INVERGE JOURNAL OF SOCIAL SCIENCES
https://invergejournals.com/
ISSN (Online): 2959-4359, ISSN (Print): 3007-2018
Volume 5 Issue 1, 2026

MAPPING THE KNOWLEDGE LANDSCAPE OF GRIT: A COMPREHENSIVE BIBLIOMETRIC AND SCIENTOMETRIC ANALYSIS (1995-2025)

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DOI: https://doi.org/10.63544/ijss.v5i1.253

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Article History:
Received: 10.01.2026
Accepted: 17.02.2026
Published: 28.02.2026

Abstract

Grit, which can be said to be perseverance and enthusiasm towards long-term objectives, has become a central construct in psychology, education, and organizational behaviour. This paper presents a bibliometric and scientometric review of research on grit and its related literature published from 1995 to 2025. Using a dataset of 1,990 documents obtained from Scopus and processed with R Studio (Bibliometrix) and VOSviewer, the study examines publication trends, influential authors, countries, and journals, as well as thematic developments and collaboration networks. Findings reveal that grit research has grown exponentially at an annual rate of 18.65%, with seminal contributions by Duckworth et al. (2007) and the ensuing methodological and conceptual controversy initiated by Credé (2017). Keyword co-occurrence and thematic mapping illustrate the interdisciplinary applications of grit, highlighting its conceptual overlap with resilience, self-efficacy, positive psychology, and educational achievement. Country collaboration patterns underscore the dominance of the United States, alongside the growing contributions of Asia and Europe, reflecting a gradual but meaningful geographic diversification of grit scholarship. The discussion traces the evolution of grit from a focused psychological construct to a multidisciplinary field of inquiry, addressing key debates surrounding its measurement, dimensionality, and predictive validity across diverse populations and contexts. The paper concludes with theoretical and practical implications for educators, organizational leaders, and policymakers seeking to foster perseverance and passion in achievement-oriented settings. Finally, it outlines a future research agenda aimed at refining conceptual clarity, expanding cross-cultural investigations, and integrating grit more deeply with leadership, sustainability, and well-being.

Keywords: Grit, Perseverance, Resilience, Positive Psychology, Bibliometric Analysis, Knowledge Mapping

1. Introduction

The construct has taken a centre stage since the introduction of grit by Duckworth et al. (2007) as a subject of study in the field of psychology and education. Grit is defined as perseverance and long-term passion in long-term goals and focuses on the value of long-term effort as opposed to talent. Although early research has focused on placing grit in the context of personality psychology, more recent research has applied it to the fields of education, leadership, organizational behaviour, and well-being (Credé, 2017; Wolters and Hussain, 2015). Grit has been established as a key determinant of future performance and survival in a variety of settings, leading to a broad debate on its conceptual uniqueness and predictive success.

Although it is becoming more prominent, grit research has been criticized due to overlaps in concept

with conscientiousness, motivation, and self-control (Credé, 2017). Meanwhile, recent years have experienced the diversification of grit research into applied settings (including foreign language learning, engineering education, professional training, and workplace performance). This interdisciplinary growth requires a methodical mapping of the field in order to assess its intellectual organization, patterns of collaboration, and development of themes.

According to Lee and Park (2024), grit is a factor that leads to motivation and success in preservice physical education teachers and is applicable to inclusive teaching and perseverance in the course of professional preparation. To take an example, new evidence indicates that grit is a developmental process in positive education, which mediates the connection between growth mindset and psychological well-being of Chinese primary school students (Mechanisms from growth mindset to psychological well-being of Chinese primary school students, 2025).

The tools of bibliometric and scientometric methods can be effectively used to fill this gap to enable the quantitative synthesis of research trends and visualize intellectual connections. Past reviews of grit have been either narrative or meta-analytic in nature and not reflect the wider network of knowledge. The proposed study thus uses bibliometric analysis of the literature on grit published between 1995 and 2025 with the aim of: (1) examining the trends in publications and citations, (2) determining the most impactful authors, sources, and countries, (3) visualizing the thematic structures and research fronts, and (4) suggesting a future research agenda based on the emerging trends.

2. Literature Review

Grit literature has evolved fast since the construct was proposed by Duckworth et al. (2007) as the product of perseverance of effort and consistency of interest. Initial research associated grit with academic performance, military performance, and success at the workplace, which placed it as an indicator of resilience and long-term motivation. Nevertheless, there were arguments on the incremental validity of grit on top of the known traits like conscientiousness (Credé et al., 2017).

Grit in education has been found to be positively related to self-regulated learning, academic performance, and engagement (Wolters and Hussain, 2015; Datu et al., 2023). In applied linguistics, the construct of grit has been extended to the second-language acquisition (Zhao et al., 2023). Grit has been linked to persistence, flexibility, and leadership in the organizational context. Regardless of this increase, there have been scholars who have still questioned the clarity of the grit construct, measurement consistency of grit, and cross-cultural applicability of grit (Calo et al., 2022; Toyama, 2024). The results support the importance of the detailed scientometric mapping to place grit in its larger intellectual context.

Grit and self-control are distinct psychological concepts that are related to each other, and both contribute to the success of long-term goals and achievement (Duckworth and Gross, 2014). According to Tang et al. (2019), grit increases over time with continued commitment and growth mentality and is an indicator of higher academic success and general life satisfaction. The complex character of grit is also mentioned in the research by Bowman et al. (2015), which found distinctive dimensions of grit that determine the educational success, satisfaction, and persistence of students. The other studies explored the formation of grit and growth mindset in adolescence and discovered that the two characteristics complement one another and lead to motivation and perseverance in pursuing long-term objectives (Park et al., 2022).

Grit has been demonstrated to play a role in psychological resilience, posttraumatic growth, and life satisfaction even in such adverse conditions as the COVID-19 pandemic (A longitudinal analysis of grit, posttraumatic growth, and life satisfaction in school students under COVID-19, 2023) It has been demonstrated that grit is a psychological buffer that mitigates the negative emotional impact of perfectionistic tendencies. The variations between conscientiousness and grit are made clear and grit has been singled out as a predictor of academic success which is independent of the general personality characteristics (Conscientiousness, grit, and academic performance). It was also discovered that grit could enhance physical exercise among college students by personal growth initiative and self-efficacy (Hu, Zhang, Huang, and Jin, 2025), which means that grit is not only effective in the academic field.

3. Data and Methodology

The present research relied on the Elsevier Scopus database as the source of information because it

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ISSN (Online): 2959-4359, ISSN (Print): 3007-2018
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includes the extensive peer-reviewed publications on management, education, and psychology, and the search strategy involved the use of keywords such as grit, perseverance, passion, and similar constructs in the title, keywords, and abstracts. The end dataset comprised 1,990 published documents, between 1995 and 2025, based on 924 publications: (1) performance analysis to investigate the descriptive statistics and publication trends; (2) science mapping through the use of keywords co-occurrence, theme development and citation/co-citation analysis; and (3) mapping of collaborations among multiple nations and institutions. The statistical analysis tools were R Studio using Bibliometrix package, network map tools using VOSviewer, and tabulation of descriptive data using Excel.

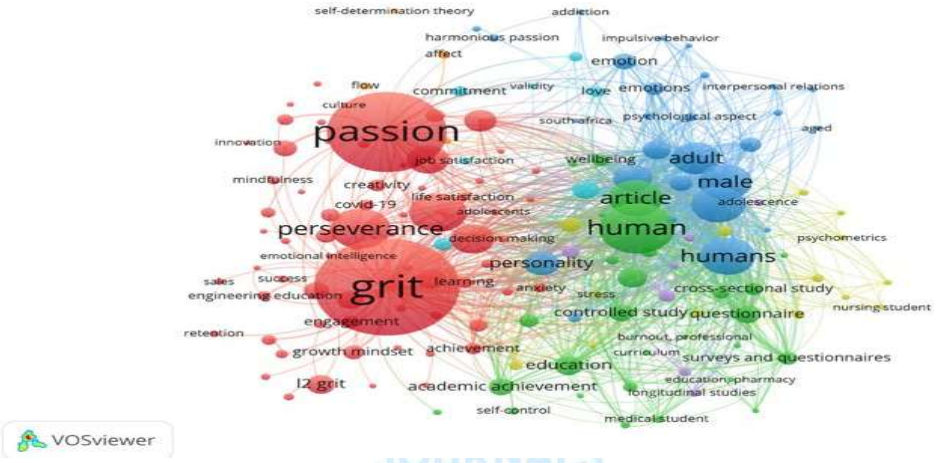
The instruments applied in these Metrics considered were annual publications growth, leading authors and journals, key-word bundles, thematic maps and country/collaboration networks. These tools combined enable the quantitative rigor and the visual investigation of the structure and dynamics of the research on grit. With this structure of dynamics R Studio and VOSviewer are essential in this research study and offer a distinct outcome that underpins and offers evidence regarding the research study.

4. Results

Cooccurrence of Keywords

Figure 1

Cooccurrence of Keywords



These included the most mentioned authors and journals, groups of keywords, thematic representations, and country-country collaboration networks, and the number of publications annually. These sources present both visual outlook and quantitative analysis of the data that forms the basis of the research structure and dynamics of grit. The keywords that are depicted in the co-occurrence network visualization are classified according to frequencies of co-occurrence, which demonstrates an apparent intellectual structure in this area of research, with three main clusters (red) of keywords (e.g., grit, perseverance, passion, creativity) that can be connected to psychological constructs related to achievement, motivation, and resilience. The importance of grit and passion as the key components shows that they are critical in the formation of the discourse, especially in regard to education, self-determination, and personal growth.

The green and blue clusters represent other yet complementary disciplines. The blue cluster appears to focus on the emotional and demographic factors of human behaviour, connecting the research about grit with more general psychological and social contexts. It is pegged by such terms as emotion, adult, male, and psychological aspect.

The empirical and methodological background of the field is presented in the green cluster comprising of human, education, controlled study, surveys, and academic achievement. It clarifies the way grit and resilience are explored by using organised psychological and educational tests. The correlations among clusters lead to the multidisciplinary approach where grit and other psychological characteristics interact with educational performance and human experiences overall.

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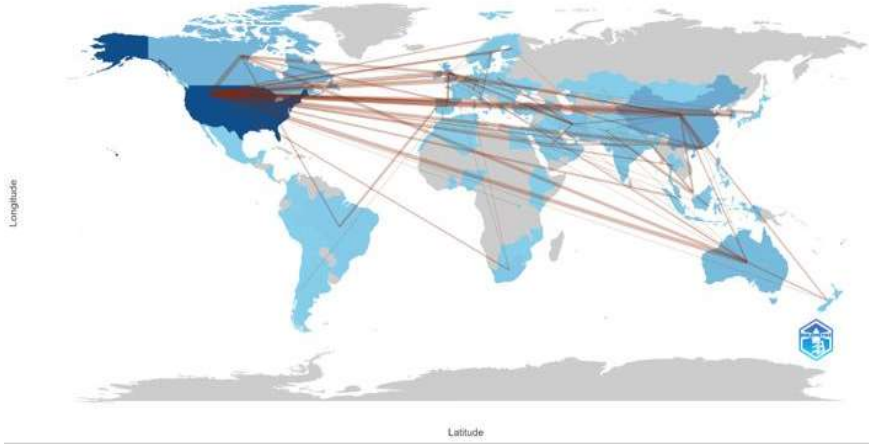
Country Collaboration Map

Figure 2

Country Collaboration Map



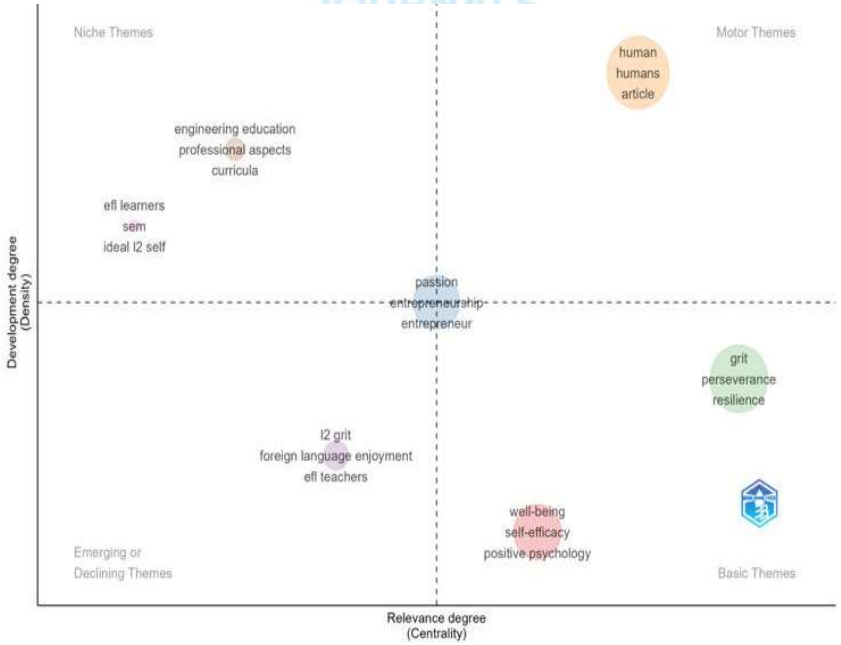
The country collaboration map shows the global research collaborations that have affected the field. The United States is the most obvious centre of cooperation as it is demonstrated by its vast connections with many countries across Europe, Asia, and Oceania. This is indicative of its capacity to attract international academic circles as well as its pre-eminent position in the production and dissemination of knowledge. The good working relationships amongst European countries, particularly the UK, Germany and Spain, suggest that cross-regional partnerships are a significant contributor to improving the quality and presence of research.

As countries such as China, India and Japan actively collaborate with the western countries, Asia is also becoming an increasingly significant part of closing the gap between the research contributions of the global North and South. It is worth noting that although Australia is geographically distant, its involvement in global relations is also emphasized by being a connected node. Everything said and done, the map shows that there is an increasing tendency towards the globalisation of research, in which the influence of scholarly work and the variety of opinions are both enhanced by transnational partnerships.

The Thematic Map

Figure 3

Thematic Map



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ISSN (Online): 2959-4359, ISSN (Print): 3007-2018
Volume 5 Issue 1, 2026

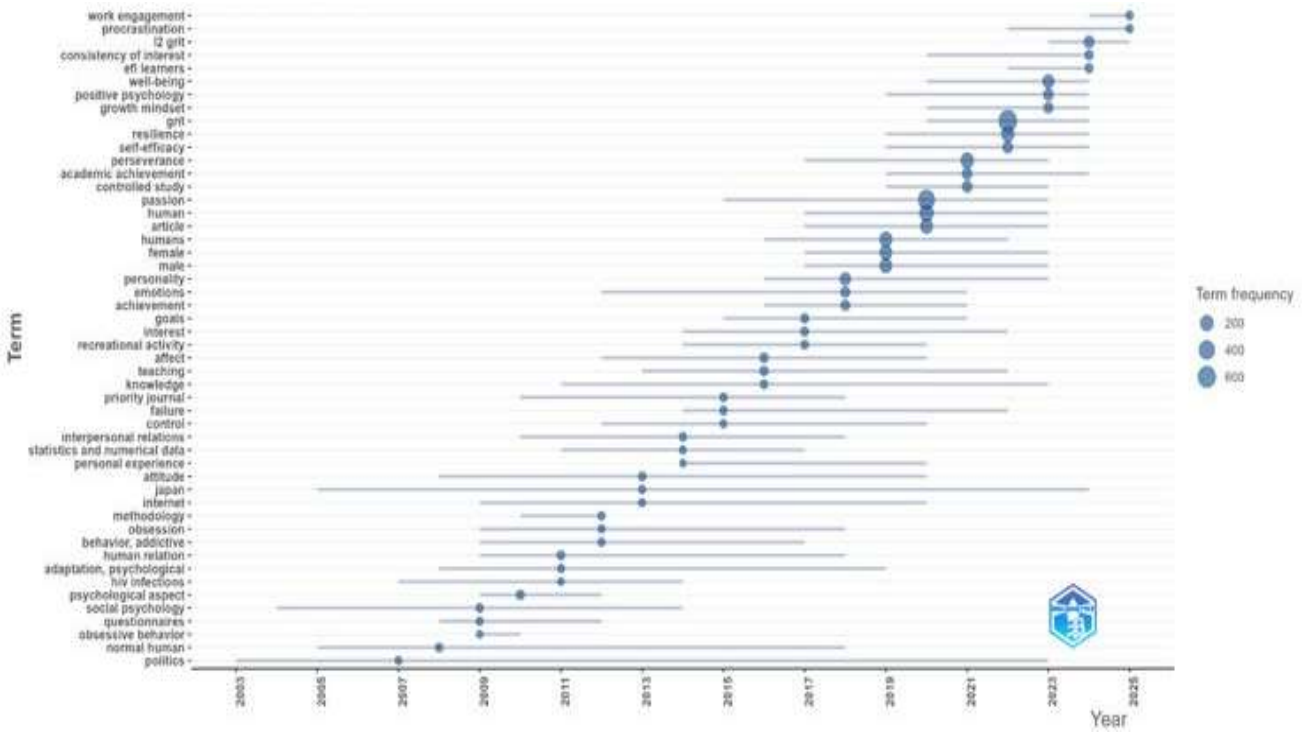
The thematic map separates research themes into four quadrants based on the level of development (density) and the importance (centrality). Among the Motor Themes, there are the keywords human and humans and article, which are found in the upper-right quadrant. These issues are main and highly elaborated which means that they represent the intellectual centre of the literature and shape a significant part of the existing discourse. On the other hand, the lower-right quadrant Basic Themes contain such concepts as grit, persistence, and resilience. The relatively low density of them implies that they might not be thoroughly developed theoretically yet and might be further empirically investigated, even though they are basic and universal in terms of their application to studies.

Engineering education, curricula, professional aspects, and EFL learners are the examples of the Niche Themes, which are situated in the upper-left quadrant. These topics seem to be of interest to specific academic communities since they are highly specialised, well-developed and less vital to the greater discipline. On the other hand, the Emerging or Declining Themes in the lower-left quadrant are L2 grit, liking foreign languages, and EFL teachers. These themes are at the moment characterized by low centrality and density meaning that they are either underdeveloped areas where research can be expanded in future or areas whose importance in the literature is declining.

The Trend Topic Analysis

Figure 4

Trend Topic Analysis



The trend topic analysis reveals the development of the research topics over the years and indicates continuity and new directions, with the older studies (before 2010) being more focused on traditional constructs in psychology (personality, behaviour, and psychology) and the more recent ones (2010-2015) being more focused on applied psychological constructs and their implication in education, organizational setting and personal development and the increased use of terms related to methodology and measurement.

The terms that have undergone the latest research interest (i.e. latest five years, 2016 onwards) tend to cluster around applied and interdisciplinary constructs, including work engagement, self-efficacy, positive psychology, grit, academic performance and well-being, and the size of the nodes of these terms is the largest in the visualization, which indicates a shift in the focus on purely psychological constructs to multidimensional and integrated constructs that involve education, organizational behaviour, and societal well-being, and lastly, an increasing focus on performance, resilience, and positive outcomes across educational, professional, and

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social contexts (i.e., a maturing of the field).

The Citation Analysis

Table 1

The Citation Analysis

Rank	Authors	Year	Journal	DOI	Total Citations	TC per Year	Normalized TC
1	Duckworth, A.L., Peterson, C., Matthews, M.D., Kelly, D.R.	2007	Journal of Personality and Social Psychology	10.1037/0022-3514.92.6.1087	4,120	216.84	12.15
2	Credé, M., Tynan, M.C., Harms, P.D.	2017	Journal of Personality and Social Psychology	10.1037/pspp0000102	1,013	112.56	20.05
3	Aaker, J.L., Lee, A.Y.	2001	Journal of Personality and Social Psychology	10.1037/0022-3514.81.3.492	658	26.32	1.98
4	Cardon, M.S., Gregoire, D.A., Stevens, C.E., Patel, P.C.	2013	Journal of Business Venturing	10.1016/j.jbusvent.2012.03.003	564	43.38	9.25
5	Williams, L.A., DeSteno, D.	2008	Journal of Personality and Social Psychology	10.1037/0022-3514.94.6.1007	468	26.00	3.55
6	Murnieks, C.Y., Mosakowski, E., Cardon, M.S.	2014	Journal of Management	10.1177/0149206311433855	459	38.25	9.86
7	Fletcher, G.J.O., Simpson, J.A., Thomas, G.	1999	Journal of Personality and Social Psychology	10.1037/0022-3514.76.1.72	457	16.93	5.01
8	Yim, C.K., Tse, D.K., Chan, K.W.	2008	Journal of Marketing Research	10.1509/jmkr.45.6.741	450	25.00	3.42
9	Davis, B.C., Hmieleski, K.M., Webb, J.W., Coombs, J.E.	2017	Journal of Business Venturing	10.1016/j.jbusvent.2016.10.006	416	46.22	8.23
10	Wolters, C.A., Hussain, M.	2015	Metacognition and Learning	10.1007/s11409-014-9128-9	414	37.64	12.44

The highest cited article is (Duckworth et al., 2007) with 4,120 citations and a citation rate of 216.84 per annum, which shows that the article is one of the most effective articles in the discipline and has made a contribution to the intellectual framework of the discipline. The findings of the citation analysis also indicate the presence of several highly influential papers, the most cited of which is (Duckworth et al.,2007)with 4,120 citations and an annual citation rate of 216.84, which justifies the role of Journal of Personality and Social Psychology as a central source of establishment of theoretical and empirical foundations in the sphere of personality, motivation, and social psychology. Credé (2017) and Aaker (2001) are also highly influential papers that support the role of Journal of Person

Meanwhile, the presence of interdisciplinary journals like Journal of Business Venturing, Journal of Management and Metacognition and Learning suggests a cross-domain transfer of psychological knowledge to the fields of entrepreneurship, organizational behaviour and education research. Interestingly, Wolters (2015) has the greatest normalized citation impact (12.44), although with a lower absolute citation count, implying that it has a better impact in a smaller citation window. Likewise, Credé (2017) shows outstanding normalized impact (20.05), which is the quick adoption and the ongoing applicability of the recent

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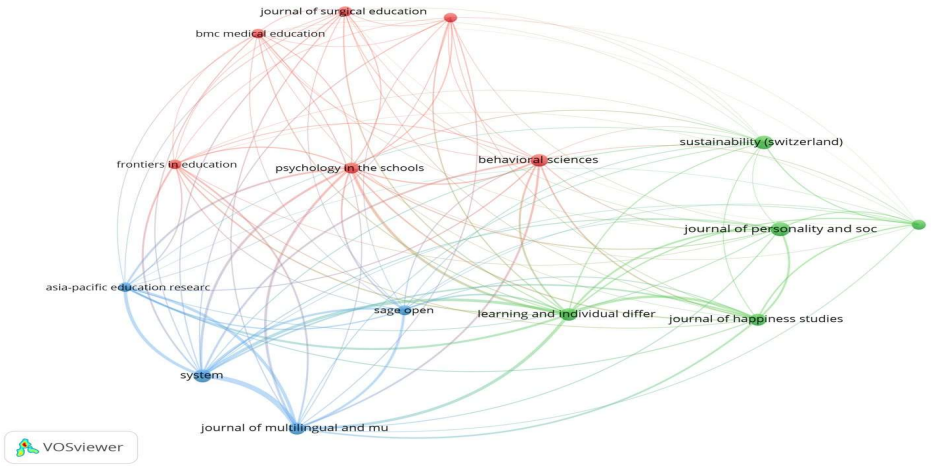
psychological research. In general, the distribution of citation indicates a body of knowledge that is rooted in traditional psychological theories and at the same time extends to education, management, and business research, which is the multidisciplinary direction of the field.

The Journal Co-Citation Network

Table 5

Journal Co-Citation Network



The journal co-citation network (Figure X) demonstrates three large clusters of the intellectual structure of the field. The red cluster has Psychology in the Schools, Behavioural Sciences, and Frontiers in Education at its center and a high connection with medical and surgical education journals. This cluster brings out the incorporation of psychological methods in education and professional training with focus on research in teaching practices, pedagogical psychology and learning outcomes. The green cluster, led by Journal of Personality and Social Psychology, Journal of Happiness Studies, and Learning and Individual Differences, is indicative of the impact of psychological and well-being studies, and the addition of Sustainability (Switzerland) indicates a new interdisciplinary trend, linking personality, positive psychology, and sustainable development.

The blue cluster is a group of journals including System, Journal of Multilingual and Multicultural Development, and Asia-Pacific Education Researcher, which are scholarly in the field of applied linguistics, multiculturalism, and regional education systems, and has multidisciplinary views. Cross-cluster linkages can show how the field is inter-related; e.g. Behavioural Sciences is linked to Learning and Individual Differences, whereas System is indirectly linked to journals dealing with education. On the whole, the co-citation map shows a relatively decentralized system where education, psychology, and interdisciplinary sustainability research meet, suggesting a growing but yet developing knowledge base, which reacts to both the traditions of the discipline and the current global issues.

4.6 Main information:

Table 2

Main Information About Data

Category	Description	Results
Main Information		
	Timespan	1995–2025
	Sources (Journals, Books, etc.)	924
	Documents	1,590
	Annual Growth Rate	18.65%
	Document Average Age	5.09 years
	Average Citations per Document	24.49
	References	79,460

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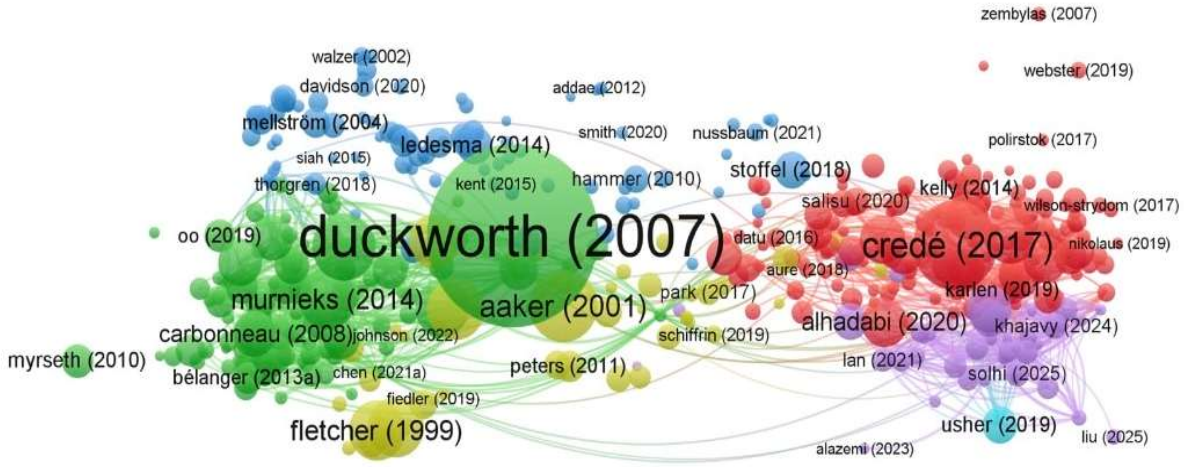
Category	Description	Results
Document Contents		
	Keywords Plus (ID)	1,881
	Author's Keywords (DE)	4,441
Authors		
	Authors	4,017
	Authors of Single-Authored Documents	337
Author Collaboration		
	Single-Authored Documents	350
	Co-Authors per Document	2.91
	International Co-Authorships	20.13%
Document Types		
	Article	1,379
	Book	9
	Book Chapter	105
	Conference Paper	44
	Editorial	1
	Erratum	1
	Note	4
	Review	46
	Short Survey	1

The bibliometric analysis was done using R Studio (Bibliometrix) and included 1,590 documents of 924 sources between 1995 and 2025, which is a good and continuously increasing research interest with an annual growth rate of 18.65. The papers were of average age (5.09 years) and were cited an average of 24.49 times, which represents a moderate academic impact. The number of authors in the literature is 4,017, but the most significant trend is collaboration, which is reflected in the average of 2.91 co-authors per document and the rate of 20.13 percent of international co-authorship. The data had a very broad content with 4,441 author keywords and 1,881 Keywords Plus entries, indicating a broad and dynamic thematic focus, and the publications were predominantly journal articles, with some book chapters and few conference papers, reviews, and editorials, indicating an active, collaborative, and globally active research environment.

Coupling of Documents

Figure 6

Coupling of Documents



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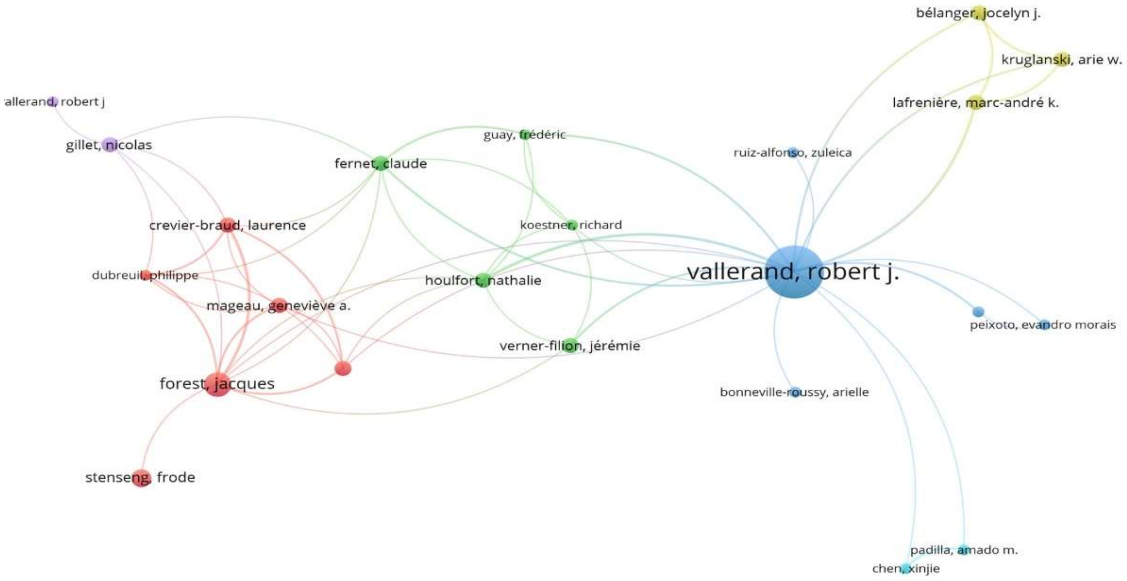
It is a co-citation network map generated by VOSviewer which indicates the intellectual structure of research in your chosen field, where the colours are used to indicate different groups of authors cited together, and the size of the node indicates how many times a specific work is cited, and in this case, the work that has the most citations across the broadest range of research streams, Schmidt, (2018), is at the centre of the clusters of other works such as Fletcher (1999) and Caza (2021), indicating how a particular work grounds future research and connect

Other publications, including Credé (2017) and Usher (2019), which are more recent, high-profile publications that are on the fringes of the clusters, can be seen as the more recent streams of scholarship, whereas the concentration of the red and purple clusters indicates that the research fronts have grown in recent years, whereas the distribution of the green and blue clusters indicates that the older foundational structures have not disappeared, and the outliers, including Yuan (2012) and Gorski (2013), are far away from the central structure, can The bibliometric network therefore represents the pioneer literature of the discipline as well as the intellectual proliferation and diversification into more specialized areas of study.

Coupling of Sources

Figure 7

Coupling of Sources



In the co-authorship network visualization below, the biggest node and strongest set of connections is that of Robert J. Vallerand, the most central scholar in the research field, whose work is a hub of a number of groups of scholars, each represented by a different colour, which are thematic collaborations, such as a global research network (blue, e.g., Peixoto, Bonneville-Roussy, and Chen) and streams of collaboration in motivation and personality psychology (green, e.g., Koestner, Guay, and Houlfort) and interpersonal and organizational psychology

This visualization also demonstrates the dynamism of collaborative research in this area: although there are several clusters, indicating that there are specialized groups of researchers who concentrate on specific thematic areas, there are also peripheral yet related authors (e.g., Bélanger and Kruglanski in the yellow cluster) that indicate interdisciplinary connections between motivational theories and more general models in social psychology, which also points to the fact that Vallerand has been a key scholarly figure that has helped to bring the field together.

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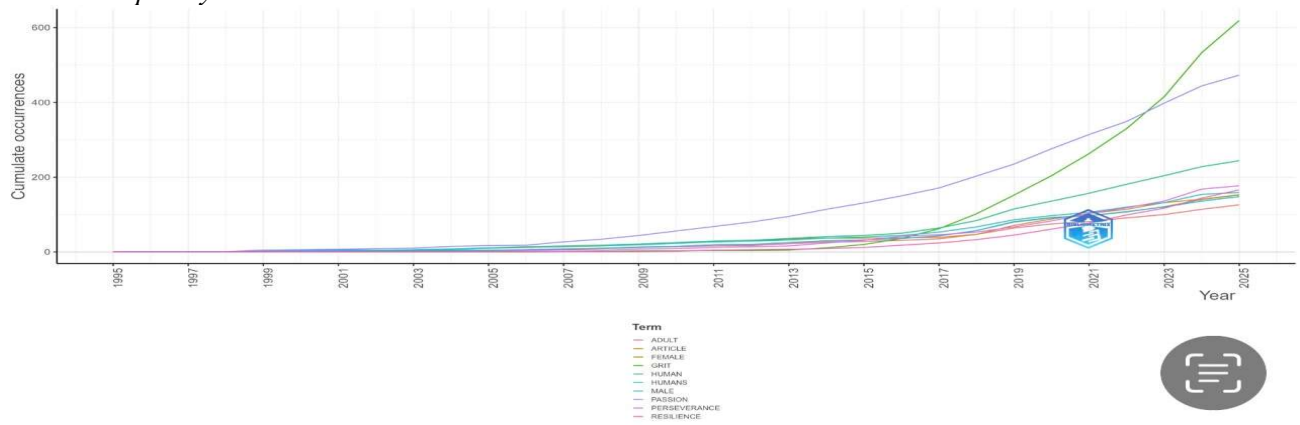
Words Frequency Over Time

Figure 8

Words Frequency Over Time



The following longitudinal trend analysis presents the cumulative frequency of key terms over time, which shows the overall distribution of terms between 1995 and 2025, with most of the terms having a relatively low and stable occurrence rate until around 2008 when all terms begin to experience a steady increase in frequency, with the most common terms, namely, humans and grit, having a significantly higher frequency after 2016 and thus reaching the highest occurrence rate by 2025.

This number also shows that the terms such as resilience, perseverance, and passion have been used rather consistently, albeit at a lower rate, and thus indicate that the former are concepts of interest in empirical and theoretical research, whereas more general demographic characteristics such as male, female, and adult have lower and more stable frequencies, which means that they are not as central to the concept of the research as grit or resilience. In short, the visualization demonstrates the shift of the research landscape towards psychological constructs of character and adaptability, which is consistent with the broader emphasis on positive psychology and motivational models in the present literature.

Most Cited Countries

Table 3

Most Influential Countries by Total Citations

Rank	Country	Total Citations (TC)	Average Article Citations	Number of Articles
1	United States	13,023	32.70	398
2	Canada	2,208	41.70	53
3	United Kingdom	1,595	24.20	66
4	China	1,240	11.40	109
5	Australia	1,149	25.50	45
6	Hong Kong	1,102	50.10	22
7	Iran	1,002	30.40	33
8	Sweden	751	34.10	22
9	New Zealand	659	59.90	11
10	Germany	546	22.80	24

The data represent the 10 most productive countries in terms of research and citation impact (total citations, average citations per article) and reveal that the United States is the most influential contributor with 13,023 total citations, then followed by a significant distance by Canada (2,208 citations) and the United Kingdom (1,595 citations) although the countries with lower total citations such as China (1,240) and Australia (1,149) have lower average article citations, at 11.4 and 50.1.

The findings also indicate that countries that have relatively low total citations can have a high citation influence per article with New Zealand having the highest average article citation rate of 59.9, having 659 total citations, closely followed by Hong Kong and Canada, and with Germany and Iran also contributing

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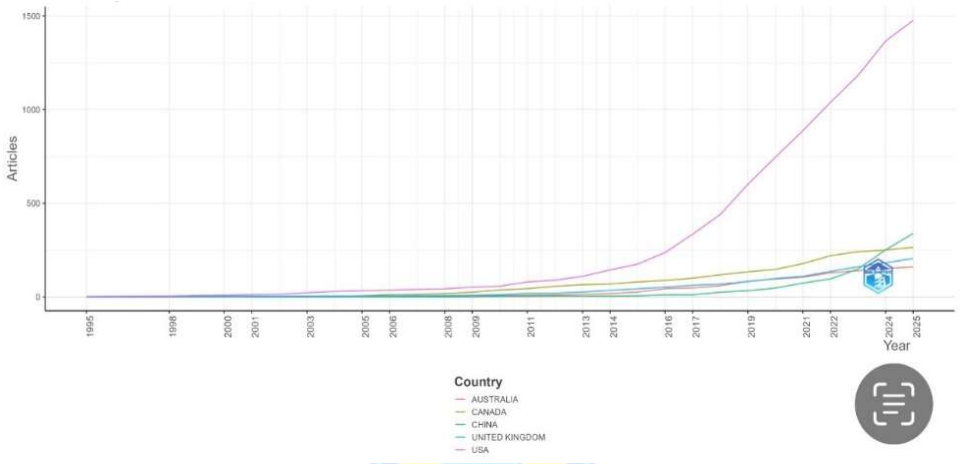
significantly with 546 and 1,002 total citations, but with average citation rates (22.8 and 30.4) that are lower than most high-impact countries. Combined, the data represents an image of the world research landscape in which the U.S. leads in size, whereas smaller countries like New Zealand and Hong Kong are high impact due to high-impact publications.

Country Production Over Time

Figure 9

Country Production Over Time



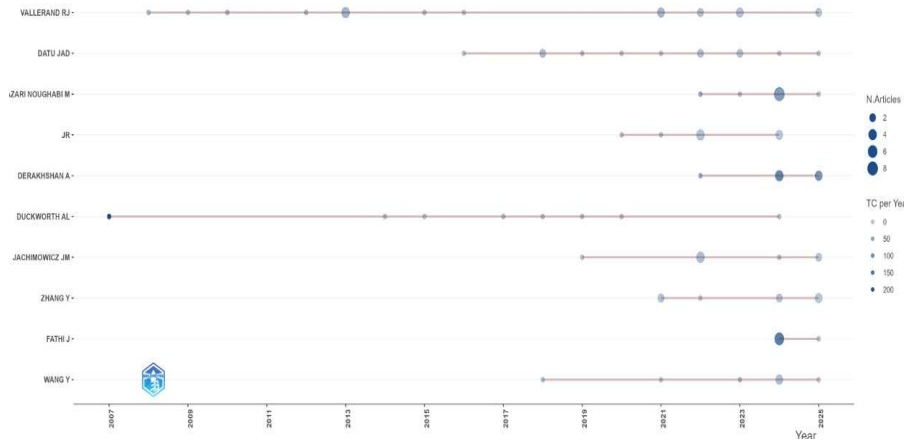
An examination of the trend in country production overtime shows that there has been a great increase in the output of research in all countries considered but the growth patterns vary widely. The US publications are by far the highest and then exponentially increase after 2010 when it reaches 1,500 articles. China and the United Kingdom also demonstrate significant growth but at a smaller scale than the USA, and China demonstrates faster growth since 2015 that might be a manifestation of the growing investment in research and development. Canada and Australia have stable yet small contributions, which is indicative of their positions as key, yet peripheral, contributors of research productivity.

The temporal distribution also shows that despite the steady growth in the production of research by all countries between 1995 and 2010, the rate of increase after 2010 is stiffer in both the USA and China, indicating an accelerated production of research in all the countries, but the USA and China are on the forefront. The convergence of the output growth of the UK, Canada, and Australia demonstrates that the USA is still in the lead in terms of output, but over time, the research production has become more global and spread among the countries.

Author's Production Over Time

Figure 10

Author's Production Over Time



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The following timeline will indicate how many publications have been published and how many publications have been cited over the years, with the most active authors such as Vallerand RJ and Duckworth AL actively publishing over decades (late 2000s and beyond), and newer authors such as Derakhshan A, Jachimowicz JM, and Zhang Y publishing in the recent past (last five years). The size of the circles reflects the number of articles, and Vallerand RJ and Duckworth AL are among the first most frequent contributors, and such scholars as Wang Y and Azari Noughabi M have become more prominent later, and their publications are more often cited, which means that they have become more influential.

Even though there are some authors that have the same number of articles with moderate citation impact, other authors, like Wang Y and Derakhshan A, have more recent articles with high citation impact, which gives them a chance to become upcoming leaders in the field, as well as the continuity of the contributions of the old scholars and the introduction of new researchers over time. Overall, this number demonstrates that the number of articles and citation impact fluctuate with time among Vallerand RJ, Duckworth AL, Wang Y, and Azari Noughabi M, reflecting the relationship between the duration of research productivity and the new high-impact contributions to the development of the changing intellectual environment.

Most Relevant Countries

Table 4

Country Collaboration Patterns in Grit Research

Rank	Country	Articles	Articles (%)	SCP[1]	MCP[2]	MCP (%)[3]
1	United States	398	25.0	345	53	13.3
2	China	109	6.9	84	25	22.9
3	United Kingdom	66	4.2	49	17	25.8
4	Canada	53	3.3	45	8	15.1
5	Australia	45	2.8	31	14	31.1
6	Iran	33	2.1	23	10	30.3
7	India	28	1.8	26	2	7.1
8	South Korea	26	1.6	22	4	15.4
9	Indonesia	25	1.6	17	8	32.0
10	Germany	24	1.5	16	8	33.3
11	Malaysia	24	1.5	17	7	29.2
12	Italy	23	1.4	16	7	30.4
13	Turkey	23	1.4	17	6	26.1
14	Hong Kong	22	1.4	11	11	50.0
15	Sweden	22	1.4	14	8	36.4
16	France	20	1.3	15	5	25.0
17	Poland	18	1.1	11	7	38.9
18	Spain	18	1.1	14	4	22.2
19	Thailand	17	1.1	13	4	23.5
20	Netherlands	16	1.0	10	6	37.5
21	Saudi Arabia	16	1.0	9	7	43.8
22	Norway	14	0.9	10	4	28.6
23	Philippines	14	0.9	13	1	7.1
24	Japan	13	0.8	11	2	15.4
25	Romania	13	0.8	11	2	15.4

[1] **SCP** = Single Country Publications (articles where all authors are from the same country).
[2] **MCP** = Multiple Country Publications (articles with authors from at least two different countries).
[3] **MCP (%)** = Percentage of a country's total articles that involve international collaboration.

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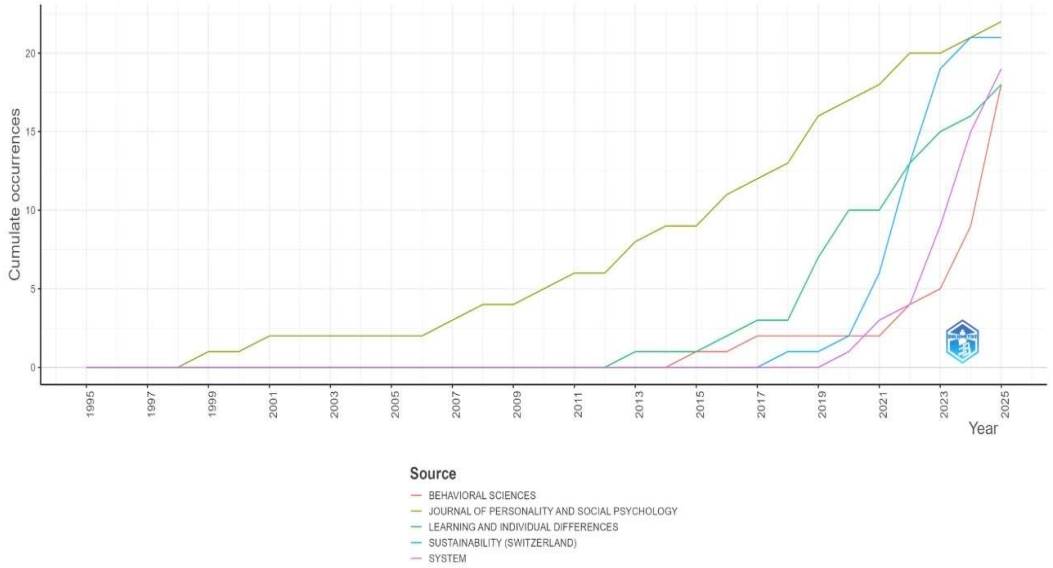
The table gives a bibliometric distribution of the outputs in the countries in terms of the number of articles, the percentage of the articles, and the collaboration patterns. The United States is the biggest contributor to the dataset (398 articles), China (109 articles), the United Kingdom (66 articles), and then an extended tail of contributions by countries like Romania, Japan and the Philippines. The dataset also determines the presence of single-country publications (SCP) and multi-country publications (MCP) and the percentages of MCP indicate the degree of international collaboration, with smaller producers such as Hong Kong (50%), Poland (38.9%) exhibiting a higher level of collaborative activity than larger contributors such as the USA (13.3%).

This distribution shows that the research is concentrated in a small number of leading countries and the proportion of MCP is increasing: although the USA has the most articles, the proportion of MCP is comparatively low, which means that it is more likely to rely on national collaborations; and the more recent contributors, Malaysia (39.2%), Germany (33.3%), and Indonesia (32%), reflect a strategic focus on international research networks that can facilitate visibility and knowledge sharing.

Sources Production Over Time

Figure 11

Sources Production Over Time



This number represents the cumulative increase in the number of scholarly outputs by publication source over time, with the Journal of Personality and Social Psychology demonstrating the earliest and most sustained growth beginning in the late 1990s and continuing through the mid-2010s, and then a faster increase, other journals, such as Learning and Individual Differences and Sustainability (Switzerland), joining the field later, but with a steep increase in growth after 2015, and more recent sources such as behavioural sciences and System demonstrating a steep increase beginning mainly after 20

This historical development indicates the trend of the literature consolidation and growth, the long-standing hegemony of the traditional psychology periodicals indicates the primitivism of the discipline, and the fast appearance of the new sources indicates the transition to the interdisciplinary and practical research environment. The increase in the pace of publication since 2015 of all sources indicates increased scholarly activity and possibly increased interest in the topic globally, and the overall data indicates a transition to a knowledge base that is more decentralized and distributed across a wider range of interdisciplinary venues, which indicates maturation as well as diversification of the field.

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Source Impact Bibliometrix

Table 5

Most Influential Sources (Journals) in Grit Research

Rank	Source (Journal)	h index	g index	m index	Total Citations (TC)	Number of Publications (NP)	PY start
1	Administrative Science Quarterly	1	1	1	1	1	2025
2	Annals of Anthropological Practice	1	1	1	1	1	2025
3	Asia Pacific Journal of Management	1	1	1	1	1	2025
4	Assessing Writing	1	1	1	1	1	2025
5	Australian Journal of Management	1	1	1	4	1	2025
6	Discover Education	1	1	1	1	1	2025
7	Group and Organization Management	1	1	1	3	1	2025
8	International Journal of Bilingualism	1	1	1	7	1	2025
9	Int. Journal of Organization Theory and Behaviour	1	1	1	2	1	2025
10	Journal of Beliefs and Values	1	1	1	1	1	2025

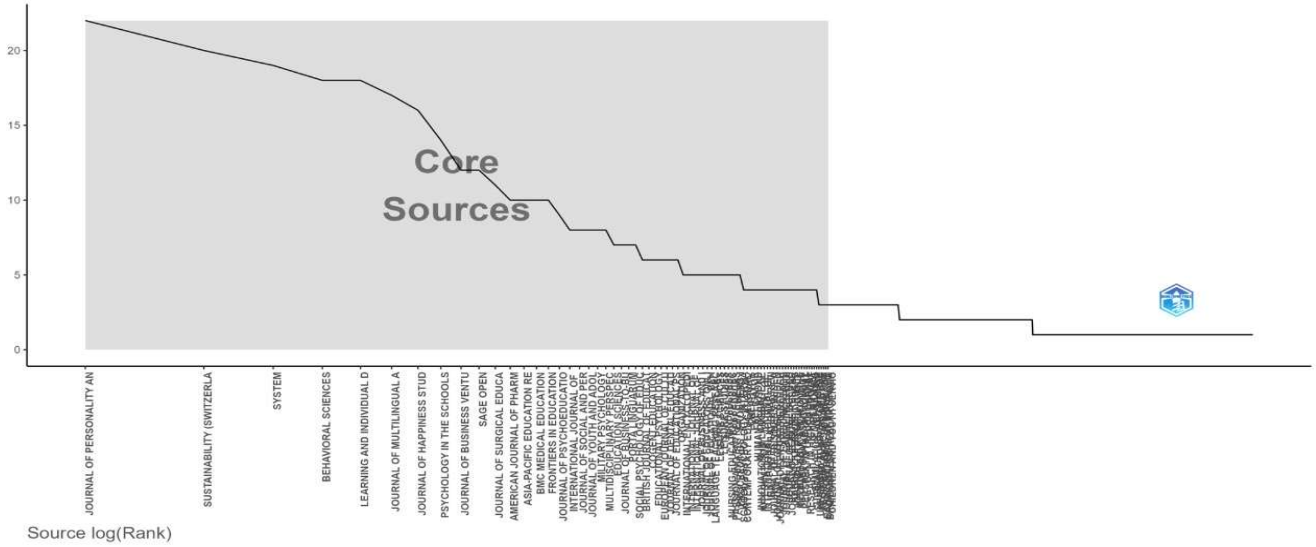
Table 4 shows bibliometric indicators of different academic sources that have been included in the dataset in 2025 (h = 1, g = 1, m = 1), the lowest total citations (TC) and number of publications (NP) since they are only beginning to enter the field, except the International Journal of Bilingualism which has the highest number of citations (7) but only one article and the International Journal of Organization Theory and Behaviour which has two articles hence they are slightly different.

These results indicate the interdisciplinary character of the field and the range of journals to which the scholarly output has been spread (e.g., management, anthropology, education, linguistics), which may indicate a further expansion of dissemination channels and may be a sign of the maturation of the field and expansion into related areas, which may enable such sources to gain bibliometric impact in the long run.

Bradford's Law

Figure 12

Core Sources by Bradford's Law



The Bradford Law distribution displays the concentration of the majority of the outputs in few journals known as the core sources, and the remainder of the outputs is distributed in a larger number of peripheral publications. We observe that the Journal of Personality and Social Psychology, Sustainability (Switzerland) and System are in the core zone, with a disproportionate contribution to the field knowledge production, and then the Behavioural Sciences and Learning and Individual Differences, which are also central journals, and

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the long tail of the distribution is made up of numerous different sources, each of which contribute little, but cumulatively represent the diffusion of the research into multidisciplinary and niche journals.

This trend proves one of the main principles of bibliometric analysis, i.e. a small number of sources generate the overwhelming majority of the relevant publications, and the majority of sources generate very few relevant publications. The fact that there are many psychology-oriented and interdisciplinary journals in the core zone indicates the centrality of the psychological theory and the growing integration of applied and cross-disciplinary methods, whereas the abundance of peripheral sources indicates the dispersion of research to other academic settings, which can expand the field but also spread its publication base. Generally, the Law by Bradford demonstrates the organization of sources, which is centralized in the well-established journals, yet is also decentralized to a great number of new outlets.

Most Relevant Sources

Table 6

Most Prolific Sources (Journals) in Grit Research

Rank	Source (Journal)	Number of Articles
1	Journal of Personality and Social Psychology	22
2	Sustainability (Switzerland)	20
3	System	19
4	Behavioral Sciences	18
5	Learning and Individual Differences	18
6	Journal of Multilingual and Multicultural Development	17
7	Journal of Happiness Studies	16
8	Psychology in the Schools	14
9	Journal of Business Venturing	12
10	SAGE Open	12

The table further reveals that the Journal of Personality and Social Psychology has contributed the largest number of articles in the dataset with 22 articles, then Sustainability (Switzerland) (20 articles), System (19 articles), Behavioural Sciences and Learning, and Individual Differences (18 articles each) and a number of other journals also contribute significantly to the dataset, including interdisciplinary journals like the Journal of Multilingual and Multicultural Development and the Journal of Happiness Studies and journals which publish across a variety of fields, such as Psychology in the Schools, Journal

This distribution justifies the findings of the analysis of the distribution of the journals in the Bradford Law which has a core of a few journals that are the major core of the field, the existence of psychology outlets signifies the theoretical and empirical foundation of the research and the existence of journals devoted to education, linguistics, sustainability, and business all signify the manner in which the field has become more interdisciplinary, which increases the visibility of the research across domains and the ability to integrate more across disciplines.

Annual Total Citation Per Year

Table 7

Annual Citation Trends in Grit Research

Year	Mean Citations per Article	Number of Articles (N)	Mean Citations per Year	Citable Years
2025	1.76	169	1.76	1
2024	5.68	249	2.84	2
2023	7.85	198	2.62	3
2022	13.59	143	3.40	4
2021	18.64	138	3.73	5
2020	18.13	126	3.02	6
2019	28.92	119	4.13	7
2018	30.94	88	3.87	8
2017	50.52	62	5.61	9
2016	51.48	54	5.15	10

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The table of publication and citation statistics demonstrates how the productivity (N) and citation impact (MeanTCperArt and MeanTCperYear) have changed over time, with the latest years (2024 and 2025) having the highest number of publications (249 and 169 articles, respectively) though with a relatively low citation rates as they are too recent to have been cited whereas older, highly cited works have accumulated citations (51.48 and 50.52) and thus have a higher average citation per article.

It also shows the years of greatest influence, with 20162018 being the most influential years, and both moderate productivity and steadily high citation rates (average of over 30 citations per article) both being the highest, after which the rate of research output rose steadily to a peak in 2024 and the distribution of citation is becoming more diffuse across a broader range of publications, indicating a tendency towards intensification of the research activity and the dilution of citation concentration as the literature base continues to grow.

Annual Production

Table 8

Annual Publication Trends in Grit Research (1995–2025)

Year	Number of Articles	Year	Number of Articles
1995	1	2011	22
1996	0	2012	19
1997	0	2013	24
1998	1	2014	40
1999	7	2015	42
2000	3	2016	54
2001	2	2017	62
2002	3	2018	88
2003	4	2019	119
2004	7	2020	126
2005	4	2021	138
2006	4	2022	143
2007	13	2023	198
2008	13	2024	249
2009	18	2025	169
2010	17		

The annual publication distribution indicates a trend of growing output in research production, with comparatively low production levels in the first 10 years (1995 to 2005) with an average of less than five publications per year, a slow rise in the mid-2000s, and a more rapid rise since 2014, when the number of publications was more than 40 in 2015 and has grown by an average of 8 publications annually, and a high increase in 2018 with 88 publications, and a more pronounced increase since 2

This trend reflects the way the field has developed since it was still a developing area of study in the 1990s into a field that has consolidated and expanded rapidly in the past decade, with the acceleration in 2015 being part of the general trends in the world of interdisciplinary scholarship and new publication venues, and possibly an increased academic and societal interest, possibly because of new theoretical developments, policy relevance, and international collaborations. The longitudinal data reveal the change of the isolated early contributions to the mass production of knowledge, which indicates the growth and the rising popularity of the field in the world of research.

5. Discussion

These findings have shown that grit has ceased to be a psychological construct and has become a field with numerous applications to education, professional training, and organizational behavior (Duckworth et al., 2007), and the debate about its uniqueness and predictive validity (Credé, 2017) has led to growth into applied fields, including second language learning, leadership, and resilience.

Thematic analysis reveals that one of the underlying themes is grit (i.e., not completely theorized), the possibility of further developing the theoretical integration of the construct with well-being, self-efficacy, and

positive psychology, and collaborative patterns (i.e., the globalization of grit research is growing with more involvement of Asia, and cross-cultural validation is required). In general, the analysis of grit studies reveals a tendency towards a complex of personal psychological qualities to a more holistic approach that takes into account social, cultural, and organizational aspects, which is observable in the context of positive psychology and education in general.

6. Conclusion

It is a first attempt to map the literature on grit comprehensively in 1995 to 2025 and is evidence of the exponential growth of publications based on some foundational papers, then more applied and interdisciplinary, though conceptual debates about grit persist. Findings indicate that despite the conceptual debate around grit, the practice of grit in education, organizational behaviour, and well-being demonstrates that it is salient, and the study reflects the intellectual and collaborative structure of the field and offers guidelines to scholars who are interested in advancing the research on grit.

7. Future Research

We propose the following future research directions based on the output of bibliometric. This research study is limited to grit, but it can also be study on Self attributed grit. It is recommended that future researchers examine the correlation between Servant leader and Employee Performance and grit. It is also implied that these variables should also be investigated with the help of destructive leadership**.** More theory development to differentiate grit from other related constructs (e.g., conscientiousness and resilience), Cross-cultural research to cross-validate measures of grit and examine cultural moderators of the effectiveness of grit, Longitudinal designs to test the predictive validity of grit for education, career, and life outcomes, Explorations of the potential applications of grit in leadership, organizational behaviour, and employee work performance, and Application of grit in positive psychology and sustainability paradigms to explore its contributions to well-being and societal outcomes, and Method development, including digital learning analytics, to measure grit in contemporary educational and work settings.

Conflict of Interest Statement

The author declares no conflicts of interest.

Funding Statement

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Ethical Approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Data Availability

The datasets generated during and analysed during the current study are available from the corresponding author on reasonable request.

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