

Research on the Evaluation of the International Academic Discourse Power of Chinese English-Language Books Against the Background of Constructing an Independent Knowledge System*

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Abstract

[Purpose/Significance] Based on the construction of China's independent knowledge system, this study focuses on the evaluation of the international academic discourse power of Chinese English-language books, aiming to improve the evaluation theory and indicator system and enhance their communication effectiveness and discourse power. [Method/Process] First, drawing on Foucault's theory of discourse power, the theory of "cultural consciousness," and the theory of "holistic evaluation," the study explores the generative logic of the international academic discourse power of Chinese English-language books. Second, taking English-language books in the field of computer science as samples, it uses methods such as the BERT-LSTM model to collect evaluation indicator data and conduct descriptive statistical analysis. At the macro level, it compares the global publishing landscape of English-language books and summarizes the publishing characteristics of Chinese English-language books; at the micro level, it establishes an evaluation indicator system covering four core dimensions: academic influence, discourse perception, discourse dissemination, and discourse leadership. The CRITIC method and the projection pursuit classification model are used to conduct evaluations of single dimensions and comprehensive dimensions. Finally, correlation analysis is used to measure dimensional associations, and a convolutional neural network is used for cross-validation. [Results/Conclusions] Chinese English-language books have a certain communication foundation in the international academic field, but their social dissemination power is insufficient, and the distribution of influence is uneven. In the future, the international academic discourse power of Chinese English-language books should be enhanced from three aspects: the evaluation system, evaluation indicators, and communication channels.

Full Text

Research on the Evaluation of the International Academic Discourse Power of Chinese English-Language Books Against the Background of Constructing an Independent Knowledge System*

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Abstract: [Purpose/Significance] Based on the construction of China's independent knowledge system, this study focuses on evaluating the international academic discourse power of Chinese English-language books, with the aim of

improving evaluation theory and the indicator system and enhancing their communication effectiveness and discourse power. [Method/Process] First, on the basis of Foucault's theory of discourse power, the theory of "cultural consciousness," and the theory of "comprehensive evaluation," this study explores the generative logic of the international academic discourse power of Chinese English-language books. Second, taking English-language books in the field of computer science as the sample, it uses methods such as the BERT-LSTM model to collect evaluation-indicator data and conduct descriptive statistical analysis. At the macro level, it compares the global publishing landscape of English-language books and summarizes the publishing characteristics of Chinese English-language books; at the micro level, it establishes an evaluation indicator system covering four core dimensions: academic influence, discourse perception, discourse communication, and discourse leadership. The CRITIC method and the projection pursuit classification model are used to carry out evaluations of single dimensions and comprehensive dimensions. Finally, correlation analysis is used to measure the associations among dimensions, and a convolutional neural network is used for cross-validation. [Results/Conclusions] Chinese English-language books have a certain foundation for dissemination in the international academic field, but their social communication power is insufficient, and the distribution of their influence is uneven. In the future, the international academic discourse power of Chinese English-language books should be enhanced from three aspects: the evaluation system, evaluation indicators, and communication channels.

Keywords: Chinese English-language books; evaluation of international academic discourse power; generative logic; academic influence; discourse perception; discourse communication; discourse leadership

Classification Nos.: G237.5; G353.1

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0 Introduction

At present, China is undergoing changes unseen in a century. Enhancing international academic discourse power and promoting the rise of a major country and national rejuvenation have become core issues in China's strategic research agenda. In 2022, General Secretary Xi Jinping pointed out that accelerating the construction of philosophy and social sciences with Chinese characteristics ultimately means constructing China's independent knowledge system

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. In 2025, the *Recommendations of the CPC Central Committee on Formulating the Fifteenth Five-Year Plan for National Economic and Social Development* emphasized the need to accelerate the construction of an independent knowledge system for Chinese philosophy and social sciences

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An autonomous knowledge system is of great significance for consolidating the foundations of cultural subjectivity and supporting scientific and technological self-reliance, self-strengthening, and high-quality development [3]. Academic books are one of the principal forms of output in China’s philosophy and social sciences. In the global knowledge-production landscape dominated by English, Chinese English-language academic books (hereafter referred to as “Chinese English-language books”) serve both as a medium for mutual learning among civilizations and as an important form of externalized expression of China’s autonomous knowledge system; they are directly related to China’s discursive position in the international academic arena [4]. At present, Western evaluation systems represented by SSCI still occupy a nearly monopolistic position worldwide, causing Chinese academic research to fall into the dual predicament of “anxiety over international publication” and “aphasia on local issues.” Building an autonomous academic evaluation system with Chinese characteristics and an international perspective has become an important issue urgently needing advancement in the current academic field. At the same time, different forms of scholarly output differ significantly in the standards, indicators, and methods of academic evaluation, and the degree of difficulty in operationalization also varies; therefore, evaluation indicator systems are difficult to transfer directly [5]. Accordingly, establishing and improving a multidimensional, multi-element, and multi-level evaluation indicator system for Chinese English-language books is of great practical significance.

Therefore, against the background of constructing an autonomous knowledge system, this paper focuses on the evaluation of Chinese English-language books, analyzes the generative logic of their international academic discourse power, constructs a four-dimensional evaluation system encompassing academic influence, discourse perception, discourse dissemination, and discourse leadership, and conducts empirical testing. It aims to enrich evaluation theory at the theoretical level and to provide reference for Chinese scholarship to participate more effectively in global knowledge production.

1 Related Research

1.1 Research on China's International Academic Discourse Power

The concept of “discourse” originated in the field of Western linguistics. Michel Foucault pointed out that all human knowledge is acquired through discourse [6], and first proposed the concept of “discourse power” in *The Order of Discourse* [7]. Academic discourse power is a specific manifestation within the broader field of discourse power. Research by Chinese scholars has mainly focused on the connotations of discourse power, the construction of evaluation systems, and paths for improvement. For example: in terms of the static composition of academic discourse power, scholars have analyzed the basic connotations and formation process of academic discourse power, and discussed its constituent elements as well as the limitations of its evaluation [8]; starting from the dynamic changes in academic discourse power, an evaluation model of academic discourse power integrating a BP neural network has been constructed from the three dimensions of academic leadership, influence, and dissemination [9]; focusing on scholars' academic discourse power, evaluations have been conducted from four dimensions: academic productivity, dissemination, influence, and leadership [10]; oriented toward the construction of an autonomous knowledge system, the generative logic of the international academic discourse power of Chinese social sciences has been analyzed, four major evaluation dimensions have been constructed, and three major paths for improvement have been proposed [11].

1.2 Research on the International Academic Discourse Power of Chinese English-Language Books

At present, there is relatively little research in academia on the international academic discourse power of Chinese English-language books. Existing studies mainly evaluate book influence through traditional bibliometric indicators, Altmetrics indicators, and multidimensional indicators. For example: the applicability of library holdings in evaluating the influence of academic books has been discussed from three aspects—the generation mechanism of indicator data, data acquisition, and application [12]; an evaluation system for the academic influence of e-books has been constructed using mention-count indicators for books on social media platforms such as Facebook and X [13]; and multidimensional data have been integrated to construct an indicator system from three aspects—book acquisition, evaluation, and application—in order to evaluate the social influence of books [14]. In addition, with the rapid development of AI technology, natural language processing tools such as the BERT model and Word2vec have been widely applied in areas such as book-topic extraction and sentiment tendency analysis, providing technical support for the intelligent evaluation of book influence [15].

1.3 Research Ideas

In summary, Chinese academia has already achieved some results in research on China's international academic discourse power and in the evaluation of the influence of Chinese books.

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...results, but there remains considerable room for further expansion. First, existing studies are mostly evaluations of the influence of Chinese-language books, while studies evaluating the international academic discourse power of Chinese English-language books are rare. Second, there is a lack of exploration of the generative logic of the international academic discourse power of Chinese English-language books, which is not conducive to measuring and enhancing such discourse power. Third, with regard to the international academic discourse power of Chinese English-language books, few studies have systematically examined it by embedding it within the proposition of constructing an independent knowledge system.

On this basis, within the framework of constructing an independent knowledge system, this paper attempts to analyze the generative logic of the international academic discourse power of Chinese English-language books; reveal the connotations of the four core dimensions—academic influence, discourse perception, discourse dissemination, and discourse leadership; and, by using research methods such as the BERT-LSTM model, the CRITIC method, the projection pursuit classification model (PPC), and convolutional neural networks (CNN), construct an evaluation model and conduct an empirical study. Specifically, first, English-language books in the field of computer science are taken as the research sample, evaluation-index data are collected, and descriptive statistical analysis is performed. Second, at the macro level, the quantity and proportion of Chinese English-language books are compared horizontally with books from countries worldwide, and the annual publication volume of Chinese English-language books is analyzed longitudinally; at the micro level, single-dimensional and comprehensive evaluations of the international academic discourse power of Chinese English-language books are conducted. Finally, correlation analysis is used to measure the internal associations among the dimensions, and the CNN model is employed to cross-validate the evaluation results.

2 Analysis of Basic Issues and Construction of an Evaluation System

2.1 Conceptual Definition

2.1.1 International Academic Discourse Power Academic discourse power is the organic unity of academic discourse capability, academic discourse

authority, and academic discourse influence

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. Scholars have decomposed international academic discourse power into two dimensions—academic power and linguistic power—arguing that the two are like the two sides of a coin: interdependent and inseparable

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. This paper holds that international academic discourse power is, in essence, a manifestation of a country's comprehensive strength in the international academic field. It is grounded in academic influence, mediated by discourse perception and dissemination, and ultimately oriented toward discourse leadership. The organic integration of these four dimensions jointly determines a country's academic discourse position in the international academic field.

2.1.2 International Academic Discourse Power of Chinese English-Language Books Based on the above analysis of international academic discourse power, this paper defines the international academic discourse power of Chinese English-language books as follows: in the international academic field, Chinese English-language books, as discourse subjects, rely on the content carried by books to generate influence and perceptual impact on discourse objects; through the internationalized dissemination of the discourse subjects and the formal and informal dissemination by discourse objects, the leadership of Chinese English-language books is enhanced; ultimately, this strengthens the discourse position of Chinese English-language books in the international academic field, enables China's voice to be clearly expressed in the international academic community, allows Chinese experience to be interpreted in depth, and fully demonstrates Chinese characteristics.

2.2 Analysis of the Generative Logic of the International Academic Discourse Power of Chinese English-Language Books

Foucault first constructed the practical dimension of “knowledge—discourse—power,” arguing that if power relations lack the production, accumulation, circulation, and operation of discourse, they cannot establish themselves on their own

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. In Foucault's view, discourse is directed toward power, and discourse itself may even be a form of power—namely, the so-called “discourse power.” However, such discourse theories originating in the West have not yet been deeply integrated with China's independent knowledge system, and their manifestation of “independence” is therefore limited. In 1997, Fei Xiaotong first proposed the concept of “cultural self-awareness.” So-called “cultural self-awareness” refers to the systematic cognition and grasp of the origins, background, evolutionary

course, and essential connotations of one's own national culture. Cultural self-awareness is both a state and a process. It begins with self-cognition of one's own national culture and a deep understanding of other cultures; establishes its own coordinates within a multicultural field; and, through autonomous adaptation, proceeds to engage in equal dialogue and advantageous mutual...

as a complement [19]. Against the backdrop of globalization, Chinese scholarship should be grounded in its own traditional culture and practice, achieving a transformation from "cultural self-awareness" to "cultural confidence" and then to "cultural self-strengthening" [20]. The international academic discourse power of Chinese English-language books should conform to the basic connotations of international academic discourse power, and, even more importantly, should be rooted in China's autonomous knowledge system and incorporate distinctive Chinese characteristics.

On the basis of Foucault's theory of discourse power and the theory of "cultural self-awareness," this paper refines the generation of the international academic discourse power of Chinese English-language books into four stages: discourse production, discourse perception, discourse dissemination, and discourse guidance. At the same time, drawing on Braddock's 7W theory, it divides the international academic discourse power of Chinese English-language books into seven elements: discourse motive, discourse subject, discourse content, discourse object, discourse dissemination channels, discourse effect, and discourse environment. In combination with the theory of "all-round evaluation" [21], it analyzes the generative logic of the international academic discourse power of Chinese English-language books (Figure 1).

Translated text within Figure 1:

- **Generative logic of the international academic discourse power of Chinese English-language books**
 - **Discourse production**
 - * Subjectivity
 - * Autonomy
 - **Discourse perception**
 - * Consensus
 - * Interactivity
 - **Discourse dissemination**
 - * Cross-contextuality
 - * Digital-intelligent character
 - **Discourse guidance**
 - * Local rootedness
 - * Internationality
- Supported by Braddock's 7W theory and the theory of "all-round evaluation"; based on Foucault's theory of discourse power and the theory of "cultural self-awareness"; driven by the construction of the "three

major systems” ; guided by the construction of an autonomous knowledge system.

- **Discourse motive**

- Serve the construction of an autonomous knowledge system
- Enhance the international academic discourse power of Chinese English-language books

- **Academic influence**

- **Discourse subject**
 - * Book authors
 - * Related institutions
 - * Own influence
- **Discourse content**
 - * Concepts
 - * Propositions
 - * Terms
 - * Categories
 - * Content influence
- Form evaluation
- Content evaluation
- Trigger
- Feedback

- **Discourse guidance power**

- **Discourse effect**
 - * Academic guidance
 - * Social guidance
 - * Policy guidance
- Utility evaluation
- Promote

- **Discourse perception power**

- **Discourse object**
 - * Scholarly community
 - * General public
 - * Academic influence
 - * Social influence
- Promote

- **Discourse dissemination power**

- **Discourse dissemination channels**
 - * Traditional channels
 - Print book publishing
 - Print book distribution
 - ...

- * Emerging channels
 - Social media platforms
 - Academic exchange networks
- **Discourse environment**
 - Open science
 - Digital-intelligent era
- **International academic discourse power of Chinese English-language books**

Figure 1. Generative logic of the international academic discourse power of Chinese English-language books

2.2.1 Discourse Production Stage

The intrinsic characteristics and subjectivity of a knowledge system arise from the region, national conditions, and cultural context on which its generation depends. Therefore, at the stage of discourse production, it is necessary to start from Chinese issues and use appropriate concepts and theories to articulate Chinese practice, distill Chinese experience, and explain Chinese phenomena, so as to highlight the subjectivity and autonomy of Chinese culture and construct China's autonomous knowledge system. The two elements at this stage are discourse subject and discourse content. The discourse subjects of the international academic discourse power of Chinese English-language books include book authors, related institutions, and so forth; discourse content refers to concepts, propositions, terms, categories, and so on. According to the theory of "all-round evaluation," form evaluation or utility evaluation may be conducted for discourse subjects, while content evaluation or utility evaluation may be conducted for discourse content.

2.2.2 Discourse Perception Stage

The discourse objects of Chinese English-language books are not only recipients and feedback providers of discourse content, but also re-processors of discourse content. In discourse

In the discourse-perception stage, when China's English-language books enter the international academic field, the knowledge background and comprehension ability of the discourse objects themselves affect the reception effect. Different discourse objects may form certain shared understandings, while inevitably engaging in multiple forms of dialogue. In view of differences in the academic backgrounds of discourse objects, this paper subdivides the discourse objects of China's English-language books into two categories: the scholarly community and the general public. At this stage, the degree of discourse perception of China's English-language books among the scholarly community and the general public can be measured according to the utility evaluation in the theory of "total evaluation."

2.2.3 Discourse Dissemination Stage

Discourse dissemination capacity is key to answering the question of whether the international academic community can “hear China’ s voice.” Therefore, in the discourse dissemination stage, attention should be paid to discourse design for cross-context communication. At the same time, with the continuous iteration of digital-intelligent technologies and the rapid popularization of smart devices, discourse dissemination is no longer confined to traditional channels; rather, it has given rise to new forms and new models, displaying distinctive digital-intelligent characteristics. According to differences in channel attributes and operating mechanisms, the discourse dissemination channels of China’ s English-language books can be divided into two types: one is traditional channels represented by the publication and distribution of printed books; the other is emerging channels centered on new media such as social media platforms and academic exchange networks. The two form complementarity and synergy in terms of breadth and depth of dissemination. At this stage, the dissemination effects of the two types of channels can be systematically measured according to the utility evaluation in the theory of “total evaluation.”

2.2.4 Discourse Leadership Stage

The discourse-leading role generated by China’ s English-language books is not limited to China itself; more importantly, it should exert a strong leading effect internationally. This paper divides it into three categories: academic leadership, social leadership, and policy leadership. In addition, this stage involves the element of discourse effect, which this paper further subdivides into author reputation, user reposting, book ratings, policy citations, and news coverage, all of which jointly promote the generation of the discourse leadership of China’ s English-language books. The leading effects produced by discourse content can be measured according to the utility evaluation in the theory of “total evaluation.”

2.3 Construction of an Evaluation Indicator System for the International Academic Discursive Authority of China’ s English-Language Books

In the digital-intelligent era, AI technologies such as deep learning and neural networks are developing rapidly, and the open science movement continues to advance, making the collection of multi-source heterogeneous data more convenient and laying a data foundation for evaluating the international academic discursive authority of China’ s English-language books. At present, although there are already many studies on English-language books in China, there remains the problem of much discussion of what “ought to be” and little analysis of what “actually is,” and research on the evaluation of international academic discursive authority is relatively scarce. Based on an analysis of the generation logic of the international academic discursive authority of China’ s English-language

books, this paper constructs a corresponding evaluation indicator system (Figure 2). First, four first-level indicators of the evaluation system are established, namely academic influence, discourse perception, discourse dissemination, and discourse leadership. Second, each first-level indicator is further refined and decomposed to form second-level indicators, and descriptive statistical analysis is conducted on these second-level indicators. To eliminate the influence of dimensions, the original data are normalized, and the CRITIC method is adopted for objective weighting to determine the weights of each second-level indicator. On the basis of the weights of the second-level indicators, four single-dimensional evaluation models are constructed respectively and empirically tested. Then, the PPC model is used to calculate the weights of the first-level indicators. Finally, a comprehensive evaluation model is formed based on the weights of the first-level indicators, thereby realizing an overall evaluation of the international academic discursive authority of China's English-language books. To ensure the robustness of the evaluation results, this paper further uses correlation analysis and a CNN model to cross-validate the evaluation results.

2.3.1 Academic Influence Dimension and Evaluation Indicators

Influence refers to the ability to change the thoughts and behaviors of people or events, while academic influence manifests as the ability of academic achievements to change people or things in a certain way

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argue that the academic influence of books refers to reflecting social phenomena and problems through book content, revealing social values and laws, and thereby generating developmental momentum. This paper holds that the academic influence of China's English-language books includes discourse

...the influence of the subject itself and the content influence of the discourse object. To comprehensively and systematically reflect the academic influence of Chinese English-language books, this paper selects the number of citing documents, the number of holdings, and Mendeley mentions to characterize academic influence.

Figure 2 Indicator system for evaluating the international academic discourse power of Chinese English-language books

- **Top-level objective**
 - International academic discourse-power evaluation results for Chinese English-language books
 - Weighted summation
- **Model validation and analysis**
 - CNN model validation
 - Correlation analysis

- **First-level indicators**
 - Academic influence
 - Discourse perception
 - Discourse dissemination
 - Discourse leadership
- **Tracing and classification**
 - Citation-tracing classification model
- **Second-level indicators**
 - **Academic influence**
 - * Number of citing documents
 - * Number of holdings
 - * Mendeley mentions
 - **Discourse perception**
 - * WeChat reads
 - * WeChat likes
 - * Total Altmetrics mentions
 - * Number of book-review texts
 - * Book-review sentiment score
 - * Number of book reviewers
 - **Discourse dissemination**
 - * WeChat reposts
 - * Outlets mentions
 - * Blogs mentions
 - * X mentions
 - * Facebook mentions
 - * Wikipedia mentions
 - * Video mentions
 - * Bluesky mentions
 - * Patents mentions
 - **Discourse leadership**
 - * Author h-index
 - * Author i10-index
 - * Number of book editions
 - * Book-review rating
 - * Altmetric policy mentions
 - * News mentions
 - * Overton policy mentions
- **Methods**
 - Normalization and CRITIC weighting
 - BERT-LSTM model
 - Descriptive statistical analysis

2.3.2 Discourse Perception Dimension and Evaluation Indicators

Perception is an individual's comprehensive ability to receive, integrate, and understand external information through the sensory system. The discourse

perception of Chinese English-language books refers to the academic community's ability to understand and judge the knowledge, paradigms, and issues conveyed by Chinese English-language books. Specifically, it can be divided into academic perception and social perception: academic perception refers to the cognition and interpretation carried out by scholarly groups at the academic level; social perception refers to the emotional resonance and reproduction of meaning generated by the general public in the new-media sphere. Accordingly, this paper selects WeChat reads, WeChat likes, total Altmetric mentions, the number of book-review texts, book-review sentiment scores, and the number of book reviewers as indicators.

2.3.3 Discourse Dissemination Dimension and Evaluation Indicators

Discourse dissemination refers to the ability of discourse subjects to disseminate content in traditional-media and new-media discourse environments. From the perspective of existing research, scholars have mostly focused on pathways for enhancing dissemination capacity while neglecting the classification of dissemination channels. Accordingly, drawing on Mikhailov's scientific communication model, this paper divides the dissemination pathways of discourse on Chinese English-language books into two categories: "traditional channels" and "emerging channels." The two types complement each other, enabling the effective dissemination and broad diffusion of academic content. Given that traditional channels make it difficult to achieve complete collection of quantitative data, whereas emerging channels in the digital-intelligence environment are characterized by real-time availability, persistence, and global reach^[24], this paper focuses on the emerging-media sphere and selects WeChat reposts, Outlets mentions, X mentions, Facebook mentions, Wikipedia mentions, Video mentions, Bluesky mentions, Patents mentions, and Blogs mentions to characterize discourse dissemination capacity.

2.3.4 Discourse Leadership Dimension and Evaluation Indicators

Discourse leadership is the capacity of books to broadly disseminate the viewpoints, ideas, and other content they carry, stimulate public attention and interaction, and thus

and thereby realize its capacity to guide society. This paper holds that the discourse leadership of Chinese English-language books consists of three dimensions: academic leadership, social leadership, and policy leadership. Accordingly, the author h-index, author i10-index, number of book editions, News mentions, book review rating, Altmetric policy mentions, and Overton policy mentions are selected to characterize discourse leadership.

3 Empirical Test

3.1 Data Sources and Preprocessing

This paper selects Scopus as the source database. The search was conducted in June 2025; the publication years of the books were set from 2014 to 2025, and the subject area was limited to computer science. The specific search query was as follows: DOCTYPE (bk) AND (LIMIT-TO (SUBJAREA , “COMP”)) AND PUBYEAR>2014 AND PUBYEAR<2025. After conditional filtering and manual screening, a total of 14,827 English-language books were obtained.

First, with the aid of the Altmetric API, the books retrieved from the Scopus database were matched with books in the Altmetric.com database according to their DOI numbers, and Python was used for data crawling. The Altmetrics indicators mainly include 12 types: Mendeley mentions, total Altmetric mentions, Outlets mentions, X mentions, Facebook mentions, Wikipedia mentions, Video mentions, Bluesky mentions, Patents mentions, Blogs mentions, News mentions, and Altmetric policy mentions. Second, 11 indicators—including the number of library holdings, number of book editions, number of book review texts, number of book raters, book review rating, author h-index, author i10-index, WeChat reads, WeChat likes, WeChat reposts, and Overton policy mentions—were crawled from the WorldCat database, Amazon platform, Google Scholar database, WeChat platform, and Overton database. Finally, based on the coverage of the indicators, 312 English-language books were selected as the research sample.

At the same time, user reviews of these 312 English-language books were crawled from the Amazon platform, yielding a total of 2,136 reviews. They were randomly divided into a training set, validation set, and test set at a ratio of 7:2:1, and some of the reviews were manually annotated for sentiment. The reviews were classified into three categories—positive, neutral, and negative—and assigned scores of 2, 1, and 0, respectively. Among text sentiment analysis tools, the BERT pretrained model can provide deep word-vector representations for review data, while LSTM can capture sentiment tendencies by incorporating contextual information. The BERT-LSTM model can fully leverage the complementary advantages of the two, and its sentiment classification performance is significantly superior to that of a single convolutional neural network or recurrent neural network [25]. Therefore, this paper adopts the BERT-LSTM model, setting the batch size to 8, the maximum sequence length to 256, and the number of training epochs to 5, ultimately obtaining the sentiment score for each review.

On this basis, to ensure the robustness of the evaluation results and eliminate dimensional bias caused by differences in measurement units, this paper adopts range standardization to normalize the indicator data to the [0, 1] interval, converting all indicators into dimensionless pure numerical values and laying a data foundation for the subsequent comprehensive evaluation of international academic discourse power.

In addition, to enhance the credibility of the evaluation results, corresponding weights must be assigned to indicators at all levels. Traditional weighting methods often fail when data are high-dimensional or when complex nonlinear relationships exist among indicators. The PPC model projects high-dimensional data into a low-dimensional subspace through projection pursuit technology and maximizes interclass separability along the optimal projection direction, thereby effectively capturing the latent patterns and internal structures of high-dimensional data; it is thus more suitable for complex system evaluation [26]. Therefore, this paper uses the CRITIC method to determine the weights of secondary indicators and then takes these as inputs, using the PPC model to assign weights to first-level indicators.

3.2 Descriptive Statistical Analysis

A descriptive statistical analysis was conducted on the evaluation indicators of the international academic discourse power of Chinese English-language books; the results are shown in Table 1. The analysis shows that, in terms of central tendency, the mean values of WeChat reads, Mendeley mentions, the author i10-index, and the number of citing documents are relatively high. By contrast, the quartiles and medians of new-media indicators such as Facebook mentions, Video mentions, Bluesky mentions, and Patents mentions are all 0, and their means are close to 0, indicating that Chinese English-language books have a certain foundation for scholarly dissemination, but their exposure on mainstream international social media is low. The mean numbers of book raters and book-review texts are 48.99 and 9.51, respectively, reflecting a low level of active evaluative participation by discourse carriers. The mean book-review sentiment score is 1.43, indicating that the overall evaluations are relatively positive. In terms of dispersion, the standard deviations of WeChat reads and Mendeley mentions are relatively large, reflecting significant differences in the dissemination effects of different books; the standard deviation of the book-review sentiment score is relatively small, indicating relative concentration and stability. In terms of distributional form, the skewness of the vast majority of indicators is far greater than 0 and the kurtosis is relatively high, showing a right-skewed distribution and an obvious “head effect”: a small number of Chinese English-language books perform prominently and occupy the main academic resources and dissemination traffic, while most are in a “long-tail weak” position.

Table 1 Descriptive statistical analysis of evaluation indicators for the international academic discourse power of Chinese English-language books

Indicator	Central tendency:			Dispersion:			Distribution		
	Central tendency: Lower quartile	Central tendency: Median	Central tendency: Upper quartile	Central tendency: Mean	Dispersion: Minimum	Dispersion: Maximum	Dispersion: Standard deviation	Distribution shape: Skewness	Distribution shape: Kurtosis
Number of citing documents	5	17	64	88.96	0	2261	249.25	5.78	40.15
Number of holdings	9	19	44	37.64	1	826	60.26	7.88	96.51
Mendeley mentions	21.5	58.5	152	163.06	0	4449	392.68	6.68	59.57
WeChat reads	16.5	266.5	1142	1237.09	0.01	26171	2970.53	5.43	38.88
WeChat likes	0.01	2	8	11.24	0	666	43.61	11.72	167.76
Total Alt-metric mentions	2.72	5.1	18.41	22.13	0.25	405.9	47.82	4.57	28.66
Number of book raters	3	7	22	48.99	1	4987	294.18	15.36	256.37
Number of book-review texts	1	2	6	9.51	1	679	41.29	14.08	224.12

Indicator	Central tendency:			Dispersion:			Distribution		
	Central tendency: Lower quartile	Central tendency: Median	Central tendency: Upper quartile	Central tendency: Mean	Dispersion: Minimum	Dispersion: Maximum	Dispersion: Standard deviation	Distribution shape: Skewness	Distribution shape: Kurtosis
Book-review sentiment score	1	1.5	2	1.43	0	2	0.59	-1.01	3.27
Weibo reposts	0.01	1	11	37.95	0	2862	187.83	12.09	172.35
Outlets mentions	0	0	0	0.22	0	8	0.74	5.52	45.64
X mentions	1	3	11.5	17.28	0	485	51.23	6.56	53.13
Blogs mentions	0	0	0	0.22	0	8	0.73	5.73	46.52
Facebook mentions	0	0	0	0.36	0	13	0.92	7.91	97.56
Wikipedia mentions	0	0	1	1.35	0	31	3.49	4.97	33.09
Video mentions	0	0	0	0.04	0	2	0.22	5.24	32.48
Bluesky mentions	0	0	0	0.07	0	6	0.48	9.71	109.53
Patents mentions	0	0	0	0.20	0	12	0.97	8.04	82.64
Author h-index	5.5	22	47	31.91	0.01	184	33.769	1.64	6.47

Indicator	Central ten- dency: Lower quar- tile	Central ten- dency: Me- dian	Central ten- dency: Up- per quar- tile	Central ten- dency: Mean	Dispersion: Mini- mum	Dispersion: Maxi- mum	Dispersion: Stan- dard devi- ation	Distribution shape: Skew- ness	Distribution shape: Kur- tosis
Author i10-index	3.5	36.5	146.5	101.98	0	1214	165.249	3.33	17.57
Number of book editions	1	1	1	1.27	1	11	1.017	6.06	46.73

Continued table

Indicator	Concentration trend: Lower quar- tile	Concentration trend: Me- dian	Concentration trend: Up- per quar- tile	Concentration trend: Mean	Dispersion: Mini- mum	Dispersion: Maxi- mum	Dispersion: Stan- dard devi- ation	Distribution pat- tern: Skew- ness	Distribution pat- tern: Kur- tosis
Book re-view rating	3.9	4.4	4.7	4.18	1	5	0.805	-1.98	7.94
Altmetric policy mentions	0	0	0	0.08	0	4	0.35	6.34	56.51
News mentions	0	0	0	0.80	0	31	3.33	6.38	48.31
Overton policy mentions	0	0	0	0.19	0	3	0.61	3.35	13.89

3.3 Macro-Level Analysis

This paper counted the English-language books in the field of computer science indexed in the Scopus database from 2014 to 2025 across 142 countries and regions, totaling 14,827 titles. Among them, the number and share of English-language books for the top 11 countries are shown in Figure 3, while the number of English-language books published by China is shown in Table 2. As can be seen from Figure 3, the United States, India, and the United Kingdom rank as the top three globally in terms of the number of English-language books. By comparison, China ranks fifth in the world, and there remains a certain gap between China and the United States in terms of scale. This reflects the advantage of native English-speaking countries as well as the inclusion preferences of international databases. Therefore, to further promote the international dissemination of Chinese English-language books, it is necessary to increase both the scale and quality of the translation of high-quality books into foreign languages, thereby enhancing the breadth and depth of Chinese English-language books “going global.”

Figure 3. Number and share of English-language books in the top 11 countries in the field of computer science in the Scopus database, 2014–2025

Top panel –Number of English-language books: United States 4,287; India 2,482; United Kingdom 1,348; Germany 923; China 920; Australia 582; Canada 532; France 483; Italy 425; Spain 306; Japan 230.

Horizontal axis: Number of English-language books (volumes).

Bottom panel –Share of books: United States 28.71%; India 16.75%; United Kingdom 9.12%; Germany 6.26%; China 6.24%; Australia 3.92%; Canada 3.67%; France 3.23%; Italy 2.85%; Spain 2.11%; Japan 1.56%.

Horizontal axis: Share of books (%).

Note: The search was conducted in June 2025.

Table 2 Number of China’s English-Language Books in Computer Science Indexed in the Scopus Database (2014–2025)

Year	Number published (books)	Year	Number published (books)
2014	28	2020	72
2015	51	2021	78
2016	55	2022	96
2017	56	2023	142
2018	59	2024	163
2019	65	2025	181

Note: The search was conducted in April 2026.

As shown in Table 2, the number of China's English-language books in computer science increased from 28 in 2014 to 181 in 2025, a nearly 5.5-fold increase over 11 years. Overall, the trend is one of continuous growth, indicating rising demand for English-language publishing and strengthened academic capacity in this field in China. According to the growth characteristics, this process can be divided into three stages: from 2014 to 2021, the average annual increase was 6.25 books, showing a small base and slow, stable growth; from 2022 to 2023, the number increased by 46 books in one year, with a growth rate of 47.9%, indicating a sharp acceleration, which is closely related to the rapid development of China's core computer-related industries such as artificial intelligence and chips; from 2023 to 2025, the average annual increase was 19.5 books. Although the growth rate slowed somewhat, it remained strong, suggesting that innovation breakthroughs in China's computer science field are still continuing.

3.4 Micro-Level Evaluation

A comparison of the number and share of China's English-language books in computer science at the macro level alone makes it difficult to truly assess their international academic discourse power. Therefore, this paper conducts a micro-level evaluation based on the evaluation system constructed above. First, the collected secondary-indicator data were normalized. With the aid of SPSSAU software, the CRITIC method was used to calculate the weights of the secondary indicators under each dimension, and the evaluation model for each dimension was thereby constructed. The details are as follows:

$$F_{\text{impact}} = 0.375412 \times \text{number of citing documents} + 0.330346 \times \text{number of library holdings} + 0.294242 \times \text{Mendeley}$$

$$F_{\text{perception}} = 0.140957 \times \text{WeChat reads} + 0.075071 \times \text{WeChat likes} + 0.151712 \times \text{total Altmetric mentions} + 0.095702$$

$$F_{\text{dissemination}} = 0.088213 \times \text{WeChat reposts} + 0.105516 \times \text{Outlets mentions} + 0.129834 \times \text{X mentions} + 0.089721 \\ + 0.149262 \times \text{Wikipedia mentions} + 0.139175 \times \text{Video mentions} + 0.094256 \times \text{Bluesky mentions}$$

$$F_{\text{leadership}} = 0.163081 \times \text{author h-index} + 0.123129 \times \text{author i10-index} + 0.110757 \times \text{number of book editions} + \\ + 20.7242 \times \text{book-review rating} + 0.092936 \times \text{Altmetric policy mentions} + 0.199187 \times \text{Overton policy mentions}$$

Here, F_{impact} , $F_{\text{perception}}$, $F_{\text{dissemination}}$, and $F_{\text{leadership}}$ represent the quantitative scores for the respective dimensions. Owing to space limitations, this paper presents only the quantitative scores for each dimension for selected highly cited English-language books, as shown in Table 3.

Table 3 Quantitative Scores by Dimension for Selected China' s English-Language Books

Book title	F_{impact}	$F_{\text{perception}}$	$F_{\text{dissemination}}$	$F_{\text{leadership}}$
Process mining: Data science in action	1	0.584	0.172	1

Continued table

Book title	$F_{\text{influence}}$	$F_{\text{perception}}$	$F_{\text{dissemination}}$	$F_{\text{leadership}}$
Statistical learning with sparsity: The lasso and generalizations	0.854	0.794	0.022	0.973
Springer handbook of robotics	0.970	0.533	1	0.486
Data-driven science and engineering: Machine learning, dynamical systems, and control	0.652	0.480	0.054	0.610
Introduction to software testing	0.438	0.286	0.019	0.369

Book title	$F_{\text{influence}}$	$F_{\text{perception}}$	$F_{\text{dissemination}}$	$F_{\text{leadership}}$
Sentiment analysis: Mining opinions, senti-ments, and emotions	0.539	0.595	0.101	0.208
Efficient learning machines: Theories, concepts, and appli-cations for engineers and system designers	0.511	0.612	0.067	0.366
Time-frequency signal analysis and processing: A compre-hensive reference	0.243	0.632	0.023	0.505

The analysis finds that, among the 312 Chinese English-language books, the mean values of $F_{\text{influence}}$, $F_{\text{perception}}$, $F_{\text{dissemination}}$, and $F_{\text{leadership}}$ are 0.083, 0.475, 0.072, and 0.373, respectively. Among them, the mean values of $F_{\text{perception}}$ and $F_{\text{leadership}}$ are relatively high, indicating that Chinese English-language books in the field of computer science receive a relatively high level of attention within the academic community, enjoy relatively high recognition, are well accepted by audiences, and have already begun to exert a guiding role. By contrast, the mean values of $F_{\text{dissemination}}$ and $F_{\text{influence}}$ are relatively low, revealing deficiencies in the diversity of international dissemination channels, promotional intensity, and coverage, which leads to weak outcomes in academic citation and application transformation for these books; there exists a gap in which they are “seen” but have not yet been “used.” In addition, according to Table 3, the selected representative English-language books show relatively strong overall performance in $F_{\text{influence}}$ and $F_{\text{leadership}}$, with score ranges of

0.243-1 and 0.208-1, respectively; moreover, most samples score higher than the overall mean, reflecting the advantages of highly cited English-language books in terms of academic influence and leadership.

In the evaluation models for each dimension, the coefficient matrix represents the weights of the secondary indicators. After determining the weights of the secondary indicators, the PPC model is then used to determine the weights of the primary indicators, thereby constructing a comprehensive evaluation model for the international academic discourse power of English-language books. The model is as follows:

$$F_{\text{discourse power}} = 0.295128 \times F_{\text{influence}} + 0.208176 \times F_{\text{perception}} + 0.286664 \times F_{\text{dissemination}} + 0.210032 \times F_{\text{leadership}}$$

Here, $F_{\text{discourse power}}$ represents the score for the international academic discourse power of an English-language book, and 0.295128, 0.208176, 0.286664, and 0.210032 correspond respectively to the weight coefficients of each dimension. Based on this evaluation model, the comprehensive scores for the international academic discourse power of each English-language book are obtained (Table 4).

Table 4 Scores for the international academic discourse power of English-language books in the field of computer science (top 50)

Book title	Score	Rank	Country
Springer handbook of robotics	0.786	1	Italy
Storytelling with data: A data visualization guide for business professionals	0.747	2	United States
Process mining: Data science in action	0.676	3	Netherlands
.....			
Handbook of mathematical geosciences: Fifty years of IAMG	0.434	9	China

Book title	Score	Rank	Country
Quantum finance: Intelligent forecast and trading systems	0.397	15	China
Introduction to multicopter design and control	0.385	16	China
Representation learning for natural language processing	0.328	26	China

Continued table

Book Title	Score	Rank	Country
AI in learning: Designing the future	0.324	28	China
Fundamentals of complex networks: Models, structures and dynamics	0.313	34	China
The smart city in a digital world	0.289	46	China
Transfer learning	0.280	50	China

As can be seen from Table 4, the English-language books with the top three scores for international academic discourse power are from Italy, the United States, and the Netherlands. Among the top 50 books by score, China occupies eight places, ranking 9th, 15th, 16th, 26th, 28th, 34th, 46th, and 50th, respectively, spanning the upper-middle to lower-middle range. This indicates that Chinese English-language books already possess a certain degree of international academic discourse power. However, Chinese English-language books still face the problem of “an advantage in quantity but a gap in quality.” The

top three English-language books in terms of international academic discourse power all come from developed countries in Europe and North America, while China's highest-ranking book is only in 9th place. This shows that China still lags behind European and American countries to some extent in terms of top-tier global academic influence and the creation of classic works. Further analysis shows that the leading English-language books are mostly centered on basic theory and interdisciplinary methodology. By contrast, the Chinese English-language books included in the top 50 are more concentrated in artificial intelligence, interdisciplinary fields, and engineering applications, with a bias toward technical application. On the one hand, this reflects China's international competitiveness in related fields; on the other hand, it also shows that China lacks works at the level of basic theoretical systems and methodology, and that its original theoretical systems need to be further deepened and strengthened.

3.5 Validation of Evaluation Results

3.5.1 Correlation Analysis To further examine the rationality and accuracy of the evaluation system for the international academic discourse power of Chinese English-language books constructed above, this paper uses correlation analysis to measure the internal associations between the four dimensions and the international academic discourse-power score, and presents the results in the form of a heat map (Figure 4). As can be seen from Figure 4, the correlation coefficients between the international academic discourse-power score of books and academic influence, discourse perception, discourse dissemination, and discourse leadership are 0.72, 0.65, 0.66, and 0.65, respectively; all absolute values are above 0.65, indicating a strong level of correlation, which shows

Visible labels and annotations in the heat map: the axes list Academic Influence, Discourse Perception, Discourse Dissemination, Discourse Leadership, and Book Discourse-Power Score; the color bar is labeled Correlation Coefficient, ranging from -1.00 to 1.00 . Cell annotations by row are: Academic Influence— 1.00 , 0.17 , 0.41 , 0.36 , 0.72 ; Discourse Perception— 0.17 , 1.00 , 0.17 , 0.34 , 0.65 ; Discourse Dissemination— 0.41 , 0.17 , 1.00 , 0.17 , 0.66 ; Discourse Leadership— 0.36 , 0.34 , 0.17 , 1.00 , 0.67 ; Book Discourse-Power Score— 0.72 , 0.65 , 0.66 , 0.65 , 1.00 .

Figure 4. Heat Map of Indicator Correlations (Absolute Values)

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These four dimensions together constitute effective support for the score of the international academic discourse power of books. The absolute values of the correlation coefficients among the four dimensions range from 0.17 to 0.41 , indicating weak or moderately weak correlations. This shows that the dimensions are highly distinguishable and that there is no serious multicollinearity, making them suitable for constructing an independent evaluation system; it also

corroborates the rationality of the dimensional division of the international academic discourse power of China's English-language books in this paper. Among them, the score for the international academic discourse power of books shows the most prominent correlations with academic influence (0.72) and discourse dissemination power (0.66), which corresponds well to the higher weights assigned to academic influence and discourse dissemination power during model construction, further confirming the rationality of the indicator settings for the four dimensions.

3.5.2 Evaluation Result Verification

As a classic architecture of deep learning, CNN can significantly reduce network complexity, compress the scale of parameters, and, to a certain extent, achieve robust invariance to translation, distortion, and scaling. It also has fault tolerance and trainability, providing a robust tool for validating model effectiveness [27]. The evaluation system constructed in this paper contains four first-level indicators and 25 second-level indicators; its multidimensional and nonlinear data structure places higher demands on the reliability of the evaluation model. Therefore, based on the CNN model, this paper systematically tests the feasibility and effectiveness of the system through five-fold cross-validation, thereby ensuring the scientific validity and reliability of the evaluation results.

In the model-training stage, this paper adopts a five-fold cross-validation strategy to efficiently evaluate 312 samples. Specifically, the data are divided into a training set and a test set at a ratio of 8:2. In each fold, four groups (248 records) are used as the training set and one group (64 records) as the test set, completing five rounds of iteration in total. The shape of the input data is (248, 4, 1), where 248 is the sample size, 4 corresponds to the four major feature dimensions of academic influence, discourse perception power, discourse dissemination power, and discourse leadership power, and 1 is the number of channels. During training, samples are input in groups, with 16 cases in each group, and the weights are updated sequentially. The system monitors the validation error in real time; if the error does not decrease after 15 consecutive traversals of all samples, the iteration ends automatically. After each fold of training, the model simultaneously outputs the mean squared error (MSE) and mean absolute error (MAE) of the training set and the test set, which are used to monitor fitting and generalization performance. Finally, a fitted curve of the predicted values and actual values for the international academic discourse power of China's English-language books is drawn (Figure 5).

Plot title: Comparison of Predicted Values and Actual Values [MAE = 0.0117, $R^2 = 0.9641$]

Legend: Predicted value; Actual value

Y-axis: Value

X-axis: Sample index

Figure 5. Fitted Curve of Predicted Values-Actual Values

As can be seen from Figure 5, the model's mean absolute error (MAE) is only 0.0117, indicating extremely high prediction accuracy; the coefficient of determination (R^2) reaches 0.9641, suggesting that the model can explain approximately 96.4% of the variance in the target variable, and that the predicted values are highly consistent with the actual values. The mutual validation of the two indicates that the model's prediction errors are random and small, with no systematic problems, and that it has excellent fitting performance, thereby verifying the feasibility and effectiveness of the evaluation model.

4 Conclusion

The main contributions of this paper are as follows. First, it adopts a distinctive research perspective: from the standpoint of building an independent knowledge system, it evaluates the international academic discourse authority of Chinese English-language books. Second, in terms of theory, by analyzing the generative logic of the international academic discourse authority of Chinese English-language books and the core connotations of the four dimensions—"academic influence, discourse perception, discourse dissemination, and discourse leadership"—it constructs a comprehensive evaluation system. Third, in terms of method, taking English-language books in the field of computer science as the research sample, it applies multiple methods such as the BERT-LSTM model to collect multi-source heterogeneous evaluation-index data, conducts normalization processing and descriptive statistical analysis, and incorporates these into the process of constructing the evaluation model.

The analysis finds that Chinese English-language books have a certain foundation for dissemination in the international academic arena, but their social dissemination capacity is insufficient, and the distribution of influence is uneven. A small number of Chinese English-language books perform prominently and exhibit an obvious "head effect," but most remain at a relatively low level, showing a state of "long-tail weakness"; overall, they still face significant barriers to dissemination and a lack of attention.

In summary, this paper proposes the following recommendations for enhancing the international academic discourse authority of Chinese English-language books. First, the formulation of evaluation systems should abandon drawbacks such as "judging papers by journals" and "putting performance above all else," and actively carry out innovative explorations such as "natural evaluation," "judging scholarship by its content," and "originality-oriented evaluation." Second, when selecting evaluation indicators, attention should be paid to the limitations of traditional quantitative indicators and their insufficient local adaptability, and distinctive evaluation indicators that reflect Chinese characteristics, autonomy, and original value should be incorporated. Finally, diversified and multidimensional channels for international dissemination should be built; international mainstream publishing platforms, open-access channels, and social media should be fully utilized; and multimodal formats such as book launch events and academic seminars should be combined to precisely target audience

needs and comprehensively enhance the academic discourse authority of Chinese English-language books in the global academic arena.

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Evaluation of International Academic Discourse Power of Chinese English-language Books under the Background of Independent Knowledge System Construction

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Abstract: [Purpose/Significance] Based on the construction of China's independent knowledge system and focusing on the discourse power of Chinese English-language books can enrich and refine its evaluation theories and indicator systems. This approach can enhance their communication effectiveness and discourse power. [Method/Process] First, based on the definition of relevant concepts, this paper delves into the logic behind the emergence of China's international academic discourse power in English-language books, drawing on Foucault's theory of discourse power, "Cultural Consciousness" theory and the "Full Evaluation" theory. Secondly, taking English books in the field of computer science as the research sample, this paper uses BERT-LSTM model and other methods to collect data on evaluation indicators and conduct descriptive statistical analysis on them. at the macro level, this paper compares the global landscape of English-language book publishing and examines the characteristics of Chinese English-language books. At the micro level, this paper constructs a multidimensional evaluation system encompassing four core dimensions: academic influence, discourse perceptibility, discourse dissemination capacity, and discourse leadership. Then, this paper employs CRITIC weighting method and projection pursuit classification model to evaluate the international

academic discourse power of Chinese English books from single dimension and comprehensive dimension. Finally, this paper uses correlation analysis to measure dimensional relationships and employs cross-validation with a convolutional neural network. **[Result/Conclusion]** Chinese English-language books have established a certain foundation for dissemination in the international academic field; however, their social dissemination capacity remains insufficient, and their influence is unevenly distributed. In the future, efforts should be made to enhance the international academic discourse power of Chinese English-language books from three aspects: the evaluation system, evaluation indicators and dissemination channels.

Keywords: Chinese English-language books; International academic discourse power evaluation; Generative logic; Academic influence; Discourse perceptibility; Discourse dissemination capacity; Discourse leadership

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Note: Figure translations are in progress. See original paper for figures.

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