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A PAC-Based Study of Japanese Majors' Chinese and Japanese Cultural Cognition and Intercultural Expression

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Abstract: This paper employs PAC analysis to investigate the cognitive structures of Japanese major international students concerning Sino-Japanese cultural differences, aiming to provide a comprehensive understanding of their perceptual and interpretive frameworks. The study reveals that media-driven stereotypes and the phenomenon of "differences within similarities" frequently serve as focal points in students' perceptions, highlighting the nuanced and sometimes contradictory ways they interpret cultural information. Additionally, the research identifies distinct thinking patterns among students, which can be categorized into three main types: media-sensitive, value-reflective, and symbol-interpretive. Media-sensitive students tend to rely heavily on portrayals and narratives presented in news and entertainment media, often shaping their initial judgments and assumptions about cultural differences. Value-reflective students, in contrast, demonstrate an analytical approach that emphasizes underlying cultural norms, ethical values, and social principles, leading them to engage more critically with cross-cultural observations. Symbol-interpretive students focus on the meanings attached to cultural symbols, gestures, and practices, interpreting cultural nuances in a way that integrates both personal experiences and broader societal representations. Based on these findings, the study proposes the implementation of a stratified task system that assigns learning activities according to students' cognitive tendencies, a multi-dimensional evaluation mechanism to assess both comprehension and application of cultural knowledge, and bi-directional cultural expression training strategies designed to cultivate students' ability to participate actively in intercultural dialogues. Collectively, these strategies aim to support the transformation of students from passive receivers of information into proactive agents capable of navigating, interpreting, and contributing to cross-cultural understanding. By offering a structured framework that addresses both cognitive and experiential aspects of cultural learning, this research contributes to the development of educational practices that foster deeper intercultural competence and more effective communication in diverse academic environments.

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1. Introduction

The "Guidelines for Teaching Japanese Majors in Higher Education" issued by the Ministry of Education of China emphasize that cross-cultural communication skills are essential competencies that Japanese major students should develop. Traditionally, Japanese language education in Chinese universities has focused heavily on Japanese culture itself, with limited attention given to fostering students' critical reflections on culture or their capacity to express Chinese culture in Japanese. Moreover, domestic

courses specifically dedicated to Sino-Japanese cross-cultural communication have been introduced relatively recently. In institutions offering such courses, departments with Western language programs, such as English and French, generally demonstrate more established practices, while Japanese language departments providing cross-cultural communication courses remain relatively few, and their teaching approaches are still largely exploratory. Even in universities that offer intercultural courses, the majority of instruction emphasizes observable differences between China and Japan, including linguistic expression, corporate culture, travel and tourism practices, culinary habits, and behavioral norms. Conversely, there is comparatively less focus on equipping students to actively convey Chinese culture to a Japanese audience. Additionally, current Japanese majors face challenges stemming from exam-oriented study habits and a relatively rigid curriculum structure, which may limit opportunities for deeper engagement with cross-cultural learning [1].

Studying abroad during higher education offers students an authentic environment to practice language skills while simultaneously testing their abilities to comprehend and express cultural nuances. This study focuses on three fourth-year Japanese major students, analyzing their perceptions of Sino-Japanese cultural differences during their study in Japan. It explores practical strategies for integrating Chinese cultural elements into Sino-Japanese cross-cultural teaching, aiming to enhance students' adaptability and competence in cultural expression across diverse contexts. The research adopts the PAC (Personal Attitude Construct) analysis method, which allows for a systematic exploration of individuals' cognitive structures. By employing short text stimuli, free association exercises, and quantitative analysis techniques, the study visualizes the internal cognitive frameworks of respondents, thereby revealing the depth and complexity of their understanding of Sino-Japanese cultural differences [2]. This approach not only highlights students' immediate perceptions but also uncovers the underlying mental models that guide their interpretations and judgments, providing valuable insights for the design of cross-cultural pedagogy that fosters both critical thinking and active cultural engagement.

2. Theoretical Background

In recent years, the concepts of "cultural confidence" and "the dissemination of Chinese culture" have become prominent themes within domestic foreign language education research, reflecting a growing emphasis on fostering students' awareness and appreciation of their own cultural heritage. This trend underscores the importance of cultivating cultural confidence as a key objective in educational reform and the innovation of foreign language teaching methodologies [3]. Despite this increasing attention, most existing studies have concentrated on English as a second language, leaving the teaching of less commonly taught languages, such as Japanese, relatively underexplored. Furthermore, there is a notable gap in research that examines learners' individual attitudes and cross-cultural expression strategies at the micro-level, particularly regarding how they internalize and convey cultural meanings in foreign language contexts [4].

To address these gaps, the present study employs the PAC (Personal Attitude Construct) analysis framework to investigate the cognitive and affective dimensions of cross-cultural learning among Japanese major students. Three fourth-year students who have undertaken study abroad experiences in Japan were selected as participants. Through in-depth interviews and cultural representation questionnaires, the study systematically analyzes how these students construct their individual attitudes when interpreting and expressing Sino-Japanese cultural symbols. By examining the mechanisms through which learners process, evaluate, and express cultural content, the research provides insights into the nuanced ways in which students' personal attitudes shape their intercultural communication behaviors [5].

Moreover, this study explores the pedagogical implications of integrating cultural content into Japanese language teaching. Specifically, it examines how structured

inclusion of cultural elements in the curriculum can influence students' cross-cultural cognition, enhance their reflective thinking, and improve their ability to convey Chinese cultural values effectively in Japanese. By bridging the gap between macro-level educational goals and micro-level learner experiences, the research offers empirical evidence that can inform the precise design of culturally enriched teaching segments in foreign language classrooms. Ultimately, the findings contribute to a more comprehensive understanding of how targeted instructional strategies can support the development of both cognitive and expressive competencies, enabling students to engage more confidently and effectively in intercultural interactions [6].

3. Research Methodology

This study selected three fourth-year Japanese major students, all of whom departed for Japan in October 2024, as the research participants. The selection criteria were carefully defined to ensure that participants possessed relevant academic and practical experiences: all participants were undergraduate students majoring in Japanese, had completed courses in Sino-Japanese cross-cultural communication, had accumulated at least six months of study experience in Japan, and voluntarily agreed to participate in the study. This approach ensured that the selected students could provide authentic and informed insights into cross-cultural perceptions and expression strategies.

The research procedure is illustrated in Figure 1. The methodology follows a structured PAC (Personal Attitude Construct) analysis process designed to reveal the internal cognitive structures of learners when engaging with cultural content. The procedure begins with a briefing session, during which students are provided with detailed instructions on the specific steps of PAC analysis. They are then presented with three carefully designed stimulus sentences intended to prompt reflection on cultural knowledge and cross-cultural communication practices. These stimulus sentences are as follows: "Which Chinese cultural elements need to be understood in Sino-Japanese cultural exchanges?", "What understandings or misconceptions do Japanese people have about Chinese culture?", and "As a Chinese student, how can I introduce and explain Chinese culture to Japanese people?" Each participant is instructed to generate associations based on the stimulus sentences, producing ten words or short sentences that they consider relevant. Participants are also asked to rank these associations in order of significance, reflecting the priority and salience of each concept in their cognitive framework.

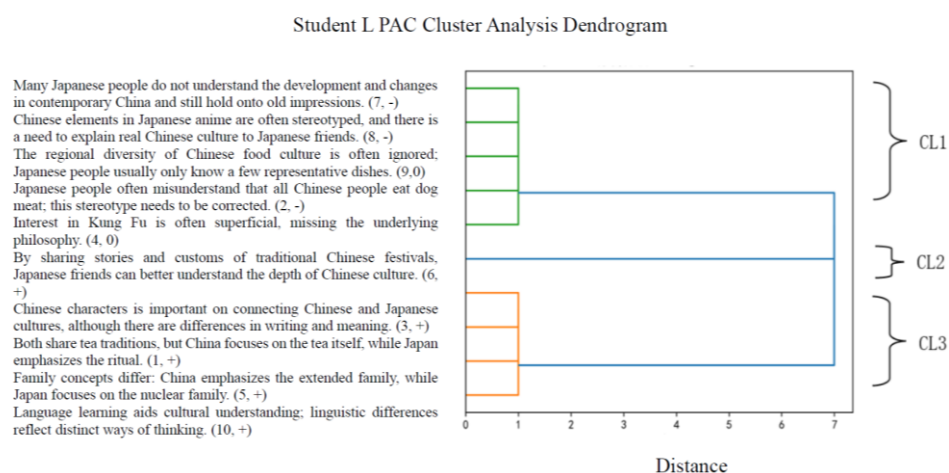


Figure 1. Student L's Cluster Analysis Dendrogram.

Following the generation of associations, students evaluate the perceived similarity among the words they have listed using a nine-point Likert scale, where higher scores

indicate greater conceptual proximity. These similarity ratings are then compiled into a data matrix, forming the basis for quantitative analysis. Hierarchical cluster analysis is subsequently conducted using Python's matplotlib library, allowing the research team to generate dendrograms that visualize the relationships between the associations. This analytic approach not only identifies clusters of culturally related concepts but also reveals the underlying cognitive patterns that shape how students interpret, prioritize, and express aspects of Chinese culture in a Japanese context. By combining both qualitative association data and quantitative similarity measures, the methodology provides a comprehensive and nuanced perspective on the participants' cognitive structures, offering valuable guidance for enhancing cross-cultural teaching strategies in Japanese language education.

4. Results and Analysis

The analysis of the data collected through PAC exercises and interviews provides a detailed view of how the students perceive and interpret Sino-Japanese cultural differences. The dendrograms generated from hierarchical cluster analysis reveal the cognitive structures underlying each student's attitudes toward cross-cultural understanding. Through interviews, the students interpreted and labeled the clusters, discussing their meanings in depth to examine both the structure of their associations and their attitudes toward Sino-Japanese cultural cognition. The findings highlight both common patterns and individual variations in students' perceptions, offering valuable insights into the micro-level mechanisms of cultural understanding and expression.

4.1. Cluster Analysis of Student L

As shown in Figure 1, the dendrogram for Student L reveals three primary clusters.

- 1) **CL1: Stereotypes and Misunderstandings** - This cluster contains five statements reflecting inherent views and common misconceptions about China. For example, many Japanese people hold skewed perceptions of contemporary Chinese society, which can hinder meaningful understanding during cross-cultural interactions.
- 2) **CL2: Similarities and Differences** - Comprising four statements, this cluster explores the similarities and differences in cultural practices, daily life, and language between Japan and China. Student L notes that while Japanese culture has historically been influenced by Chinese culture, notable differences exist in specific cultural details and social norms.
- 3) **CL3: Cultural Exchange and Dissemination** - This cluster consists of a single statement emphasizing that reliance on textbooks or media alone is insufficient for grasping the cultural significance of traditional Chinese festivals. Deep understanding requires more vivid, experiential forms of cultural communication.

4.2. Cluster Analysis of Student M

Figure 2 presents the dendrogram for Student M, which reveals four distinct clusters.

- 1) **CL1: Surface and Deep Understanding of Culture** - This cluster, containing three statements, highlights the challenge of perceiving the deeper essence of Sino-Japanese cultural and artistic exchanges. While surface-level cultural elements can be imitated or observed easily, the deeper historical, philosophical, and artistic heritage requires careful reflection to understand fully.
- 2) **CL2: New Media as an Opportunity for Exchange** - Consisting of a single statement, this cluster underscores the role of social media as a platform that facilitates cultural interaction and exchange between China and Japan.
- 3) **CL3: Differences in Social Expression** - Comprising three statements, this cluster emphasizes how differences in social customs, etiquette, and communication

styles between the two countries influence the effectiveness of interpersonal interactions.

- 4) **CL4: Cognitive Bias Influenced by Media** - This cluster, also containing three statements, reflects the impact of media on shaping cultural impressions, highlighting the need to recognize and mitigate misconceptions that arise from media representations.

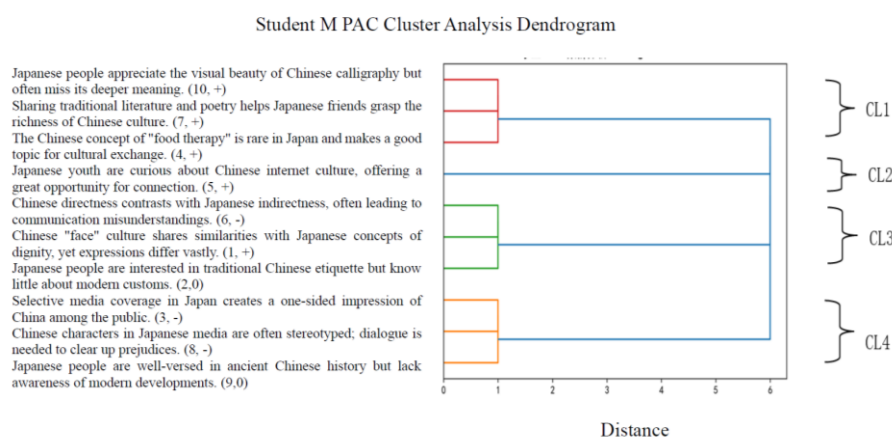


Figure 2. Student M's Cluster Analysis Dendrogram.

4.3. Cluster Analysis of Student Z

The dendrogram for Student Z is illustrated in Figure 3, with four primary clusters identified.

- 1) **CL1: Positive Communication and Experience** - This cluster includes two statements that stress the importance of direct interaction and personal experience in facilitating accurate cultural understanding. Sharing real-life experiences is crucial for correcting misunderstandings and fostering mutual comprehension.
- 2) **CL2: Symbolic Cultural Understanding** - Comprising three statements, this cluster explores how Japanese individuals interpret Chinese culture symbolically, revealing potential biases in overall cultural cognition and the ways in which symbolic representations influence perception.
- 3) **CL3: Communication Attitudes** - This cluster, consisting of two statements, highlights the necessity of adopting an open and flexible attitude in cross-cultural communication. Adjusting one's behavior and mindset is essential to avoid misinterpretation and enhance dialogue effectiveness.
- 4) **CL4: Differences in Values and Thinking Patterns** - Containing three statements, this cluster examines the deeper differences in value orientations and cognitive patterns between the two cultures. These differences reflect variations in judgment standards, reasoning styles, and approaches to problem-solving.

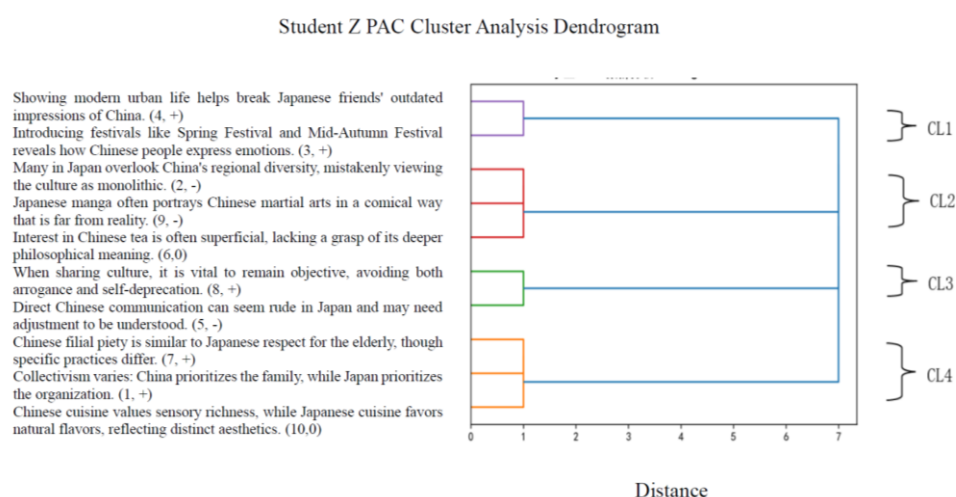


Figure 3. Student Z's Cluster Analysis Dendrogram.

Overall, the cluster analyses reveal that while students share some common recognition of cultural similarities, differences, and media influences, individual variations in perception, cognitive focus, and attitude toward cultural exchange are evident. The findings suggest that effective cross-cultural teaching should address both surface-level knowledge and deeper cognitive and symbolic understanding, while also fostering flexible communication strategies that account for differences in values and thinking patterns. By visualizing and interpreting these cognitive structures, educators can gain insights into students' internal representations of cultural knowledge and design more targeted interventions to enhance their cross-cultural competence.

5. Discussion and Teaching Implications

This study analyzes the dendrogram data of the three students in conjunction with their self-explanations, extracting meaningful themes and generating a topic distribution heatmap of cross-cultural cognition (Figure 4). The analysis reveals several prominent focal points that recur across the students' cognitive structures, particularly the influence of "media stereotypes" and the recognition of "similarities with differences" in Sino-Japanese cultural understanding. These themes offer insights into both the students' perceptual tendencies and their interpretive strategies when engaging with cross-cultural content.

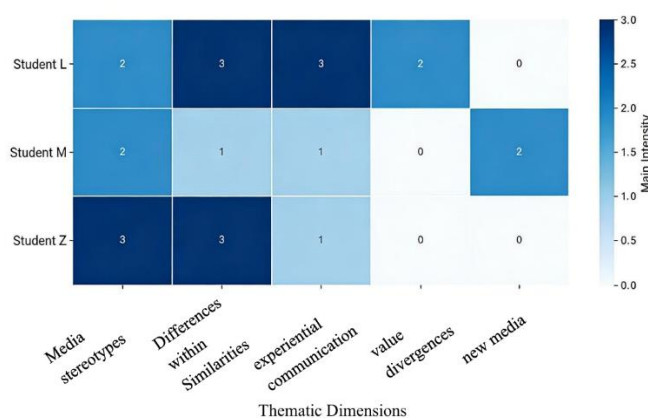


Figure 4. Topic Distribution Heatmap of Sino-Japanese Cultural Cognition.

5.1. Analysis of Research Findings

All three students demonstrated a strong awareness of the impact of media in shaping cultural perceptions. They noted that Japanese individuals often form stereotypical views of China through exposure to media portrayals, including popular culture such as anime. Importantly, the students not only recognized this phenomenon but also reflected on the underlying reasons for these stereotypes, highlighting the critical role that media plays in influencing cross-cultural impressions. In addition to media-related observations, the students consistently emphasized the "similarities with differences" phenomenon. Students L and Z highlighted the coexistence of surface-level cultural similarities and deeper, substantive differences, while Student M particularly noted differences in social expression and communication patterns. This suggests that while the students can identify commonalities between Chinese and Japanese cultures, they also possess the ability to discern subtle distinctions, reflecting nuanced levels of cross-cultural awareness.

These findings have direct implications for the design and reform of cross-cultural communication courses. One key recommendation is to integrate "media literacy" as a central component of the curriculum. By analyzing the ways in which Japanese media constructs images of China and highlighting discrepancies between media portrayals and reality, students can develop the skills to critically evaluate cultural representations. Such instructional activities are likely to cultivate students' abilities to decode stereotypes, enhance critical thinking, and improve their effectiveness in cross-cultural communication. Furthermore, course content should move beyond superficial similarities and encourage a deeper exploration of nuanced cultural differences. Incorporating localized case studies and detailed analyses can guide students from recognizing commonalities to understanding divergences, fostering more sophisticated intercultural dialogue and reinforcing students' cultural sensitivity and confidence.

5.2. Updates in Teaching Design

To leverage the diverse cognitive and thinking patterns of students, teaching strategies should be designed to maximize individual potential and enhance cross-cultural communication competence. Several concrete recommendations are as follows:

Stratified Tasks and Collaborative Learning

- 1) **Basic Tasks (Completed by All Students):** Each student completes a weekly cultural symbol translation exercise, contributing to a shared class glossary that supports collective learning.
- 2) **Specialized Tasks (Based on Thinking Patterns):** Students with a media-sensitive orientation could create monthly 2-3 minute Sino-Japanese cultural comparative videos and analyze their communicative effectiveness in class. Value-reflective students might produce a report every four weeks comparing cultural values between China and Japan, such as differences in workplace etiquette, followed by classroom debates to discuss findings.
- 3) **Expansion Tasks:** Students may form teams to design cross-cultural micro-lessons integrating media creation, value analysis, and symbolic translation exercises, thereby encouraging collaborative innovation.

Triple Ability Evaluation Mechanisms

- 1) **Cultural Expression Portfolio Assessment:** Students create multimedia portfolios in Japanese to introduce Chinese culture, demonstrating both the depth of understanding and expressive capabilities.
- 2) **Error Correction Skills Assessment:** Students collect examples of cultural misunderstandings from Japanese media or peers and analyze the origins of these misconceptions, proposing corrective strategies to improve intercultural comprehension.

- 3) **Cultural Response Strategy Simulation:** Situational simulations test students' flexibility and adaptability in handling cross-cultural misunderstandings, particularly evaluating their ability to adjust communication strategies based on interlocutors' characteristics.

Bi-directional Expression Ability Cultivation

- 1) In the input phase, students critically analyze Chinese cultural representations in Japanese media.
- 2) In the output phase, students complete "reinterpretation" tasks designed to encourage innovative perspectives and demonstrate cultural awareness, fostering the ability to convey Chinese culture actively and accurately in cross-cultural contexts.

In summary, the results of this study underscore the importance of combining critical media literacy, nuanced cultural analysis, and active expression exercises in cross-cultural teaching. By designing teaching strategies that account for both individual thinking patterns and common cognitive tendencies, educators can more effectively cultivate students' intercultural competence, enhancing their ability to communicate, reflect, and act in diverse cultural environments. These findings provide a practical framework for refining Sino-Japanese cross-cultural curricula and advancing the overall effectiveness of foreign language education.

6. Conclusion

This study employs the PAC (Personal Attitude Construct) analysis method to investigate the cognitive structures of Japanese major students with study experience in Japan, focusing on their perceptions and interpretations of Sino-Japanese cultural differences. The findings reveal distinct thinking patterns among students when engaging in cross-cultural understanding and expression, highlighting both commonalities and individual variations in their cognitive approaches. Notably, media stereotypes and the concept of "similarities with differences" emerged as central points of focus, reflecting the students' ability to recognize both overt cultural parallels and subtle distinctions that shape intercultural interactions.

In addition to these commonalities, the analysis identified three characteristic thinking tendencies: media sensitivity, value reflection, and symbol interpretation. Media-sensitive students demonstrated heightened awareness of the influence of media on cultural perception and were adept at recognizing potential biases in representations of Chinese culture. Value-reflective students exhibited a strong capacity for examining and comparing cultural values, social norms, and ethical principles between China and Japan. Symbol-interpretive students focused on the deeper symbolic and historical significance of cultural elements, emphasizing the importance of contextual understanding in cross-cultural communication. Together, these patterns illustrate the complexity of cognitive structures in cross-cultural learning and underscore the necessity of pedagogical strategies that accommodate diverse approaches to cultural cognition.

Based on these insights, the study proposes targeted teaching strategies designed to enhance students' cross-cultural competence. The strategies include the implementation of stratified tasks, which address varying cognitive tendencies and encourage both collaborative and independent learning; innovative evaluation mechanisms that combine portfolio assessment, error correction analysis, and situational simulations to measure both understanding and expressive abilities; and a bi-directional cultural learning model that integrates critical analysis of media representations with creative reinterpretation and active communication of cultural content. This comprehensive approach aims to cultivate students' ability to both comprehend and convey cultural meanings effectively, promoting a more engaged and reflective form of cross-cultural participation.

Ultimately, the research provides both theoretical and practical guidance for foreign language education, demonstrating how an in-depth understanding of students' cognitive

structures can inform curriculum design and pedagogical innovation. By aligning instructional strategies with students' thinking patterns and emphasizing active cultural engagement, educators can foster enhanced cultural awareness, critical thinking, and communication skills. This approach not only supports the development of competent and reflective language learners but also contributes to the broader goal of preparing students to navigate complex intercultural environments with sensitivity, adaptability, and confidence.

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References

1. O. V. Liubashenko, N. V. Semian, and T. P. Druzhchenko, "English Intercultural Tutorial for University Students Majoring in Japanese," *Journal of Curriculum and Teaching*, vol. 11, no. 1, pp. 25-34, 2022.
2. Q. Yan, "The Construction of Teaching System of Intercultural Communication Course for Japanese Major," In *7th International Conference on Education, Management, Information and Computer Science (ICEMC 2017)*, June, 2016, pp. 656-660. doi: 10.2991/icemc-17.2017.133
3. W. Zhu, "Reform and Practice of Blending Teaching of "Cross-Cultural Communication" Course for Japanese Majors," In *1st International Conference on Education: Current Issues and Digital Technologies (ICECIDT 2021)*, June, 2021, pp. 274-278. doi: 10.2991/assehr.k.210527.050
4. X. Li, "Research on the Talent Cultivation Mode of Colleges and Universities Specializing in Japanese Language in the Context of "New Arts"," In *International Conference on Educational Information Technology (Vol. 6, No. 2).*, 2024. doi: 10.22158/mmse.v6n2p131
5. A. Thackeray, R. L. Marcus, L. Yu, P. McCracken, B. Cardell, and J. Hanmer, "Linking AM-PAC cognition to PROMIS cognitive function," *Archives of physical medicine and rehabilitation*, vol. 102, no. 11, pp. 2157-2164, 2021.
6. N. Cong-Lem, "Intercultural communication in second/foreign language education over 67 years: A bibliometric review," *Journal of Intercultural Communication Research*, vol. 54, no. 1-2, pp. 1-21, 2025. doi: 10.1080/17475759.2025.2456265

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