some emerging and flourishing topics, such as language acquisition, stance, epistemic modality, and mirativity. These new

emerging topics also exhibit a shift in evidential focus from traditional semantic or syntactic discussion to pragmatic and cognitive aspects.

B. Future Trends of Evidential Studies

A thematic map reveals the essential research themes in a particular domain. By setting the minimum frequency to five and the number of representative labels in each theme to three in Biblioshiny, we obtained a thematic map of evidential studies from 1991 to 2021 (Figure 9). There are two parameters in the thematic map – centrality, which measures the importance of the chosen theme, and density, which measures the development of the chosen theme. The themes in the lower-right part of the map are the basic themes, which represent the most fundamental research in this area. The motor themes appear in the upper-right part, which represent high density and high centrality (i.e., developed and essential).

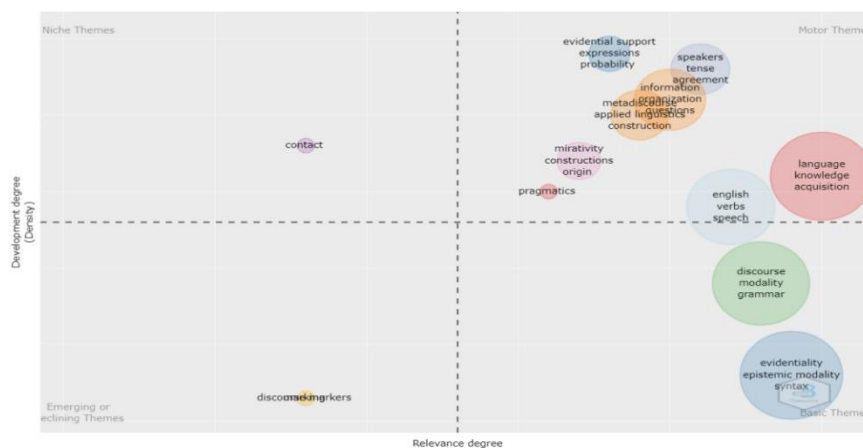


Figure 9. Thematic Map of Evidentiality

Figure 9 clearly depicts the basic and motor themes of evidentiality. By combining them with the figures and table in last part of topic change, we inferred that future studies of evidentiality may be conducted based on the following aspects:

First, the relationships between evidentiality and other linguistic categories continue to be the basic issues of evidential research, such as evidentiality's relationships with epistemic modality and mirativity. Semantic-conceptual categories cannot be independent of their linguistic manifestations; therefore, the grammatical category of one language does not perfectly coincide with the same category of another language. While a universality of concepts exists, which are common to the depiction of grammatical systems, the object of study for linguists is grammatical structure, and we should consider the universality of meaning as a multidimensional space from which each language mines the expression of its own linguistic categories. Therefore, more empirical research that adopts a functional perspective and explores evidentiality through its linguistic means in a variety of languages could provide more favourable and sufficient evidence for the relationships of these ambiguous terms.

Second, another promising line of evidentiality research would be from the perspective of interaction. Hanks (2014) clarified from the research methodology that the authentic use of messaging language should be examined in an interactive context, emphasizing the contextual meaning. This suggests that evidential research is beginning to focus on its social nature. Current research focuses on textual resources, such as metadiscourse and stance resources in different languages and genres. However, social communication is a multimodal system, and the gestures that accompany communication (e.g., directions, gaze, and eyebrow and head movements) can be used to express evidential meaning in some culturally diverse languages; thus, we think that future studies should consider the multimodal resources of evidentiality as well as combine this aspect with the linguistic dimension.

Third, in recent years, the study of discourse has crossed over into the field of cognition, covering two main topics – language acquisition as well as subjectivity and intersubjectivity. The first topic aims to investigate the effect of the acquisition of evidentiality on children's evidential reasoning. A conceptual structure refers to the organisation of the individual's knowledge of the world, while the linguistic system is one of the behavioural systems that manipulate this knowledge. Thus, how cognition and linguistic-semantic resources are connected should be precisely studied. As highlighted in the section of *Pragmatic Studies of Evidentiality*, research from a cognitive perspective has been fruitful; however, some concepts may not have corresponding and observable references in the world, and most evidentiality devices may encode abstract categories. These factors can influence the commanding process of evidentials. In addition, due to the diversity of the lexical structure in natural languages, cognition interfaces may also vary with language. The second topic is subjectivity and intersubjectivity, which is also a critical indicator in the formation of the semantic meanings of evidentials. Research has studied the subjectivity and intersubjectivity of argumentative and academic discourse. However, the following question remains: Is the relation of the two notions different in different languages

and genres? This is a topic for future evidential research.

Fourth, studies of evidentiality from a discourse perspective have been highly fruitful. The present issue of evidentiality in discourse provides functional analyses of the form and function of evidentiality across different discourse domains (political discourse, media discourse, academic discourse, legal discourse, and natural dialogue); however, contrastive studies of various discourse and genres are still scarce, which would be the one of the future research topics in evidential studies.

V. CONCLUSION

This study conducted a visualised analysis of evidential studies from Web of Science with the help of Biblioshiny. The findings indicated that (1) research on evidentiality has exhibited a steady upward trend; (2) a strong supporting relationship exists between the high yield authors and institutions, for the reason that authors drive the emergence of high-yield institutions; (3) the United States and Spain are the most influential countries; and (4) evidential research has rich perspectives and fruitful results in both theoretical discussion and empirical research. Theoretically, scholars have highlighted their concern regarding the terminological and conceptual confusion of evidentiality as well as some other notions, such as epistemic modality and mirativity. Empirically, the studies have often appeared divided into two camps: those whose focus is on the semantic, morphological, and typological description of grammaticalized morphological evidential systems, and those whose interest lies in pragmatic functions. Future studies of evidentiality should investigate evidentiality in various languages to establish a more inclusive typology, further enrich the semantics of evidentiality and focus on more diversified genres and broader social contexts.

Through the visual analysis of international literature, we clarified the knowledge structure of international evidentiality-related research to a certain extent. Admittedly, this study also has some limitations. The major limitation was that the relevant literature was not sufficiently comprehensive as we limited the literature to the Web of Science core collections; therefore, the relevant interpretation and analysis may not be of a sufficient depth. However, this study is still hoped to be of help for researchers who seek to track the trends and research directions of evidential studies.

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Linxiu Yang is currently a professor at the Foreign Languages School of Shanxi University, China. Her current research interests include functional linguistics and discourse analysis. She has published over 20 academic articles in the areas of discourse studies, functional linguistics and foreign language teaching and learning in *Journal of Pragmatics* and *Discourse Studies*.

Jin Han is currently a postgraduate student at the Foreign Languages School of Shanxi University, China. Her research interest is mainly functional linguistics and discourse analysis.