

# The rise and evolution of L2 grit in SLA: A bibliometric review of key themes and future trends (2016–2024)

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## Abstract

As a core concept in positive psychology, “grit” has recently gained significant attention within the field of second language learning. Despite a growing number of studies, there has been a lack of a systematic overview of this area’s overall development, key themes, and future trends. To provide a clear picture of the research landscape, this study comprehensively reviewed 121 core academic articles published between 2016 and 2024. Our analysis shows that research on L2 grit has evolved through three distinct stages: initial exploration, rapid growth, and diversification. Currently, research primarily focuses on four key areas: the definition and measurement of grit, its relationship with academic achievement and willingness to communicate, and its role in online learning environments. This study suggests future directions in cross-cultural comparison, long-term vertical tracking and pedagogical interventions, so as to further reveal the dynamic mechanism of grit in diverse language learning situations, and provide theoretical support and empirical basis for L2 teaching practice.

**Keywords** second language acquisition; L2 grit; grit; CiteSpace; visual analysis; positive psychology

## 1. Introduction

Over the past decade, grit, one of the key constructs of positive psychology (Duckworth et al., 2007; Duckworth & Quinn, 2009), has received increasing scholarly attention in both educational psychology and second language acquisition (SLA) (Dewaele, 2012; Teimouri et al., 2020). Defined as “persistence and passion for long-term goals” (Duckworth et al., 2007, p.1087), grit is typically measured across two core dimensions: perseverance of effort (PE) and consistency of interest (CI) (Duckworth et al., 2007; Teimouri et al., 2020). In the long and challenging process of language learning, grit is seen as an important individual difference variable (MacIntyre & Khajavy, 2021). Learners with higher grit levels tend to demonstrate greater motivational persistence, deeper academic engagement, and more stable learning outcomes.

As the construct of grit gains traction, an increasing number of studies have explored its intersection with other internal and external factors, such as affection, mindset, teacher support, and classroom environment (Wei et al., 2019; Fathi et al., 2024). The incorporation of positive variables like foreign language enjoyment and growth mindset has significantly broadened the theoretical

perspectives of grit in language learning research. Nevertheless, several unresolved issues remain, including conceptual ambiguities in defining grit within second language (L2) contexts, differences in the role of grit in cross-cultural and linguistic background, and the dynamic fluctuation of grit under varying learning situations. These gaps indicate a pressing necessity to systematically review available literature and clarify its progress and limitations.

To address this need, this study employs a bibliometric and visual analysis of 121 peer-reviewed articles published between 2016 and 2024. We begin by tracing the developmental trajectory of the field to delineate its intellectual landscape and evolutionary stages. This analysis forms the basis for identifying and synthesizing the core research themes that currently dominate the discourse on L2 grit. Finally, building upon these findings, we outline several promising trends for future investigation. By doing so, this paper provides a comprehensive knowledge map and a strategic guide for researchers and practitioners, aiming to advance both the theoretical understanding and pedagogical application of grit in second language acquisition.

## 2. Data Sources and Research

## Methods

### 2.1. Data Collection and Retrieval Strategy

This study draws on Web of Science (WoS) Core Collection database to ensure both the authority and comprehensiveness of its dataset. The search spans from January 2016 to March 2024, and the search query used is “TS=(grit) AND TS=(language)”. With results limited to journal articles, a total of 235 initial results were obtained. After filtering out conference papers, review articles, and duplicate records, a total of 121 peer-reviewed journal publications closely related to L2 grit were retained for final analysis.

### 2.2. Research Tools and Analytical Procedures

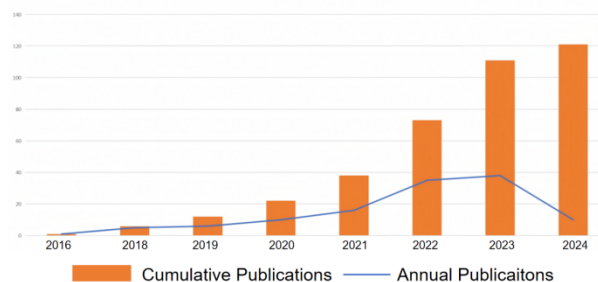
Employing CiteSpace (version 5.8.R3) as the primary tool, knowledge mapping visualization was used to conduct bibliometric analysis. Core techniques included co-citation analysis, and pathfinder network analysis, which were used to identify core research themes, disciplinary evolution paths, and emerging trends. Compared to the traditional qualitative review, the above-mentioned quantitative methods offer a more objective reveal of research hotspots, domain structures and frontier dynamics, and enhance the systematic and academic value of review research.

To ensure the validity and reproducibility of the results, reasonable parameters were adopted in CiteSpace: time slices were divided annually (2016–2024), Top N method was used to select the top 50 most cited articles in each year as the analysis object, and pathfinder network analysis was used to refine the visualization mapping for structural compactness and coherence. Through the combination of the above analytical methods and parameters, this study systematically and comprehensively reveals the intellectual landscape and thematic evolution of L2 grit research, providing both empirical insights and theoretical guidance for future investigations.

## 3. The Rise and Evolution of L2 Grit Research

### 3.1. Publication Trends and Developmental Stages

To trace the rise and evolution of L2 grit research, we first examined its publication trajectory. A longitudinal analysis of publication volume from 2016 to 2024 reveals a steady upward trend, with a significant surge in scholarly output observed after 2020 (see Figure 1). This growth pattern allows us to delineate the field's development into three distinct stages:



**Figure 1.** Publication volume and time evolution of L2 grit research between 2016-2024

#### 3.1.1. Initial Stage (2016–2020)

In 2016, the concept of grit in SLA was first put forward and attracted wide attention from scholars, marking the start of research in this domain. Thirty-five related articles (29% of the total) were published during this period. The focus was primarily on its conceptual exploration and initial applications in language learning. Teimouri et al. (2020) introduced and validated the first L2-specific grit scale, establishing a methodological foundation for the domain. In addition, anxiety and motivation have become high-frequency keywords, and scholars have begun to explore the intersection between grit and learners' internal affective motivation variables. Anxiety, in particular, emerged as a salient focus. Lee & Hsieh (2019) expanded the research scope by first linking grit with willingness to communicate (WTC) and other intra-individual variables. In essence, this initial stage was characterized by conceptual exploration and the establishment of a methodological foundation for the field.

#### 3.1.2. Rapid Growth Stage (2021–2022)

From 2021, the domain experienced a substantial expansion, with 51 related articles (42% of the total) published. Research diversified into examining the relationship between grit and affective variables (such as foreign language enjoyment), academic achievement and external variables (such as teacher support and classroom environment). Cross-cultural perspectives became increasingly prominent, with studies involving learners from Japan, South Korea and Iran. Keyword co-occurrence analysis (Figure 2) still identified anxiety as a central node, while foreign language enjoyment and academic achievement became the emerging core keywords, showing that the research on how grit positively influenced learners' affective experience and learning outcomes has been deepened. Representative studies, such as Sudina & Plonsky (2021a), highlighted grit's predictive power on both WTC and academic outcomes, becoming one of the representative achievements in this stage. This period marked a significant shift from foundational work to empirical investigations of grit's antecedents and outcomes in diverse L2 contexts.

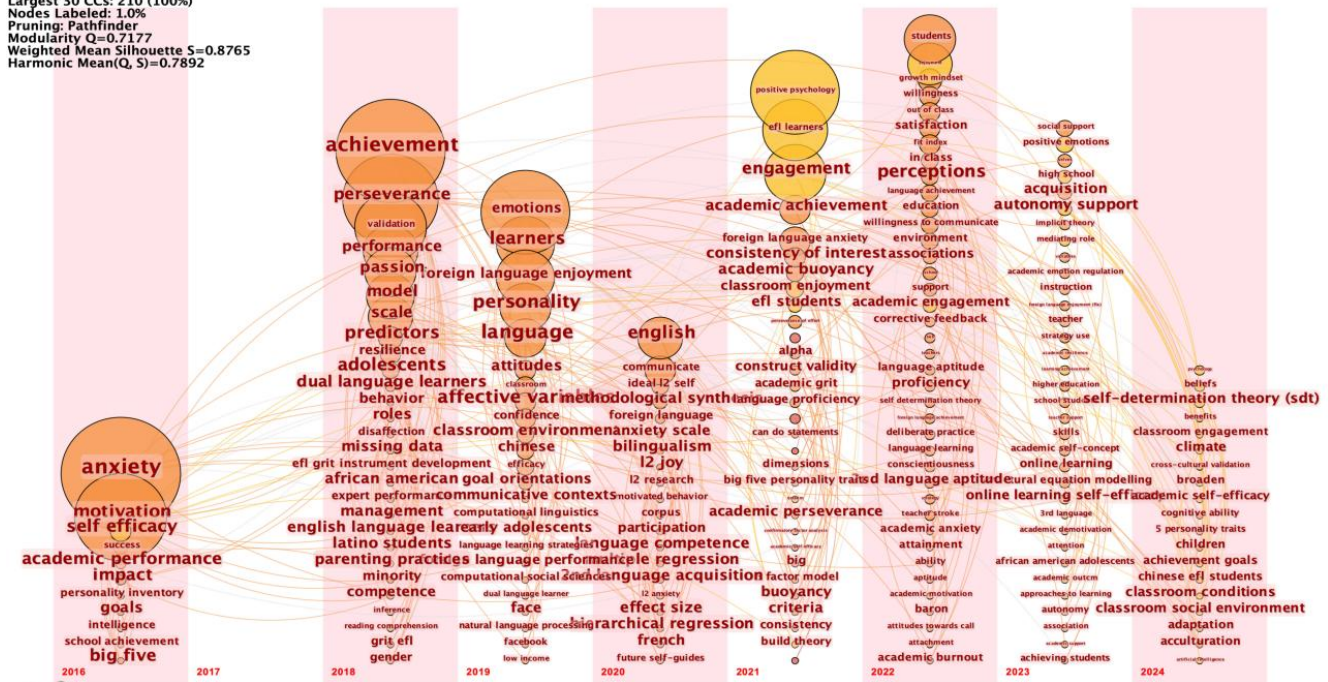


Figure 2. Keywords co-occurrence Timezone mapping in L2 grit research domain

### 3.1.3. Diversification Stage (2023–2024)

After 2023, L2 grit research has entered a period of steady growth. Research has stabilized in volume but expanded in thematic depth and breadth. Research focus in this stage included: the dynamic development of grit in emerging contexts (such as online learning), its interaction with environment variables (such as environment), and the extension of analysis from individual-level to context-level. Increased attention has been paid to the role of teacher support in sustaining learners' grit in the learning process. Research on the impact of teacher support on L2 grit has emerged since 2018 and been receiving growing attention in 2023–2024. Studies also began to trace longitudinal changes in grit and explored how it interacts with newer constructs such as self-regulated learning and language mindset, marking the gradual strengthening of the long-term tracking of grit development in L2 learners. Researchers are no longer limited to examining the cross-sectional effects of grit on language learning outcomes, but begin to explore its dynamic changes at different time nodes, and how these changes relate to long-term outcomes such as learning engagement and achievement. This stage reflects the field's growing maturity, characterized by a move towards more dynamic, context-sensitive, and longitudinal research designs.

### 3.2. Core Journals and Authors

Beyond the temporal trends in publication volume, the intellectual structure of a field is also shaped by its most influential publication venues and authors. An analysis of source journals and core authors reveals the structural distribution of scholarly influence within the L2 grit domain (Table 1 and 2, Figure 3). Among journals, *Frontiers in Psychology*, as a comprehensive journal in

interdisciplinary domains, has the largest number of publications and receives a high degree of attention in L2 grit research. Journals on applied linguistics like *Journal of Multilingual and Multicultural Development* and *System* also pay a continuous attention to relevant research. Regarding the influence of authors, scholars such as Lee (Education University of Hong Kong), Teimouri (Georgetown University) and Khajavy (University of Bojnord) are among the most influential in this domain, reflecting their prominent contributions in the validation of L2 grit scales, cross-cultural research and interaction of affective variables.

Table 1. Primary source journals of L2 grit articles from 2016–2024

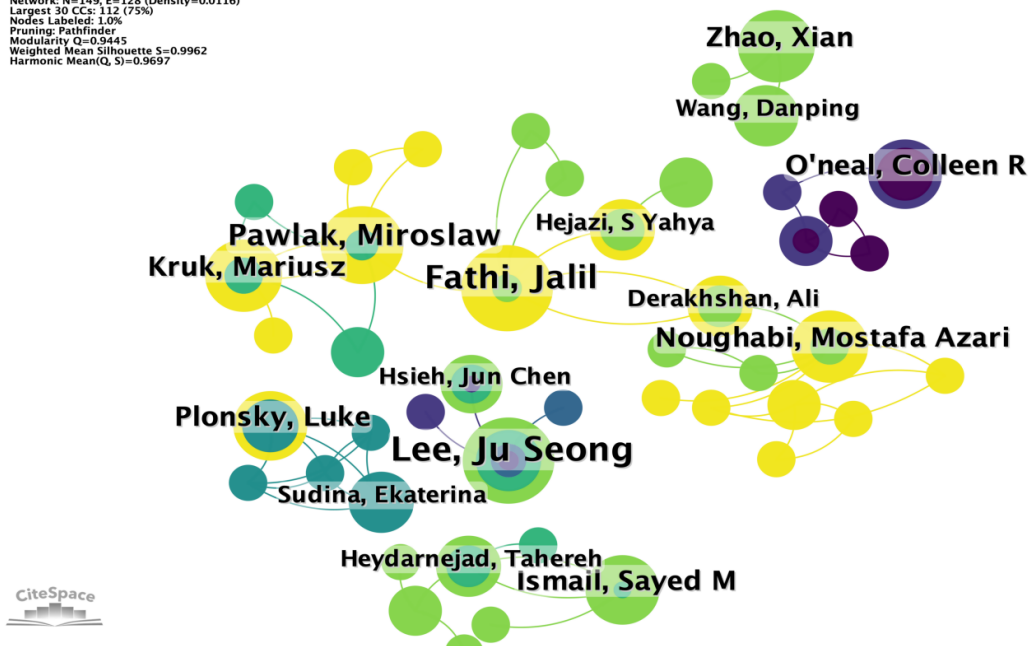
Rank	Journal Name	Number of Articles
1	Frontiers in Psychology	27
2	Journal of Multilingual and Multicultural Development	14
3	System	9
4	Language Teaching Research	5
5	Computer Assisted Language Learning	4
6	Innovation in Language Learning and Teaching	3
7	Asian-Pacific Journal of Second and Foreign Language Education	3
8	ITL-International Journal of Applied Linguistics	3



**Table 2.** Top 10 core authors of cited numbers on L2 grit from 2016-2024

Rank	Author	Affiliation	Publications	Citations
1	Lee Ju Seong	Education University of Hong Kong	7	99
2	Teimouri Y	Georgetown University	2	93
3	Gholam Hassan Khajavy	University of Bojnord	2	75
4	Sudina Ekaterina	East Carolina University	3	74
5	Abdullah Alamer	King Faisal University	3	54
6	Feng Liying	Xiamen University	1	37
7	Ali Derakhshan	Golestan University	3	31
8	Wei Rining	Xi'an Jiaotong-Liverpool University	1	21
9	Hejazi, S. Yahya	Semnan University	3	21
10	Shirvan Majid Elahi	University of Bojnord	2	20

CiteSpace, v. 6.2.R4 (64-bit) Advanced  
 June 22, 2024 at 6:42:23 PM CST  
 WoS: /Users/a47/Desktop/131 Grit 2/data  
 Timespan: 2018-2024 (Slice Length=1)  
 Selection Criteria: g-index (k=25), LRF=3.0, L/N=10, LBY=5, e=1.0  
 Network: N=149, E=128 (Density=0.0116)  
 Largest CCs: 112 (75%)  
 Nodes Labeled: 1.0%  
 Pruning: Pathfinder  
 Modularity Q=0.9445  
 Weighted Mean Silhouette S=0.9962  
 Harmonic Mean(Q, S)=0.9697

**Figure 3.** Visual network mapping of core authors in L2 grit research from 2016-2024

### 3.3. Keyword Co-occurrence and Thematic Clustering

Keyword co-occurrence analysis via CiteSpace reveals both dominant themes and their evolution paths in L2 grit research (Table 3 and Figure 4). High-frequency keywords such as anxiety (centrality: 0.21) reveal the significance of affective factors in L2 grit research. Grit has been empirically shown to alleviate language learning anxiety and enhance emotional well-being to improve learning outcomes (Xu et al., 2022), while teacher support plays a mediating role in relieving language learning anxiety (Liu et al., 2023). Motivation (centrality: 0.15), as a key variable to promote academic perseverance, is especially in relation to PE, one sub-dimension of grit (Pawlak et al., 2024). Keywords like academic achievement and engagement further underscore grit's predictive value in academic performance. Sudina & Plonsky (2021b) explored the differential impact of each dimension of grit on academic

achievement. Recent emergent keywords, such as online learning and environment, reflect the increasing focus on the impact of online learning environment on grit, especially in the context of post-pandemic education.

**Table 3.** Keywords co-occurrence frequency, centrality and year (part) in L2 grit research domain

No.	Frequency	Centrality	Year	Keyword
1	34	0.21	2016	anxiety
2	31	0.2	2018	achievement
3	27	0.14	2018	perseverance
4	26	0.15	2016	motivation
5	25	0	2019	emotions
6	25	0.02	2021	positive psychology
7	20	0.01	2018	validation
8	18	0.02	2021	EFL learners
9	17	0.21	2021	engagement
10	16	0.15	2019	learners

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 April 22, 2024 at 1:58:26 PM CST  
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 Timespan: 2016–2024 (Slice Length=1)  
 Selection Criteria: g-index (k=25), LRF=3.0, L/N=10, LBY=5, e=1.0  
 Network: N=210, E=562 (Density=0.0256)  
 Largest 30 CCs: 210 (100%)  
 Nodes Labeled: 1.0%  
 Pruning: Pathfinder  
 Modularity Q=0.7177  
 Weighted Mean Silhouette S=0.8765  
 Harmonic Mean(Q, S)=0.7892



Figure 4. Time-series keyword clustering mapping in L2 grit research domain

Time-series mapping of keywords (Figure 5) further demonstrates the dynamic evolution of the field's research focus, indicating a change from static single-variable research to multi-dimensional dynamic analysis. It mainly focused on the conceptual model of grit and the individual internal variables (such as anxiety and motivation) from

2016–2020. The role of affective factors and external support (such as foreign language enjoyment and teacher support) gained prominence from 2020–2021. Research in 2023–2024 extended to dynamic situational factors, highlighting emerging research themes such as online teaching and environment.

CiteSpace, v. 6.2.R4 (64-bit) Advanced  
 March 12, 2024 at 5:36:41 PM CST  
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 Timespan: 2016–2024 (Slice Length=1)  
 Selection Criteria: g-index (k=25), LRF=3.0, L/N=10, LBY=5, e=1.0  
 Network: N=210, E=562 (Density=0.0256)  
 Nodes Labeled: 1.0%  
 Pruning: Pathfinder  
 Modularity Q=0.7177  
 Weighted Mean Silhouette S=0.8764  
 Harmonic Mean(Q, S)=0.7892

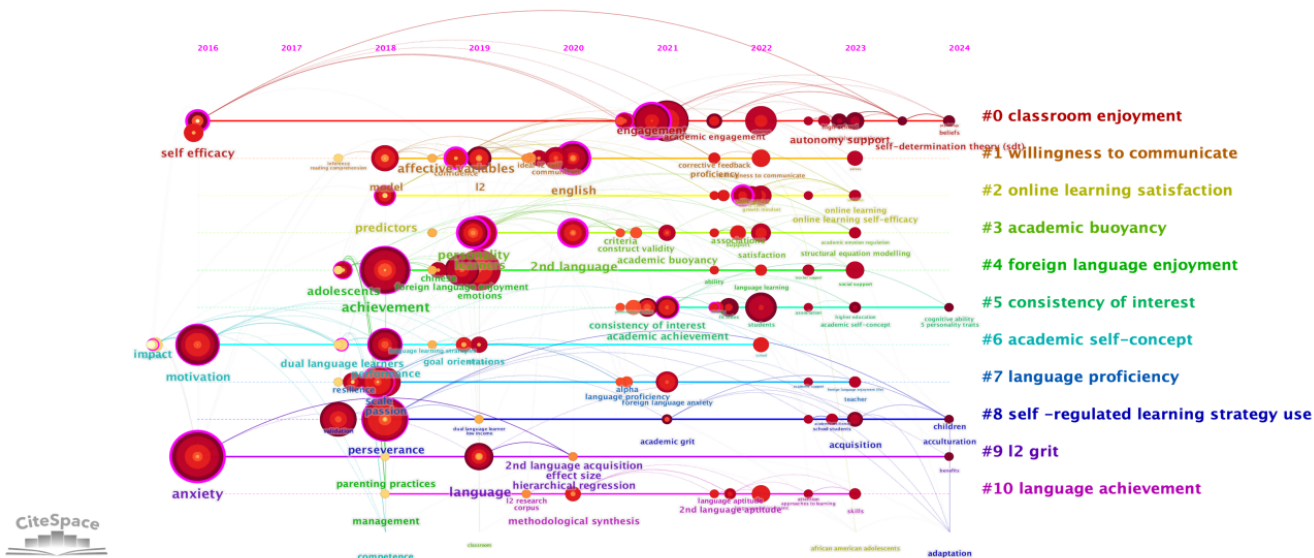


Figure 5. Time-series keyword clustering in L2 grit research domain

## 4. Key Themes in L2 Grit Research

Based on keyword co-occurrence and time-series mapping analysis, this study identifies four key themes in L2 grit research from 2016 to 2024: (1) conceptualization and measurement of L2 grit, (2) the relationship between L2 grit and academic achievement, (3) the connection between L2 grit and WTC, and (4) the role of L2 grit in online language learning environment. The section below outlines the major findings for each thematic domain.

### 4.1. Conceptualization and Measurement of L2 grit

The concept definition and measurement of L2 grit serve as a theoretical foundation in this research domain and remain a persistent focus. At present, the connotation and measurement tools of grit in the context of L2 are still evolving (Teimouri et al., 2020; Yang et al., 2024). Early studies frequently adopted domain-general scales, such as the Grit-O scale (Duckworth et al., 2007) and Grit-S scale (Duckworth & Quinn, 2009) to predict L2 learning outcomes. However, questions were raised regarding their predictive validity in L2 learning contexts (Li & Yang, 2024). Therefore, more recent research has shifted toward developing and validating language-specific grit scales to explore its conceptual structure and measurement properties, which are more sensitive to linguistic and contextual nuances (Teimouri et al., 2020; Sudina & Plonsky, 2021a; MacIntyre & Khajavy, 2021).

There is still no scholarly consensus on the structural dimensions of grit with the generic domain in L2 contexts. For example, while Ebadi et al. (2018) proposed a four-dimension structure, Giordano (2019) only confirmed one dimension (PE). By contrast, other studies have provided empirical support for a two-factor model comprising of PE and CI, or a hierarchical structure that positions these two as sub-components under a higher-order grit factor (Wei et al., 2020; Alamer, 2021; Sudina & Plonsky, 2021a; Liu et al., 2022). In particular, Teimouri et al. (2020) proposed through exploratory factor and principal component analysis that the 9-item language-specific grit scale had a stronger validity than the generic one. Subsequently, Sudina & Plonsky (2021a) used second-order confirmatory factor analysis in college foreign language learners, reinforcing the higher-order structure of L2 specific grit.

Available studies on the structure and measurement of L2 grit are still inconsistent influenced by differences in culture, language and educational background (Zhao & Wang, 2023), which suggests the necessity for more careful cross-validation across languages, learning stages and cross-cultural contexts (Li & Yang, 2024). Based on the research results of Alamer (2021) and Liu et al. (2022) in scale development and validation, future studies may further integrate and improve the existing grit scales, and systematically examine the structure of L2 grit and its relationship with learning behaviors and outcomes by using large samples, multivariate statistical models and cross-group analysis.

### 4.2. Relationship Between L2 Grit and Academic Achievement

The positive predictive effect of grit on academic achievement is one of the earliest and most central issues in this domain. A large number of studies have confirmed that grit levels can significantly predict language academic achievement, especially when grit interacts with such positive variables as motivation and foreign language enjoyment, it has a more significant promoting effect on the improvement of learning engagement and achievement (Teimouri et al., 2021; Fathi & Hejazi, 2024). In general, learners with higher grit levels are better equipped to cope with frustration and stress during the learning process, thereby sustaining effort and interest longer.

It is worth noting that there may be differences in the relationship between the two sub-dimensions of grit and academic achievement. Studies of Sudina & Plonsky (2021a) found that under the context of foreign language learning, CI was a stronger predictor of academic achievement than PE. Subsequently, Sudina & Plonsky (2021b) pointed out that this dimensional difference may be influenced by the learning environment: in English as a Foreign Language (EFL) environment, PE tends to be a stronger predictor of the improvement of learners' self-rated language proficiency, whereas in English as a Second Language (ESL) context, the predictive effect of CI is inversely negative. These inconsistent results highlight the necessity to further explore the correlative mechanism between L2 grit and academic achievement, especially the changing relationship between the two in different cultural and linguistic contexts. Accordingly, future studies should continue to validate the applicability of language-specific grit scales in different contexts and explore the validity and reliability of other relevant measurement tools, such as the long-range goal-oriented scale.

Furthermore, research has begun to focus on the mediating role of affective variables between grit and academic achievement. Fathi & Hejazi (2024) demonstrated that grit indirectly affects learners' performance through strengthening foreign language enjoyment. This suggests that further analysis of how affective factors such as anxiety, self-confidence, and foreign language enjoyment influence the relationship between grit and language performance is needed to uncover the underlying mechanisms.

### 4.3. The Connection Between L2 Grit and Willingness to Communicate (WTC)

Improving learners' WTC in a second language is one of the important aims in language teaching. Empirical studies have consistently shown that grit can significantly predict learners' WTC (Lee & Lee, 2019; Lee & Hsieh, 2019; Bensalem et al., 2023; Alrabai, 2024). In other words, learners with higher grit levels usually show a stronger goal persistence and motivation, and thus participate in language communication more actively (Lee & Hsieh, 2019). In addition, foreign language enjoyment, as a mediating variable, reinforces the positive impact of grit on WTC (Bensalem et al., 2023), indicating that positive affection plays a bridging role.

In the studies on distinguishing the internal dimensions of grit, many scholars have noticed that

compared with CI, PE has a more significant impact on WTC. For instance, after comparing English learners in public schools and private language institutions, Ebn-Abbasi and Nushi (2022) found that PE is positively correlated with learners' WTC and has a crucial predictive effect on it in both educational environments. A few studies also show a weak predictive effect, suggesting that grit may vary across learner groups and contexts. But generally speaking, there is a positive correlation between grit and WTC in many regional studies. This conclusion has been validated in studies in Indonesia (J. S. Lee & Drajiati, 2019), South Korea (Lee & lee, 2019), and China, including three longitudinal surveys on high school students (Yang et al., 2024). High consistency of these findings suggests that the positive correlation between grit and WTC is universal across contexts (Zhao & Wang, 2023). Future studies should further explore the dynamic effects of grit on WTC in different learning contexts (e.g. in and out of the classroom, online and offline), and examine potential moderators such as age and affection, so as to elucidate the intensity and mechanism of grit's influence on WTC more accurately.

#### 4.4. The Role of L2 Grit in Online Language Learning Environments

Large-scale online teaching during the COVID-19 pandemic has created many psychological, affective and learning challenges for L2 learners. In an online learning environment, grit has been shown to play an important role in alleviating learning stress and optimizing learning experience. A study of English learners at colleges and universities in China shows that students' self-oriented perfectionism is positively correlated with their grit levels. Grit can not only relieve English learning anxiety, but also reduce the risk of academic burnout in online learning contexts (Liu et al., 2021). Similarly, an Iranian study by Derakhshan and Fathi (2024) found that online learning self-efficacy (OLSE) plays a mediating role between grit and learning engagement, suggesting that self-management skills are critical to improving learners' grit performance and learning engagement.

Among the factors influencing online learning satisfaction, Sun & Mu (2023) pointed out that ideal L2 self and grit are significantly positive predictors, and OLSE is a key intermediary, indicating that grit not only improves online learning satisfaction directly by enhancing learners' self-efficacy, but also promotes learning motivation and active engagement indirectly. Moreover, Zhao and Wang (2024) emphasized that the sub-dimension of grit (PE) can balance negative emotions in online learning and help learners stay positive in distance learning. Wicaksono et al. (2023) further demonstrated that grit and self-efficacy have a synergistic effect on improving academic resilience and learning motivation, providing a reference for designing supportive online learning frameworks.

In sum, in online learning situations lacking in face-to-face interaction, grit plays a role by directly reducing learning anxiety and enhancing academic resilience on the one hand, and indirectly improving learning satisfaction and motivation by enhancing self-efficacy on the other hand, becoming an important psychological variable for

optimizing online L2 learning experience (Derakhshan & Fathi, 2024; Sun & Mu, 2023). Future studies should explore the dynamic mechanisms of grit in multicultural contexts, further reveal its multi-layered impact on online and blended learning, and provide empirical evidence for the design of personalized learning support services.

## 5. Future Trends in L2 Grit Research

Future studies on L2 grit are expected to make new breakthroughs along many directions. Building on the knowledge mapping analysis, the forthcoming studies can benefit from a more systematic and integrative research framework. Building on the preceding analysis of the field's evolution and core themes, we propose four trends for future research: (1) investigating interactions between grit and other positive psychological constructs, (2) examining the moderating effects of environmental factors, (3) clarifying the differentiation and connection between grit and related constructs, and (4) adopting longitudinal and dynamic approaches to study grit development over time. Latest theoretical viewpoints and empirical research progress will be combined to elaborate the above directions respectively to look to the future development path of L2 grit research.

### 5.1. Interactions with Other Positive Psychological Constructs

Within the framework of positive psychology, interactions between grit and other positive psychological constructs are increasingly studied. Results indicate that grit is significantly correlated with positive factors, such as foreign language enjoyment, hope, well-being, mindfulness and curiosity for knowledge in language learning (Choi & Lee, 2023; Zhao & Wang, 2023; Hosseini et al., 2023; Altıntaş & Canbulat, 2024), and also enhances learners' continuous input and positive experience in language learning to varying degrees. Especially when grit and mental resources such as self-efficacy and academic buoyancy promote each other, learners can relieve the negative effects of boredom and anxiety more effectively, and thus obtain a higher sense of learning satisfaction and achievement (Hosseini et al., 2023). Moreover, growth mindset has been found to strengthen PE and correlate positively with foreign language achievement (Fathi et al., 2024; Teimouri et al., 2020). In terms of vocabulary learning and academic performance, the positive correlation between grit and positive variables such as language curiosity and foreign language enjoyment has also been empirically supported (Choi & Lee, 2023; Yu & Ma, 2024), demonstrating the synergy among multiple positive psychological variables.

The interaction mechanism between grit and various positive affective and cognitive factors can be further explored in the future. Special attention should be paid to whether the two sub-dimensions of grit (PE and CI) have differentiated effects on positive psychological factors such as hope, well-being and growth mindset under varying cultural contexts and teaching modes (Choi & Lee, 2023; Teimouri et al., 2020).

Meanwhile, longitudinal or interventional research

design can be used to deeply understand the coupling relationship among various positive psychological variables to provide more targeted practical guidance for L2 classroom teaching and learning strategies.

## 5.2. The Moderating Role of the External Environment

In recent years, researchers have gradually realized the key influence of external environment on the development of L2 grit, and relevant studies are enriching the understanding and application of grit from various perspectives such as classroom environment and teacher support. The latest empirical research has found that a positive classroom atmosphere can stimulate a higher level of engagement and effort by learners, and achieve a virtuous cycle by strengthening the positive correlation between grit and foreign language achievement and enjoyment (Sun & Mu, 2023; Teimouri et al., 2020; Wei et al., 2020). Conversely, a negative classroom environment may diminish the positive effects of grit (Mohammed et al., 2022; Wei et al., 2020).

Teacher support, meanwhile, is critical to improving learners' grit levels. Affective support, teachers' passion, and their recognition of students perceived by learners can positively predict L2 grit levels (Derakhshan et al., 2023; Liu et al., 2023). More research indicates that teacher support can not only indirectly enhance learning motivation and mental health by improving self-efficacy and relieving anxiety, but also further improve learners' academic participation by shaping their growth mindset (Hejazi & Sadoughi, 2022; Tang & Zhu, 2024). In addition, the relationship between teacher care and students' well-being depends on learners' grit levels to a certain extent, indicating a complex mechanism of interaction between external support and individual characteristics of learners (Zhou, 2023).

While some available research has highlighted the vital role of external environment, further research is still needed to explore how specific types of teacher support (e.g., instrumental support, affective support, and academic support) have differentiated effects on the two sub-dimensions of grit (PE and CI). Under different cultural and social backgrounds, it is also worth studying how the external environment influences learners' grit and academic performance. Moreover, interventional studies can be conducted in the future to verify the feasibility of practical strategies such as teacher training and classroom affective care to develop and enhance learners' grit, and to assess the impact of these strategies on language learning outcomes and long-term development trajectory.

## 5.3. Differentiation and Connection Between L2 Grit and Related Constructs

Current attention has turned to differentiating and connecting grit from related constructs such as resilience, self-control and conscientiousness. While these constructs overlap functionally, they differ in core connotation, goal direction and temporal dimension. Recent empirical studies have further verified the uniqueness of L2 grit and its complex relationship with related constructs (Botes et al., 2024; Sudina & Plonsky, 2021a). Clarifying the boundary between grit and similar concepts will not only

help us fully understand the unique role of grit in language learning, but also deepen the discussion on its interaction with other psychological variables.

First, grit and resilience both involve adaptability in time of difficulties, but with different emphasis. Resilience mainly emphasizes the recovery from setbacks (Perkins-Gough, 2013), whereas grit focuses on sustained pursuit for long-term goals (Duckworth et al., 2007). Wang (2021) posited that self-regulated learning (SRL) mediates the interplay between grit and resilience. In the process of L2 learning, resilience helps learners flexibly adjust their strategies to meet immediate challenges, while grit supports their continuous pursuit for long-term goals, thus forming positive synergies in the process of self-regulation.

Second, grit and self-control both involve the ability to suppress impulse, but with different emphasis on temporal dimension. Self-control concerns short-term impulse inhibition (Duckworth & Gross, 2014), such as focusing on specific tasks, while grit not only means the ability to overcome short-term difficulties, but also implies long-term goal orientation and persistent effort (Sudina & Plonsky, 2021b; Wang, 2021). This makes grit especially critical in SLA, since language learning often requires lasting persistence and continuous effort.

Third, grit and conscientiousness (as one of the "Big Five" personality traits) have conceptual overlap, but with a clear distinction in essence. Conscientiousness is mainly embodied in individual self-discipline and diligence, usually closely related to the completion of short-term tasks (Credé et al., 2017). Grit, on the other hand, emphasizes a deep commitment and sustained enthusiasm for long-term goals, a trait that transcends the role of conscientiousness in short-term adaptive efforts (Duckworth & Gross, 2014). Sudina and Plonsky (2021a) confirmed that although there is some overlap between the two, there are significant differences in predicting foreign language learning achievement and sustained engagement. In particular, CI predicts L2 achievement more strongly than general conscientiousness, particularly in domain-specific applications (Credé et al., 2017). In addition, Botes et al. (2024) compared domain-general grit with language-specific grit and found that the latter is more effective in predicting foreign language learning performance, learning engagement and ideal L2 self, and is not affected by accountability or cognitive ability.

By clarifying the boundaries between grit and such constructs as academic resilience, self-control and conscientiousness, it can more systematically reveal the unique role and potential interaction mechanism of grit in L2 learning. In addition, different educational environments, linguistic backgrounds and sociocultural contexts may affect the predictive power of these constructs on language learning outcomes. For example, Sun's study (2022) found that grit and resilience have a synergistic effect on promoting creative teaching in L2 teachers, demonstrating the potential value of these constructs in educational practice. On the other hand, Wicaksono et al. (2023), based on the structural equation model of online English learning context, found that L2 grit orientation and self-efficacy can not only jointly promote academic resilience, but also effectively reduce the risk of insufficient learning motivation.



Future studies should continuously explore the complex relationship between grit and related constructs to clarify their independent and complementary effects in L2 learning. For example, how grit works in conjunction with resilience, self-control, and conscientiousness can be examined to enhance academic resilience and long-term learning outcomes in different teaching and sociocultural contexts. This will be an important direction worthy of further discussion.

#### 5.4. Dynamic Change and Long-term Tracking of L2 Grit

In the latest two years, researchers have paid increasing attention to the dynamic changes of grit in L2 learning. In the past, most scholars adopted cross-sectional design, which made it difficult to fully depict the fluctuations of grit levels experienced by learners in different stages. Longitudinal studies can further explore how grit adapts with the change of learning environment, learning task and individual mental state, and thus affects learning outcomes.

First, affective factors play a major role during the process of grit development. A longitudinal study of multilingual fifth-grade learners (Wang & Hindman, 2023) found that learners' affective abilities (such as emotion regulation) were positively correlated with both reading achievement and grit levels. Grit helps learners overcome reading challenges and continuously improve their reading skills over the course of a semester. Second, the longitudinal perspective reveals the moderating effects of external pressure and social support on grit change of L2 learners. The two-year follow-up study conducted by Estevez et al. (2023) showed that high stress levels often lead to decreased academic participation, but the sub-dimension of grit (PE) can effectively alleviate the negative effects of stress and help learners maintain high academic engagement. Moreover, the role of social support is also worthy of attention. Cui and Yang (2022) found that positive teacher-peer interaction drives steady improvement in learners' grit levels throughout the semester. This interaction pattern between social relations and grit suggests that grit is not a completely endogenous trait, but a result of environment and interpersonal interaction. The improvement of grit can help learners better cope with various challenges in language learning.

To sum up, the grit level in L2 learning is not static, but dynamically adjusts with the continuous role of context, emotion and social support. Future studies can use dynamic systems theory (DST) to further explore the change trajectory of grit in different stages of L2 learning through long-term longitudinal design and real-time measurement. In addition, the design of intervention programs such as regular feedback and goal reinforcement in teaching practice is also expected to better support learners' grit growth and academic performance, and provide important theoretical and practical guidance for online teaching and learning support.

## 6. Conclusion

This bibliometric review has systematically mapped the rise and evolution of L2 grit research from 2016 to

2024, revealing a field characterized by rapid growth and thematic diversification. Our analysis identified four key themes that form the core of current scholarship: (1) the conceptualization and measurement of L2 grit, (2) its relationship with academic achievement, (3) its connection to willingness to communicate, and (4) its crucial role in online learning environments. Building on this foundation, we proposed several future trends, highlighting the need for researchers to explore the interactions between grit and other positive constructs, the moderating effects of the learning environment, the differentiation from related concepts, and the dynamic nature of grit through longitudinal studies. Ultimately, by providing this comprehensive overview and forward-looking perspective, this study not only enriches the theoretical framework of individual differences in SLA but also offers actionable insights for fostering resilient and persistent language learners.

Although significant progress has been made in L2 grit research, there are still some inadequacies in available literature in terms of sample diversity, study design, and consideration of environmental variability (Zhao and Wang, 2023). Therefore, research scope should be further expanded in the future to conduct in-depth studies across different age groups, diverse target languages, and broader cross-cultural contexts, with priority given to long-term longitudinal research designs to capture the development trajectory and dynamic changes of grit. In addition, it is necessary to develop and validate more contextualized L2 grit measurement tools, while combining qualitative and quantitative research methods to enhance triangulation, and reveal more complex causal relationships and mechanisms of action between grit and other variables from a multidimensional perspective. In terms of theoretical framework, Bronfenbrenner's perspective on ecosystem theory (Liu et al., 2021) and the theory of DST can be integrated to investigate the interaction mechanism between environmental support and individual resilience development and explore how grit influences language learning through multiple mediating or chain effects (Zhao and Wang, 2023). With these efforts, future research will provide more universal and operable guidance for language teachers, curriculum designers and educational decision makers, and promote L2 learners to achieve higher levels of language achievement and psychological growth in the pursuit of long-term goals.

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## Data Availability Statement

The raw data supporting the conclusions of this article will be made available by the authors on request.

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### Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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