

## MOTIVATIONAL DIMENSIONS IN SECOND LANGUAGE ACQUISITION: A BIBLIOMETRIC ANALYSIS OF RESEARCH TRENDS AND THEMATIC EVOLUTION

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| Article Info                                                                                                                                                                                                                                                                                                                                                                             | Abstract                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
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| <b>Article History</b><br>Received: November 2025<br>Revised: March 2026<br>Accepted: June 2026<br>Published: July 2026                                                                                                                                                                                                                                                                  | <i>Motivation has long been recognized as a central determinant of success in second language acquisition (SLA); however, the development of motivation research over the last decade has not been comprehensively mapped. This study aims to examine publication trends, geographical distribution, thematic structure, and the conceptual evolution of research on motivation in second language learning through a bibliometric approach. Data were retrieved from the Scopus database for a ten-year period and analyzed using Biblioshiny and VOSviewer. These tools were employed to identify patterns of scientific productivity, country-level contributions, keyword co-occurrence, thematic clusters, and the evolution of dominant research themes. The findings reveal a steady increase in publications, indicating sustained scholarly attention to motivation in SLA. China emerged as the most productive country, followed by other major contributors from North America, Europe, the Middle East, and Asia. The keyword and thematic analyses show that current research is strongly centered on the L2 Motivational Self System, self-regulation, digital learning, learner engagement, anxiety, self-efficacy, and willingness to communicate. The thematic evolution further indicates a shift from attitude-based and static models of motivation toward more dynamic, contextual, and learner-centered frameworks that emphasize learning experiences, emotional factors, technological environments, and individual differences. This study contributes to the field by offering a systematic conceptual map of SLA motivation research and by identifying emerging directions for future inquiry. It recommends further longitudinal, cross-cultural, and technology-integrated studies to deepen understanding of how motivation develops across diverse second language learning contexts and across different stages of learner development over time.</i> |
| <b>Keywords</b><br>Motivational dimensions;<br>Second language acquisition;<br>L2 motivational self system;<br>Learning engagement;                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>How to cite:</b> Salamah, N.U., Tauhid, A.B., & Putro, N.H.P.S. (2026). Motivational Dimensions in Second Language Acquisition: A Bibliometric Analysis of Research Trends and Thematic Evolution. <i>JOLLT Journal of Languages and Language Teaching</i> , 14(3), 958-969. Doi: <a href="https://doi.org/10.33394/joltt.v14i3.18554">https://doi.org/10.33394/joltt.v14i3.18554</a> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
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### INTRODUCTION

Motivation has consistently been identified as a crucial factor influencing effectiveness in Second Language Acquisition (SLA). The main factor that motivates students to put in effort, overcome obstacles, and seize opportunities to use the language appropriately is motivation (Zhao, 2023). Motivation is fundamental to language development because it is the primary psychological force that drives students to invest time, persevere through difficulties, and actively engage in communicative tasks. Empirical research further demonstrates that

motivation affects learners' readiness to communicate and the regularity and intensity of their learning practices over time (S. Zhang et al., 2025).

The theoretical conceptualization of L2 motivation has evolved substantially. Gardner (2005) argue L2 motivation as a socio-psychological construct consisting of effort, desire, and positive attitudes toward the target language. This definition is also used in research that suggests motivation consists of “the effort the learner is prepared to exert, the desire to learn the language, and the positive attitudes toward learning the language. By using integrative and instrumental orientations as relatively stable learning resources, this model serves as the primary theoretical foundation for modern motivation research in SLA (Göksu & Louis, 2025). For instance, Zolta (2006) “The development of the Second Language Self-Motivation System (L2MSS)” has reconceptualized second language motivation by shifting the field’s focus from a community-based orientation to a future-oriented self-concept, encompassing the Ideal L2 Self and the L2 Learning Experience. In addition, Deci & Ryan (2012) highlighted the importance of social contextual conditions in sustaining motivation, arguing that intrinsic and extrinsic motivation are shaped by environmental support and autonomy. More recently, motivation has been conceptualized as a dynamic system that evolves through interactions among emotions, learning engagement, and educational context (Keith et al., 2024). The relationship among motivation, emotions, and language development is initially correlational but eventually becomes causal as learning experiences increase. Increased motivation and positive emotions promote more practice in the classroom and result in a discernible improvement in L2 performance (Saito et al., 2025).

Several studies have provided insights into the patterns of L2 learning motivation. A bibliometric analysis conducted between 2005 and 2021 reveals an increase in publications, a shift in topics toward multilingual environments, longitudinal research, and a focus on authentic learning experiences (W. Liu, 2025; Wu, 2022). Beyond this quantitative growth, recent research also reflects a conceptual expansion of motivational frameworks. For instance, digital ecology integration demonstrates that L2MSS components predict the acceptance of technologies like AI in learning (Huang & Mizumoto, 2024a). This development indicates that motivational constructs are increasingly examined within a technologically mediated environment.

At the theoretical level, the expansion of the "actual L2 self" supports the idea that learning experiences change present self-perception and influence the formation of the ideal and ought-to selves (Hu et al., 2025). Additionally, effort, strategy, and learning outcomes are driven mainly by self-efficacy beliefs, and pedagogical interventions that support learners' (Keith et al., 2024; Nakata et al., 2025). Goals and meaningful experiences have been demonstrated to increase motivation (Wang, 2025). Thus, current research presents motivation as a multi-layered process that varies with learners’ self-construction, technology integration, and contextual learning environment.

However, despite these significant theoretical and empirical developments, the structural evolution of motivation research in Second Language Acquisition over the most recent decade has not been systematically examined at a macro level. Although many studies investigate specific theoretical frameworks or empirical findings, there is still a limited understanding of how these developments are reflected in overall research production, geographical distribution, conceptual grouping, and thematic developments within the field. As motivation theory has shifted from socio-psychological orientations toward self-based and dynamic perspectives, and, more recently, toward technology-integrated and context-sensitive approaches, it is important to determine whether these theoretical transformations are proportionally reflected in contemporary academic output.

Without comprehensive bibliometric analysis, this field lacks empirical evidence regarding dominant research dimensions, emerging themes, and potentially underexplored

areas. Narrative and systematic reviews provide valuable conceptual syntheses. However, these do not provide quantitative evidence of the patterns of structural growth, collaboration networks, or keywords that shape the intellectual landscape of second language motivation research. Therefore, a focused bibliometric analysis is needed to explain the evolution of motivation research over the past decade.

To address this gap, the present study conducts a bibliometric analysis of motivational dimensions in Second Language Acquisition between 2015 and 2025. Specifically, this aims to map the intellectual landscape of research on motivation in second language learning by examining (1) annual scientific production, (2) geographical distribution of outputs by country, (3) Keyword co-occurrence, and (4) thematic evolution. By providing a structural overview of publication trends and conceptual development, this study provides a systematic knowledge base that can support future empirical research, theoretical improvements, and pedagogical innovations in Second Language Acquisition motivation research.

## RESEARCH METHOD

### Research Design

This study uses bibliometric analysis, a quantitative approach that evaluates topics through calculations to map publications, collaborations, themes, and significant articles. (Donthu et al., 2021). Bibliometric analysis was chosen because it enables systematic, quantitative mapping of research trends and thematic evolution, which narrative reviews or quantitative syntheses cannot fully capture. This method aligns with the study's objective of identifying both the development and conceptual structure of motivation research in Second Language Acquisition (SLA) over the past decade. To examine the data in this study, two software applications, RStudio and Biblioshiny, were used. RStudio was employed to calculate publication growth, identify influential researchers, and generate performance indicators. Biblioshiny facilitated the mapping of keyword co-occurrence, thematic clusters, and evolution of research dynamics (Liang et al., 2022). These tools complement each other, providing quantitative performance assessment and visual exploration of research patterns.

The central database in this study is Scopus, which provides comprehensive coverage of peer-reviewed literature on English language education and features a metadata structure that is highly accurate, consistent, and easy to analyze with bibliometric tools such as Biblioshiny and VOSviewer (Ali et al., 2023). While other databases, such as Google Scholar and Web of Science could provide additional sources, Scopus was chosen due to its reliable indexing and ease of integration with bibliometric software, which is important for ensuring the accuracy and reproducibility of the study (Grande, 2022; Q. Liu et al., 2025).

### Data Collection

In the instruments data collection process, this study used the PRISMA 2020 guidelines for systematic reviews. These were used during data collection to measure transparency, data duplication, and screening procedures. Although this design is usually used for systematic reviews, PRISMA is now also used in bibliometric analysis for data selection steps, including screening, eligibility assessment, and inclusion. This method improves the methodology and provides a clear visual representation of the data creation process. First, the researchers searched the Scopus database for information on the keyword "Motivation" using the term "Second Language Acquisition" and found 514 results published in November 2025. To capture the latest research developments on this topic, this study focuses on the period 2015-2025. The screening process applied specific inclusion and exclusion criteria, as summarized in Table 1 (PRISMA flowchart). Inclusion criteria were: peer-reviewed journal articles, written in English, and within the 2015-2025 timeframe. Exclusion criteria included book chapters, conference proceedings, and non-peer-reviewed sources. Each document was verified for

eligibility based on document type, source type, language, and publication year. The final dataset of 514 articles was included for further bibliometric analysis.

### Data Analysis

The data was analyzed using two complementary bibliometric approaches. First, a performance analysis emphasizing annual scientific production and geographical distribution of outputs by country. This approach examines annual scientific production, geographical distribution of publications, and influential authors, offering a quantitative overview of how research on SLA motivation has evolved over the past decade. Second, mapping techniques were applied using VOSviewer and Biblioshiny. The study mapped keyword co-occurrence and thematic evolution to identify conceptual structures and trends. In VOSViewer, keyword co-occurrence generates thematic clusters that reveal major research topics. Biblioshiny was used to track the evolution of themes over time, illustrating how research shifted between 2015 and 2025. Visualizations, including network maps of keyword co-occurrence and thematic clusters, were produced to aid interpretations of the results. These analyses provide a comprehensive quantitative and conceptual mapping of research on SLA motivation, highlighting both trends in scientific production and the evolution of research.

## RESEARCH FINDINGS AND DISCUSSION

### Research Findings

#### *Annual Scientific Production*

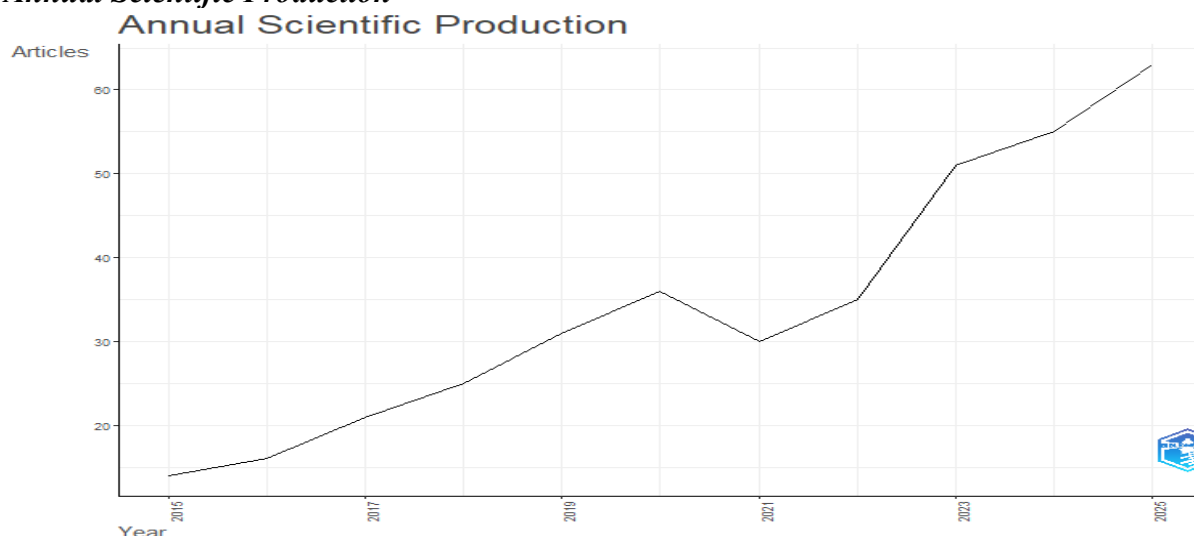


Figure 1. Annual Scientific Production of L2 Motivational Research in SLA (2015-2025)

Figure 1 illustrates annual scientific production in L2 motivation research in the field of SLA from 2015 to 2025. The data in Figure 2 shows a clear increase in publications, rising from 14 in 2015 to 63 in 2025. As detailed in Table 1, growth occurred steadily between 2015 and 2019, followed by slight fluctuations between 2020 and 2022. However, the period after 2022 saw a significant acceleration, with publications increasing from 35 in 2022 to 63 in 2025. This overall pattern indicates an increasingly intense academic focus on second language motivation in SLA research in the second half of the decade. These findings showed sustained, accelerated growth in publication trends during the period studied.

#### *Geographical Distribution of Distribution Outputs by Country*

The distribution of L2 motivation research output by country shows a clear imbalance in global scholarly contributions. China emerges as the leading contributor, with 116 publications, followed by the United States with 92 publications and the United Kingdom with 53 publications. Several EFL contexts also demonstrate substantial involvement, including Saudi Arabia with 45 publications, Malaysia with 41, Iran with 37, India with 29, and Indonesia with

22. Spain, with 36 publications, represents a notable European contribution to this field. Overall, the findings indicate that L2 motivation research is concentrated mainly in East Asia, North America, Europe, and parts of the Middle East, while contributions from many other regions remain comparatively limited. China's dominance reflects its strong investment in second language acquisition research, English education, educational reform, and technology-supported learning. Meanwhile, although the United States and the United Kingdom produce fewer publications than China, both countries continue to play an important role in shaping theoretical frameworks, methodological approaches, and practical applications of motivation in SLA. The strong presence of Saudi Arabia, Malaysia, Iran, India, and Indonesia suggests that L2 motivation has become increasingly relevant in EFL environments, particularly where English is connected to academic mobility, professional development, and access to global knowledge. The growing output from developing countries also signals increasing attention to learner-centered pedagogy, digital learning, inclusive education, and culturally responsive motivational strategies. Therefore, the country-based distribution not only maps research productivity but also reflects broader educational priorities, language policy directions, and regional needs in contemporary L2 motivation studies.

### **Keyword Map of Co-occurrence network**

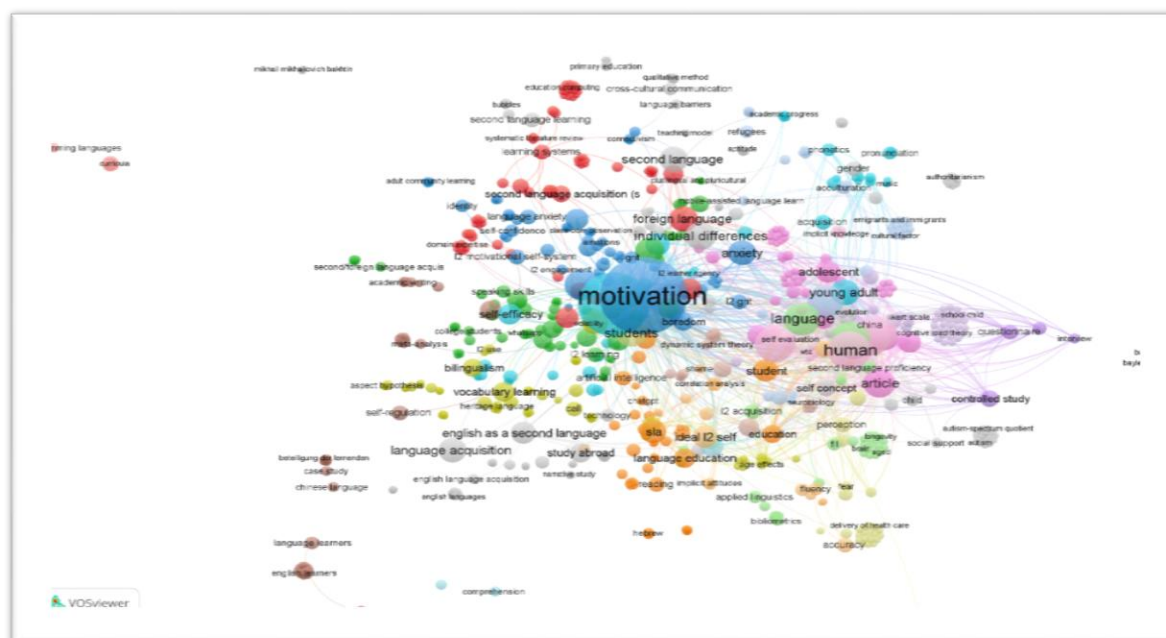


Figure 2. Keyword Map of Co-occurrence Network

Figure 2 illustrates the dominant keyword trends in SLA motivation research and reveals the main thematic directions of the field. The frequent appearance of terms such as “L2 Motivational Self-System,” “second language,” and “individual differences” indicates that current studies are strongly grounded in motivation theory and learner-oriented perspectives. Among these, the L2 Motivational Self-System (L2MSS) appears as the most central concept, showing that researchers continue to emphasize the role of learners’ future self-images, personal goals, and identity formation in second language development. Keywords such as “self-efficacy” and “language learning” further suggest that psychological and personal variables remain important in explaining why students engage with, persist in, or withdraw from language learning activities. Self-efficacy is particularly significant because learners who believe in their ability to succeed are more likely to develop intrinsic motivation, maintain effort, and achieve better learning outcomes. At the same time, anxiety emerges as another important theme, demonstrating that negative emotional experiences can weaken motivation,

reduce participation, and affect students' confidence in using the target language. The presence of "individual differences" also highlights the growing recognition that motivation is shaped by diverse learner characteristics, including beliefs, attitudes, emotions, learning histories, and sociocultural backgrounds. Overall, the keyword pattern confirms that SLA motivation research is increasingly focused on the interaction between motivational theory and psychological factors. It also shows that learner success and engagement are closely connected to self-concept, confidence, anxiety management, and personal differences in language learning contexts. These themes provide a foundation for more responsive language teaching practices.

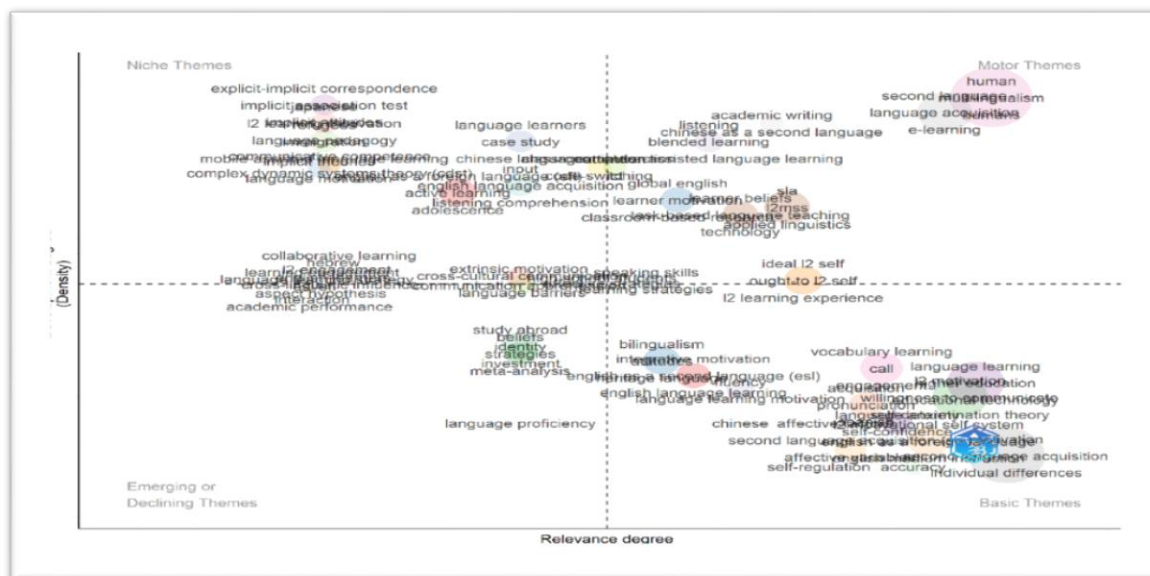


Figure 3. Thematic Evolution

Figure 3 presents the thematic development of SLA motivation research and shows how the field has evolved across different conceptual areas. The most prominent themes include the L2 Motivational Self-System (L2MSS), self-efficacy, and second language acquisition, which demonstrate both high relevance and strong conceptual development. Their position indicates that contemporary research continues to prioritize self-based motivation, learners' beliefs about their future language selves, and psychological factors that influence persistence and achievement in second language learning. These themes form the intellectual core of the field because they provide theoretical and empirical explanations for how motivation is constructed, maintained, and transformed during the learning process. Meanwhile, basic themes such as individual differences, self-regulation, technology, and language learning motivation remain important but appear less conceptually developed. This suggests that although these topics are widely discussed, they still require deeper theoretical integration and stronger empirical connections. Niche themes, including anxiety and collaborative learning, also show signs of growth, but their limited structural links indicate that they are still developing as specialized areas within SLA motivation research.

In contrast, themes such as study abroad and identity appear to be declining in relevance, suggesting a shift away from earlier sociocultural emphases toward more psychologically oriented and technology-related perspectives. Overall, Figure 3 indicates that SLA motivation research is increasingly centered on L2MSS, self-efficacy, and psychological influences, while also expanding toward multilingualism, digital learning environments, and learner-centered approaches. This thematic movement reflects the field's growing effort to understand motivation in more complex, diverse, and technology-mediated language learning contexts.

## Discussion

The improved understanding of motivation in second language acquisition (SLA) revealed in this study has significant implications for theoretical approaches and their application in education. The bibliometric analysis conducted in this study contributes to the literature on motivation in SLA by highlighting the main theoretical trends that have developed over the past ten years. In line with previous research on the integration of motivation theory (Ouyang & Lin, 2020; Wu, 2022; Ye & Hu, 2025). These findings clarify that the L2 Motivational Self System (L2MSS) has dominated SLA research since 2018.

## Growth Trend in Publication Cycle for Annual Production

The publication cycle for annual publications shows that motivation remains central to SLA interest, especially in constantly evolving theory and practice. This trend has been consistent, indicating that motivation remains the primary driving force in language learning. This is in line with Ye & Hu (2025), who show that motivational interventions empirically improve components of L2MSS. This study examined the motivations that impact the self-motivation system in a second language, specifically L2MSS, which is related to the ideal self in a second language, the self that should be in a second language, and the experience of learning a second language. Interestingly, this study was conducted with second language learners in China, which is closely related to findings that China closely examines topics related to motivation among L2 learners themselves.

Additionally, another study analyzed the relationship between the L2 motivational self system and technology acceptance after the introduction and use of ChatGPT (Huang & Mizumoto, 2024). This study used the Technology Acceptance Model (TAM) and its relationship with three components, namely Ideal L2 Self (IL2), Ought-to L2 Self (OL2), and L2 Learning Experience (L2LE). These components are interrelated and show that they form the level of motivation for learning a second language. The results show a correlation between the L2MSS component and TAM variables, especially OL2, which shows positive actual usage, indicating that external encouragement greatly motivates students to use AI technology. In addition, learning through language-learning technologies such as immersive VR reinforces the importance of motivation, as these experiences can influence intrinsic motivation and engagement. Cai et al. (2025) argued that the growth in publications not only reflects academic interest but also responds to pedagogical changes and the need to reinterpret motivation in contemporary learning environments. This study demonstrates a growing interest in emerging topics in second language (L2) learning, including technologies and virtual reality (VR). This can serve as a reference for future research that develops studies related to student learning motivation in line with the latest developments.

## Geographical Distribution in SLA Research

The dominance of publications from China, the United States, and the United Kingdom reflects the centers of theoretical development and empirical application in SLA motivation. China has emerged as a major contributor due to its EFL context, which is characterized by academic pressure, where motivation, anxiety, and enjoyment interact to influence the central position, as both are the basis for the initial development of motivation theory and international academic publishing institutions. In line with research in China (B. Zhang & Shao, 2021; F. Zhang, 2024; H. Zhang & Huang, 2025). This study examines language learning motivation among Chinese students, focusing on intrinsic and extrinsic motivation in English language learning. The findings show that increasing intrinsic motivation is crucial for academic success, with social context and individual differences exerting a strong influence. In addition, more countries, including Saudi Arabia, Japan, Iran, Malaysia, India, and Indonesia, have found motivational interventions effective in increasing learning engagement in English as a foreign language (EFL). As research from Keith et al. (2024) shows the influence of self-efficacy and

motivation in second language acquisition. Furthermore, studies on language attitudes in multilingual environments show that, depending on the sociocultural context, social perceptions and language values have varying effects on learning motivation (Wu, 2022; Ye & Hu, 2025).

This study highlights the increase in global collaboration in second language (L2) motivation research, with significant contributions from countries such as China, the United States, and Saudi Arabia. This study emphasizes the importance of international collaboration in the development of educational research. It suggests that future studies further explore how cross-cultural collaboration can improve teaching strategies and motivational practices in language learning.

### **Keyword Co-occurrence in Second Language Learning Motivation**

Keyword mapping reveals four thematic clusters that are consistent with the development of motivation theory in SLA. The dominant keywords related to the L2 Motivational Self System indicate that this theory remains the primary foundation in contemporary motivation research, particularly in ideal exploration (Huang & Mizumoto, 2024b; Kadau, 2024). The keywords on self-regulation explain that motivation is now understood as a process that can be developed through learning strategies (Dewaele & Meftah, 2024; Saito et al., 2025). This aligns with the emergence of keywords related to technology and digital learning, which is associated with research showing that immersive learning experiences are linked to focus and motivation to learn. The fourth cluster, which includes enjoyment, engagement, and confidence and communication skills, demonstrates how enjoyment can grow in tandem with learning and influence the development of long-term motivation (Göksu & Louis, 2025). Understanding motivation in Second Language Acquisition (SLA) is a complex procedure that links identity, emotions, and regulation in the context of learning, as this general pattern demonstrates.

The dominant keywords in this study highlight that the Second Language Self-Motivation System (L2MSS), second language, and individual differences are central themes in second language acquisition (SLA) motivation research, reflecting a strong emphasis on motivation theory and learner-centered approaches. Keywords such as self-efficacy and language learning further emphasize the importance of psychological factors and personal attributes in shaping motivation in the language acquisition process (Keith et al., 2024; Ye & Hu, 2025). These terms highlight that learner characteristics, such as self-efficacy and intrinsic and extrinsic motivation related to language learning, are fundamental to understanding how students engage with second-language education. These findings are in line with existing research in this field Ouyang & Lin, (2020) shows that motivational interventions targeting L2MSS components can significantly increase language learners' motivation.

Furthermore, F. Zhang, (2024) shows the relationship between motivation and anxiety in the process of listening to English by Chinese EFL learners, using an idiodynamic approach. This study reveals that motivation and anxiety fluctuate dynamically, influenced by factors such as the level of understanding of the material, the assessment of the material, and student self-regulation, which affect listening outcomes. This is supported by (Welay & Nikolov, 2022, 2024) which discusses the relationship between motivation and anxiety in the English language learning process by EFL students in Ethiopia. This study examines the influence of two types of anxiety (facilitative and debilitating) in the context of motivation using the L2 Motivational Self-System (L2MSS). The increasing emphasis on motivation theory and the psychological aspects of SLA reflects the evolving nature of this field, in which both internal learner factors (such as self-confidence) and external elements (such as teaching methods and cultural context) play important roles in language learning success.

### **Thematic Evolution in Second Language Learning Motivation Studies**

The findings of this study indicate that the dominant themes in SLA motivation research are L2 Motivational Self-System (L2MSS), self-efficacy, and second language acquisition, highlighting the importance of self-based motivation in second language learning. This theme aligns with the keywords trend before. The research by Ye & Hu (2025) shows that motivational interventions can improve L2MSS components in language learning. Basic themes, such as individual differences and language learning motivation, are still relevant but have developed more limitedly compared to major themes, such as L2MSS and self-efficacy, which are currently more dominant in the literature (Abdullah et al., 2025; Romero & Lambropoulos, 2017; Wu, 2022). This is in line with the findings of H. Zhang & Huang (2025) which shows that anxiety and collaborative learning are growing areas of research in SLA motivation.

The decline in the relevance of themes such as study abroad and identity indicates a shift in focus in SLA motivation research, now more toward psychological and technological influences in second language learning. Deandra et al. (2025) indicates that these themes are increasingly being replaced by greater interest in multilingualism and educational technology as part of global educational transformation. In addition, future research should explore how collaboration between L2MSS and technology affects learners' emotional engagement and motivation in second language learning, as these affective factors significantly impact the learning process. The cognitive and psychological domains, including self-confidence and individual differences, are critical areas where the potential of technology can be better understood and leveraged. By analyzing these interrelated dimensions, future research can uncover strategies for integrating AI not only to increase language-learning motivation but also to support the holistic development of learners in second-language learning. Such insights will be invaluable to educators and policymakers seeking to design AI-based applications and curricula that align with overall language education goals and promote adaptability and motivation in second language learners.

### **CONCLUSION**

This study provides a bibliometric analysis of second language (L2) motivation research in Second Language Acquisition (SLA), revealing key trends and themes over the past decade. These findings highlight the dominance of the Second Language Self-Motivation System (L2MSS), self-efficacy, and second language acquisition in shaping motivation, reflecting an increasing focus on self-based motivation and psychological factors in SLA. The analysis shows that while traditional themes such as individual differences and language learning motivation remain relevant, the field is increasingly shifting toward multilingualism, psychological influences, and the integration of educational technology, including artificial intelligence (AI)-driven tools. The decline in relevance of themes such as studying abroad and identity indicates a significant shift in the research landscape, with greater emphasis on factors such as self-regulation and anxiety that dynamically influence motivation.

In addition, this study highlights the importance of global collaboration in SLA research, particularly in China, the United States, and Saudi Arabia, which have made significant contributions to the development of motivation theory in SLA. This study suggests that future studies should explore the relationship among L2MSS, technology, and emotional engagement, as these dimensions play a crucial role in motivating second language learners. By analyzing how artificial intelligence (AI) systems and other innovative technologies influence intrinsic and extrinsic motivation, future research can uncover strategies that not only increase motivation but also support the holistic development of learners in second language acquisition. These insights will be invaluable to educators and policymakers who wish to design AI-based applications and curricula that align with evolving language education goals, encouraging learner engagement and adaptability.

## FUNDING

This research received no external funding. The study was conducted independently, and no financial support was provided by any public, commercial, or non-profit funding agency.

## INFORMED CONSENT STATEMENT

Participation in this study was entirely voluntary. All participants were informed about the purpose, procedures, potential risks, and benefits of the study before agreeing to take part. They were also assured that their identities would remain confidential and that all information provided would be used solely for research purposes. Participants were informed of their right to withdraw from the study at any time without penalty or loss of benefits to which they were otherwise entitled. By agreeing to participate, the participants provided informed consent under the conditions described.

## DATA AVAILABILITY STATEMENT

The data used in this study cannot be made publicly available due to privacy concerns and ethical obligations to protect participant confidentiality. This restriction ensures compliance with ethical research standards and applicable data protection regulations. However, access to the dataset may be granted upon reasonable request for validation or further scholarly analysis. Such requests will be reviewed on a case-by-case basis and must receive approval from the appropriate institutional ethics review board before any data can be shared. This procedure ensures that any proposed use of the data aligns with ethical guidelines and the consent provided by the participants.

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