

Postprint: Identification and Comparative Study of Characteristic Service Types in Domestic and International Public Libraries

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Abstract

[Purpose/Significance] In light of the differences between China and Western developed countries in social systems, social culture, economic development levels, and other dimensions, this study compares the distinct characteristics of domestic and international public library characteristic services, aiming to provide references for the development of characteristic services in Chinese public libraries. [Method/Process] Building upon an investigation of the current status of domestic and international public library characteristic services, cluster analysis is utilized to identify the main types of Chinese and foreign public library characteristic services, and comparative analysis is conducted to reveal their commonalities and differences. [Results/Conclusion] The comparison of characteristics of Chinese and foreign public library characteristic services indicates that the academic rigor of the content of Chinese public library characteristic services needs to be enhanced, the cultivation of library professionals requires continuous strengthening, and greater attention should be devoted to the interaction between libraries and users during the service process, thereby continuously improving the attractiveness and influence of public library characteristic services.

Full Text

Preamble

A Study on the Identification and Comparison of Special Service Types in Chinese and Foreign Public Libraries

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Abstract: *[Purpose/Significance]* In view of the differences between China and Western developed countries in social systems, cultural contexts, and economic development levels, this study compares the distinct characteristics of special services in public libraries at home and abroad, providing references for the development of special services in Chinese public libraries. *[Method/Process]* Based on an investigation of the current status of special services in public libraries both domestically and internationally, this paper identifies the main types of special services through cluster analysis and conducts comparative analysis to reveal commonalities and differences. *[Result/Conclusion]* The comparison reveals that the academic content of special services in Chinese public libraries needs improvement, the cultivation of library professionals requires continuous strengthening, and greater attention should be paid to interaction between libraries and users during service processes to continuously enhance the attractiveness and influence of public library special services.

Keywords: public library special services; cluster analysis; Chinese-foreign comparison

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With societal progress and technological development, the service content of public libraries continues to evolve to meet public demands in the new era. In recent years, an increasing number of Chinese and foreign public libraries have begun offering various special services to readers, enterprises, and other information seekers. For example, Wenzhou Public Library in China has built a special database of shoe pattern images based on the local shoe industry, providing abundant design materials for local footwear enterprises [1]; Yunnan Provincial Library has established 15 multimedia resource databases for ethnic minorities unique to Yunnan, offering rich materials for research on local ethnic cultures [2]; Canadian public libraries provide special services covering learning, work, healthcare, and automotive repair through purchasing and collaboratively building special databases [3]. These examples demonstrate that developing special services based on distinctive resources for the public has become a development trend for public libraries at home and abroad, generating positive economic and social benefits for libraries. However, due to differences in social systems, cultural customs, and economic structures between China and Western countries, the development of special services in public libraries has exhibited different characteristics. Therefore, exploring the differences in special services between Chinese and foreign public libraries can help clarify the general patterns of such services and provide references for the development of special resource services in Chinese public libraries.

1 Literature Review

There is currently no unified definition of the concept of public library special services in academia. Some scholars believe that special services in public li-

braries are high-quality, efficient, and innovative service behaviors based on the full development and rational allocation of document information resources and human resources, targeting specific reader groups through unique service methods [4]. Others view special services as a relative concept intended to distinguish them from conventional library services, noting that when special services gain widespread social recognition but fail to maintain their uniqueness, they may transform into regular services [5]. Still others consider special services as a competitive strategy for differentiated development [6]. Synthesizing these perspectives, this paper defines special services as targeted services provided by public libraries according to users' actual needs, which possess certain uniqueness in service content, methods, or target audiences compared to conventional library services.

Literature review reveals that public libraries at home and abroad have leveraged their advantages to develop a series of special services distinct from conventional offerings, mainly including special collection development, classified user services, social participation and co-construction, and application of new concepts and technologies [7]. Representative examples of special collection development include the Music Library built by Tianjin Library [8], the ethnic minority multimedia resource database by Yunnan Library [2], and the ancient books pavilion specially constructed by Nanjing Library [7]. Foreign public libraries also commonly rely on special collections to provide special services. For instance, the Russian National Library offers specialized legal information resources [9], and the top ten public libraries in Canada have collaboratively built 102 special databases covering regional characteristics and social culture. Classified user services mainly target different user groups with specialized services, such as the Library of Congress providing dedicated services for disabled readers [10], and Anhui Provincial Library offering door-to-door services and computer training courses for elderly readers [7]. Social participation and co-construction refers to extensive cooperation with other social sectors to develop public welfare special services, such as Hangzhou Library cooperating with Hangzhou Civilization Office to introduce the "Citizens' University" into the library [7], and Hong Kong Public Libraries collaborating closely with schools and educational organizations to implement the "Reading Ambassador Program," "Community Library Partnership Program," and reading club activities [7]. Typical examples of new technology and concept applications include cloud computing-based special services in Chinese university digital libraries [11] and robot librarians at Westport Library in Connecticut, USA [10].

Current academic attention to library special services mainly involves service content, service environment, and service interaction. Regarding service content, some scholars have compared academic service content in 15 university libraries at home and abroad, including research support and data resource services [12]; others have discussed special services for international students in Chinese university libraries [13]. Foreign scholars such as R. Matthews have focused on how libraries can provide personalized services [14], while L. Bonnie explored how to better support academic writing through library services [15]. In

terms of service environment, some scholars have analyzed the diversified needs of physical spaces for children's reading in public libraries [16], while others discussed the construction requirements of maker spaces from the perspectives of service concept needs and environment creation [17]. Some scholars have also explored training librarians to better deliver library services [18], noting that libraries can serve as good learning spaces and provide environmental support [19]. Regarding service interaction, scholars have pointed out that good service interaction facilitates library information services [20], and that the importance of user interaction lies in 挖掘 users' deeper needs to achieve service upgrades [21]. Others have emphasized that user-centered interaction plays a crucial role in enhancing library services [22], and that emphasizing service interaction is an effective way to continuously improve library services [23]. These studies show that providing special services is a common transformation adopted by public libraries to adapt to social development. Although the connotation of public library special services has not yet been unified, it remains a hot topic in academia, with service content, environment, and interaction being key research areas. Therefore, this paper will also analyze and compare the main types and corresponding characteristics of Chinese and foreign public library special services from these three aspects.

2 Data Acquisition for Chinese and Foreign Public Library Special Services

To identify the types and characteristics of special services in Chinese and foreign public libraries, this study employs two-step cluster analysis to categorize the main types of special services. The rationale for using cluster analysis is that there is currently no clear classification system or framework for library special services, and the categories are numerous and diverse, making direct qualitative classification lack necessary theoretical basis. To effectively extract key features of different service types, this paper quantifies the special services of sample public libraries from three mainstream research dimensions—service content, environmental support, and service interaction—and uses two-step cluster analysis to group services with similar features into the same cluster, thereby summarizing similarities and differences between Chinese and foreign public library special services through comparative analysis of category characteristics.

2.1 Data Acquisition

This study crawled activity updates from the official websites of Chinese provincial public libraries and national, state, and municipal public libraries in the United States and Canada throughout 2018, screening to obtain the special services provided by each library during that year.

Due to incomplete and lagging information on some domestic provincial library websites, 20 provincial libraries were ultimately selected as data sources for Chinese public library special services: Anhui Provincial Library, Guangxi

Zhuang Autonomous Region Library, Zhejiang Library, Sichuan Provincial Library, Hainan Provincial Library, Shandong Library, Guizhou Provincial Library, Yunnan Provincial Library, Inner Mongolia Library, Ningxia Library, Capital Library, Tianjin Library, Chongqing Library, Hubei Provincial Library, Heilongjiang Provincial Library, Jilin Provincial Library, Liaoning Provincial Library, Hebei Provincial Library, Hunan Library, and Jiangxi Provincial Library.

Following criteria of data availability and effectiveness, 20 representative national, state, and municipal public libraries from the United States, Canada, and other countries were selected as data sources for foreign public library special services: Library of Congress, California State Library, Kentucky State Library, Georgia State Library, Massachusetts State Library, Colorado State Library, Connecticut State Library, Hawaii State Library, Idaho State Library, Boston Public Library, New York Public Library, San Francisco Public Library, Chicago Public Library, Ontario Library (Canada), British Columbia Library (Canada), Bavarian State Library (Germany), Hamburg State Library (Germany), Victoria State Library (Australia), and South Australia State Library. After data cleaning, 2,521 entries of domestic public library special service data and 2,649 entries of foreign public library special service data were obtained. Partial examples are shown in Table 1 .

2.2 Data Processing

Based on the obtained data, each service entry needed to be quantified and transformed into vector form before cluster analysis. This paper developed secondary dimensions from three primary dimensions—service content, environmental support, and service interaction—and used expert scoring to quantify each service entry. Specific processing methods were as follows:

- (1) **Service Content (SC):** Analysis revealed that service content mainly includes providing academic support and information resources, with varying depths of academic support. Some libraries offer services helping users understand research principles and rules (relatively superficial support), while others provide in-depth academic support such as information literacy education and targeted courses. Additionally, the academic nature of information resources varies, with some libraries specializing in professional academic resources and others in leisure reading materials. Therefore, in the service content dimension, experts were invited to score each service from two aspects: depth of academic support and academic nature of information resources, on a 0-5 scale (lower scores indicate shallower support and lower academic nature).
- (2) **Environmental Support (ES):** Characteristics mainly manifest in two dimensions: physical environment support and librarian support. Different services require varying levels of support. For instance, “children’s reading activities” only require physical space for reading, while “maker spaces” need both physical space and technical equipment. Regarding

librarian support, some services can be completed through internet terminals with online administrators, while others require dedicated librarians or special liaisons. Therefore, this dimension was divided into two sub-dimensions: physical space support and librarian support, with experts scoring each service on a 0-5 scale (lower scores indicate lower support requirements).

- (3) **Service Interaction (SI):** Based on the collected data, this was subdivided into interaction frequency and interaction form sub-dimensions. Using the same expert scoring method on a 0-5 scale, lower scores indicate lower interaction frequency and simpler interaction methods (e.g., remote online services), while higher scores indicate higher frequency and more complex forms (e.g., one-on-one guidance).

The specific analytical dimensions are shown in Table 2. Based on qualifications, workplace categories, professional titles, research fields, and relevant work experience, a panel of 50 experts in library science teaching, research, administration, and related work from Beijing, Shanghai, Wuhan, Nanjing, and other locations was formed. The 2,521 domestic and 2,649 foreign public library special service entries from January to December 2018 were presented to the experts, with each expert scoring 300 service entries across the six indicators in three dimensions, ensuring each entry received scores from at least three experts.

3 Identification of Chinese and Foreign Public Library Special Service Types

This paper uses cluster analysis to process expert scoring results, clustering domestic and foreign public library special services separately to identify their characteristics for further comparative analysis.

3.1 Clustering Results and Discussion for Chinese Public Libraries

Using SPSS 19.0's two-step clustering algorithm to analyze scoring data for Chinese public library special services, with academic support depth, information resource academic nature, physical space support, librarian support, service interaction frequency, and service interaction form as analysis dimensions, five clusters were identified. The clusters show strong internal cohesion and significant inter-cluster differences. To avoid line overlap, categories (4) and (5) are represented with dashed lines in Figure 1 [Figure 1: see original paper]. Sample sizes and percentages are: Cluster 1 contains 476 samples (18.9%), Cluster 2 contains 223 samples (8.8%), Cluster 3 contains 1,241 samples (49.2%), Cluster 4 contains 193 samples (7.7%), and Cluster 5 contains 388 samples (15.4%). The five service types are named as follows:

- (1) **Chinese Category (C1): Deep Academic Resource Support Services.** The blue solid line in Figure 1 shows the clustering results for Chinese public library Category (C1). This category exhibits the deep-

est academic support and strongest resource academic nature among all Chinese public library special services. These services mainly include academic lectures and training activities, such as Tianjin Library’s “Tianjin Library Reading Club Citizen Science Lecture” and Zhejiang Library’s “Elderly Mental Health Lecture.” Analysis reveals these services require minimal physical environment support—reader discussion areas or small audio-visual rooms suffice. They typically only need librarians to handle simple registration procedures without deep support, and interaction frequency between users and libraries is limited. However, training activities usually involve specialized instruction or one-on-one teaching, making service forms relatively complex. In summary, these services provide professional knowledge or skills, characterized by offering academic resources and deep academic support.

- (2) **Chinese Category (C2): High Interaction Frequency Services.** The orange solid line in Figure 1 represents Chinese public library Category (C2), distinguished by having the highest service interaction frequency among domestic special services. These mainly include English salons and reading clubs, such as Liaoning Provincial Library’s “English Salon” where participants can practice daily English conversation, and Tianjin Library’s “Tianjin Library Reading Club Lixin Reading Club” where a host leads members in reading and discussion. While the academic nature of resources is moderate—less prominent than pure academic support services but more specialized than leisure resources—these services require librarians with good communication skills for hosting. Their key characteristic is strong interactivity, as participants must attend in person and interact with hosting librarians through learning, reading, and discussion.
- (3) **Chinese Category (C3): Leisure Resource Services with High Physical Environment Support.** The dark gray solid line shows Category (C3) results, which require very high physical space support but provide resources with low academic nature. These services mainly involve large-scale on-site activities such as recitation contests and poetry competitions. For example, Capital Library’s “Traditional Chinese Style Private School Classroom” creates ancient teaching atmosphere through scene decoration and traditional Hanfu clothing, allowing children to experience classical teaching. Due to high venue and technical equipment demands for large events, and their primary purpose of enriching public cultural life through leisure resources and cultural activities, these services are characterized by leisure-oriented information resources and high physical environment support.
- (4) **Chinese Category (C4): Public Library Agency Services.** The yellow dashed line represents Category (C4), which shows balanced scores across all six dimensions without prominent features. These services mainly include book clubs and symposiums, such as Sichuan Provincial

Library's "Book Club" event featuring news anchors sharing reading techniques, and Zhejiang Library's "Wenlan Reading" symposium. A common feature is that these are often user-organized activities where libraries function more as agency service providers. This explains why these services have relatively low demands on all library aspects.

- (5) **Chinese Category (C5): Self-Service with High Physical Environment Support.** The green dashed line shows Category (C5), which includes cultural exhibitions, music appreciation, and film screenings. For instance, Zhejiang Library's exhibition "A Date with the Reading Calendar" traces the evolution of writing and reading carriers, displaying various bookbinding forms. These services require high venue and equipment support, but with current technology, playback equipment is often highly automated, allowing users to participate through self-service. Consequently, these activities show weak interactivity, low librarian involvement, and simple service methods.

3.2 Clustering Results and Discussion for Foreign Public Libraries

Using the same clustering method, foreign public library special services were grouped into five clusters, as shown in Figure 2 [Figure 2: see original paper] (Category (3) uses dashed lines to avoid overlap). Sample sizes and percentages are: Category (1) contains 424 samples (16.0%), Category (2) contains 315 samples (11.9%), Category (3) contains 609 samples (23.0%), Category (4) contains 726 samples (27.4%), and Category (5) contains 575 samples (21.7%).

- (1) **Foreign Category (F1): Academic Resource Services with Deep Environmental and Librarian Support.** The blue solid line in Figure 2 shows Category (F1), characterized by high levels of physical environment support, librarian support, and information resource academic nature. These services mainly take the form of lectures, such as the Library of Congress's "Street Folklore: Hip Hop, Car Culture, and Black Life in Houston, Texas." These lecture services require high-quality venues and equipment, strong academic content, and broad scope, necessitating special liaison librarians to coordinate speakers and activities, thus requiring deep librarian support.
- (2) **Foreign Category (F2): Leisure Resource Services with Deep Librarian Support.** The orange solid line represents Category (F2), which requires deep librarian support but provides information resources with low academic nature. These services mainly include author talks and book sales events, such as Boston Public Library's "Dan Kennedy: The Return of the Mogul" featuring media commentators discussing the author's book. These events typically involve small-scale invitations to authors, requiring librarians to coordinate between authors and readers, thus demanding deep librarian support.
- (3) **Foreign Category (F3): Self-Service with High Physical Envi-**

ronment Support. The dark gray dashed line shows Category (F3), requiring high physical space support but minimal librarian involvement, with low interaction frequency and simple interaction forms. Similar to Chinese libraries, these include exhibitions, film screenings, and music appreciation, such as New York Public Library’s “MOSAIC Concert” offering 60 minutes of free appreciation through online self-registration. These activities require high-quality venues and automated equipment, with users participating through self-service.

- (4) **Foreign Category (F4): Leisure Services with High Interaction Frequency.** The yellow solid line represents Category (F4), showing relatively balanced overall demands, leisure-oriented resources, and high service frequency. These mainly include foreign language training and conversation practice, such as San Francisco Public Library’s “ESL Conversation Group.” The content focuses on daily life vocabulary with relatively low academic nature, but strong interactivity requires communicative librarians to host activities.
- (5) **Foreign Category (F5): High-Interaction Services with Deep Academic Support.** The green solid line shows Category (F5), distinguished by very deep academic support and the highest interaction frequency among foreign public library special services. These mainly involve training courses, such as Chicago Public Library’s “Early Literacy” program where instructors help preschool children learn words and sentences. These courses require relatively high academic support, involve multiple sessions over time resulting in high interaction frequency, and typically do not require large physical spaces or complex equipment.

4 Comparison of Chinese and Foreign Public Library Special Services

Based on the clustering results, this paper compares Chinese and foreign public library special services at both overall and dimensional levels to reveal differences and provide references for Chinese public library development.

4.1 Overall Comparison

Overall differences exist between Chinese and foreign public library special services (see Figure 3 [Figure 3: see original paper]). Foreign public libraries generally have advantages over Chinese counterparts in academic support depth, librarian support, service interaction forms, service interaction frequency, and information resource academic nature, indicating higher academic support, stronger resource professionalism, more diverse interaction forms, stronger interactivity, and higher service personnel quality. This reflects that Chinese public library special services lack sufficient resource professionalism, remain at a primary development stage in service models, and insufficiently emphasize user interaction and participant quality. However, Chinese public

libraries lead in physical environment support, indicating relatively more comprehensive physical infrastructure.

4.2 Comparison of Service Content

Service content includes academic support and service resources. Regarding academic support, Chinese Category C1 and foreign Category F5 show the highest academic support levels. Category C1 includes 476 samples (18.9% of total), while Category F5 includes 575 samples (21.7%). Foreign deep academic support services have a 2.8 percentage point higher proportion, indicating foreign public libraries place greater emphasis on specialization and academic orientation. Chinese public libraries should strengthen academic support depth to establish strong perceptions of being “professional” and “academic,” thereby enhancing influence.

Regarding service resources, Chinese Category C1 and foreign Category F1 have the highest academic resource levels. Category C1 accounts for 476 samples (18.9%), while Category F1 accounts for 424 samples (16.0%). Chinese public libraries have a slightly higher proportion of professional academic resource support, but foreign libraries show higher overall academic levels, indicating Chinese general service resources need further academic improvement.

Further analysis reveals that Chinese high-academic-support services often accompany provision of professional academic resources, such as training courses providing professional materials, clustering as Category C1. In contrast, foreign library services show weaker correlation between high academic support and resource provision—these can exist separately. High academic support services cluster as F5, while high academic resource services cluster as F1. For example, Germany’s Hamburg Library “Legal Literacy” training and Colorado State Library’s “Parent Encouragement” training involve professional lawyers and child education experts sharing knowledge, using more accessible resources like images and videos rather than highly academic materials, emphasizing professional-user interaction over one-way instruction. Meanwhile, foreign F1 services like Massachusetts State Library’s “History of England” lecture provide simple historical knowledge with low academic support but offer professional materials for further learning.

4.3 Comparison of Environmental Support

Environmental support includes physical environment and librarian aspects. For physical environment, Chinese Categories C3 and C5, and foreign Categories F1 and F3 show the highest demands. Chinese categories C3 and C5 total 1,629 samples (64.6%), while foreign categories F1 and F3 total 1,033 samples (49.0%). Chinese high physical environment support services are 15.6 percentage points higher, indicating Chinese services have higher physical environment demands and greater investment in physical infrastructure—an advantage that should be maintained.

Regarding librarian support, Chinese categories C2 and C3 require intermediate-level librarian support, while foreign categories F1 and F2 require advanced-level support. Chinese public library special services have lower librarian requirements, indicating insufficient participation by high-level library professionals. If service resource quality represents the hard power of special services, librarian professionalism constitutes the soft power—both are indispensable. Strengthening high-quality librarian cultivation is crucial for future development.

Overall, Chinese and foreign libraries share similarities in physical environment-dependent services, typically focusing on large-scale activities like exhibitions, lectures, and competitions. Chinese examples include Tianjin Library's "Youth Photography Competition" and Shandong Library's "Building Strong National Defense" exhibition. Foreign examples include Victoria State Library's "21st Century Melbourne Art Exhibition" and Connecticut State Library's "Women and War" lecture. However, differences exist in librarian support: Chinese high-participation services are mainly non-academic (e.g., English salons, private school classrooms), while foreign F1 services include academic activities like Massachusetts State Library's "Privilege and Poverty" lecture analyzing social class and civil rights, reflecting Chinese libraries' lack of large-scale academic events requiring professional librarians.

4.4 Comparison of Service Interaction

Service interaction involves frequency and form. For interaction frequency, Chinese Category C2 and foreign Categories F4 and F5 show high interactivity. Category C2 includes 223 samples (8.8%), while Categories F4 and F5 total 1,301 samples (49.1%). Chinese high-interaction services lag significantly behind foreign counterparts, indicating insufficient attention to user-library interaction.

For interaction form, Chinese Category C1 and foreign Category F5 show the highest specifications. Category C1 accounts for 476 samples (18.9%), while Category F5 accounts for 575 samples (21.7%). Foreign high-specification interaction is 2.8 percentage points higher, indicating more diverse interaction forms.

Detailed analysis shows both Chinese C2 and foreign F4 services are leisure-oriented, such as Tianjin Library's "Reading Club" and Idaho State Library's "Fireside Chat" activities that promote reader discussion through edutainment. These long-term activities involve librarians as coordinators, maintaining high interaction frequency from preparation through follow-up. However, foreign F5 services differ by requiring both high interaction frequency and academic/professional content. For example, Idaho State Library's "High School EBSCO Tools Professional Training" involves professional librarians teaching high schoolers to master the tool, while Chinese libraries lack such academically-oriented training by professional librarians.

4.5 Summary of Characteristics

Based on clustering and comparative analysis, commonalities between Chinese and foreign public library special services include: (1) Both actively develop various special services to maximize library resource value; (2) Both cover all service types including high-academic-support training/lectures, leisure cultural discussions, large competitions, and exhibitions; (3) Both rely on librarians for organizing large-scale and long-term activities.

Differences include: (1) Chinese high-academic-support services typically accompany high-academic-resource provision, while foreign services separate these aspects; (2) Chinese high physical environment support services focus on leisure culture, while foreign services include academic lectures; (3) Chinese librarian-intensive services are mainly leisure-oriented, while foreign services include professional academic training by librarians.

5 Conclusions and Implications

This paper conducted cluster analysis of Chinese and foreign public library special services from three dimensions—service content, environmental support, and service interaction. The comparison reveals several key differences: foreign services excel in academic support depth, librarian support, interaction forms, interaction frequency, and resource academic nature. Chinese services show higher physical environment support but need improvement in academic content, professional librarian cultivation, and user interaction.

Future development of Chinese public library special services should focus on three aspects:

First, **service content** should enhance academic orientation and support depth. Leveraging physical environment advantages, libraries should hold large-scale lectures with deep academic support, particularly emphasizing cultivation of librarians with academic expertise to directly deliver training and lectures, thereby 挖掘 library value in academic activities and expanding influence. Resource provision should be more diversified and targeted—using accessible resources like images and videos for academically intensive services, while providing professional academic resources for interested users of leisure cultural activities.

Second, **environmental support** should combine physical advantages with academic services. While maintaining leisure cultural exhibitions and competitions, libraries should provide more academically and professionally intensive large-scale lectures. Additionally, they must strengthen professional librarian cultivation to reduce dependence on external experts and enhance direct support for high-academic-support services.

Third, **service interaction** requires greater emphasis on its role in improving service quality and user experience. Libraries should strengthen communication

with users, particularly in high-academic-support services, through diverse interaction methods (online, telephone, offline) and higher interaction frequency including pre-service coordination, in-service discussion, and post-service follow-up. Librarians should deeply participate in academically and professionally intensive services, possessing sufficient expertise to engage in in-depth discussions, understand user needs, and truly establish a “user-centered” service philosophy for sustainable development.

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Author Contributions

Qian Minghui: Conceived research framework, revised and finalized manuscript;
Xu Zhixuan: Data collection and analysis, drafted initial manuscript;
Chen Xiangyi: Literature review, drafted initial manuscript.

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

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