Penerbit Akademia Baru

Journal of Advanced Research Design

Journal homepage:
https://akademiabaru.com/submit/index.php/ard
ISSN: 2289-7984

The Ticking Clock: A Bibliometric Exploration of Its Impact on Academic Performance

Lim Seong Pek[1], Khairul Firdaus Ne'matullah[2,*], Adiba Zailan[2], Fazlina Ilyani Kamarudin[2], Khadijah Ummira Muhammad Helmi[2], Henry E. Lemana II[3], Jun S. Camara[4]

[1] Faculty of Education and Liberal Arts, INTI International University, Negeri Sembilan, Malaysia
[2] Faculty of Education and Social Sciences, University College MAIWP International, Kuala Lumpur, Malaysia
[3] School of Languages and General Education, Walailak University, Thailand
[4] School of Advance Studies, Pangasinan State University, Pangasinan, Philippines

ARTICLE INFO

Article history:
Received 3 January 2025
Received in revised form 31 January 2025
Accepted 11 April 2025
Available online 30 April 2025

Keywords:
Academic procrastination; academic performance; self-regulation; educational psychology; motivation strategies

ABSTRACT

Academic procrastination is a pervasive problem that affects students' performance and well-being worldwide. It is the deliberate postponement of academic assignments in spite of possible adverse outcomes. With an emphasis on trends, significant figures, and topic clusters, this bibliometric analysis looks at the research landscape of academic procrastination and its impact on academic performance from 2015 to 2024. A systematic methodology was used to assess 222 peer-reviewed papers that were included in the Social Sciences Citation Index (SSCI). The results demonstrate the various characteristics of procrastination by relating them to academic performance, mental health, and self-regulation. Procrastination is a complicated research issue, as evidenced by the thematic clusters identified by the analysis, which include self-efficacy, psychological aspects, academic accomplishment, performance regulation, and personality models. The study has an international and multidisciplinary approach, with noteworthy contributions from several nations and prestigious scholarly publications. Critical theoretical implications are emphasized, such as the necessity of integrated models that consider the behavioural, psychological, and environmental aspects of procrastination. Implications for practice include creating self-regulation-enhancing interventions, enhancing mental health support networks, and assisting students in effectively managing procrastination through the use of digital resources. By highlighting important gaps and new developments in the field, this study provides a thorough road map for further research. It advances knowledge and helps create focused techniques to lessen the detrimental impacts of procrastination on students' academic performance and well-being. The creation of evidence-based strategies to combat procrastination in educational settings and elsewhere is ultimately supported by this investigation. This research aligns with SDG 3: Good Health and Well-being by examining the mental health impacts of academic procrastination, a global issue affecting student well-being. It highlights the need for interventions to reduce stress, build resilience, and enhance self-regulation. The findings advocate for evidence-based strategies and interdisciplinary approaches to mitigate procrastination's effects, fostering environments that support well-being and academic success.

* *Corresponding author.*
E-mail address: khairulfirdaus@ucmi.edu.my

https://doi.org/10.37934/ard.128.1.6478

1. Introduction

Academic procrastination, which is defined as purposefully delaying assignments in spite of possible drawbacks, has become a widespread problem in educational settings all over the world. In an era marked by rising academic standards and performance expectations, this problem has become more concerning. No particular group is exempt from procrastination; students of all ages, professions, and educational levels are impacted. Alaya *et al.,* [1] mentioned that procrastination has serious consequences for both academic achievement and general well-being, affecting everyone from schoolchildren who struggle with homework to college students who put off important assignments. Since it is so common and has such an influence, Kuftyak [2] further stated that educational researchers are quite interested in learning more about it, especially in relation to academic achievement.

The impacts of procrastination are made worse by the many issues facing schooling today. Despite its many advantages, the quick adoption of technology in the classroom has also led to inefficiencies and distractions. Students' attention is diverted by social media, gaming, and streaming services, which frequently results in ineffective time management [3]. Furthermore, Hussain *et al.,* [4] revealed that students are under more strain due to the growing complexity of curricula and the rise in expectations for extracurricular activities, which leaves them feeling overburdened and more likely to put things off. The problem is exacerbated by the lack of self-control and efficient time management techniques, which leads to a vicious cycle of poor performance and delays [5]. Saxena and Chandra [6] also brought up that these issues are especially urgent in higher education, where success depends on self-discipline and autonomous learning.

The importance of this study lies in its potential to influence educational practices and policies. Academic procrastination not only affects individual learners but also poses broader challenges for educational institutions, such as declining retention rates and underutilized resources. Understanding procrastination's impact on performance can inform the development of targeted interventions and support systems, such as time management workshops, mentorship programs, and the incorporation of technology-based solutions like productivity apps [7]. Additionally, Asio [8] expressed that educators can use findings from such research to design curricula and teaching strategies that minimize procrastination opportunities, fostering a culture of proactive learning.

Despite its importance, researching academic procrastination presents a number of difficulties. Given its complexity, procrastination is difficult to define and measure since it regularly interacts with other variables such as motivation, anxiety, and personality traits [9]. Additionally, Zaid *et al*., [10] asserted that procrastination's stigma may cause people to underreport in their self-evaluations, which could affect the accuracy of the data. According to Girdhar *et al*., [11], bibliometric hurdles include interpreting the extensive and varied body of research on procrastination and making sure that findings are suitably contextualized for various educational settings. According to Kooren *et al*., [12], tackling the root causes of procrastination, such as perfectionism, fear of failing, or a lack of intrinsic desire, necessitates comprehensive and frequently resource-intensive strategies.

The purpose of this study is to map the body of existing literature, pinpoint knowledge gaps, and provide insights into patterns and trends in this area of research [13]. Consolidating the body of knowledge on academic procrastination and its effects on academic performance is essential, and this type of analysis provides a thorough understanding of the areas that future research efforts should concentrate on [12]. Additionally, this study offers a chance to investigate interdisciplinary methods, integrating knowledge from behavioural science, psychology, and education to address the problem more successfully.

2. Methodology

Bibliometric analysis has emerged as a crucial instrument for comprehending and charting the intellectual terrain of academic disciplines, which makes it extremely pertinent to the investigation of academic procrastination and its impact on academic achievement. Researchers can evaluate the growth and focus areas of a certain field in an organized manner by using bibliometric analysis, which methodically looks for patterns and trends in a body of literature [14]. This approach provides a thorough understanding of the subject by identifying significant publications, authors, and journals as well as highlighting the connections between research subjects [13].

Trend analysis is a crucial feature of bibliometric analysis since it shows how research has changed over time. In the context of academic procrastination, scholars can place their work within larger academic developments by comprehending how the focus of research has changed—from early descriptive studies to more complex investigations involving psychological, educational, and technological dimensions [15]. Future research directions can be informed by trend analysis's ability to uncover new areas of interest, such as the importance of self-regulation techniques or the effect of digital tools on procrastination [7].

Another crucial component according to Tao *et al.*, [13], is performance analysis, which assesses the output and influence of writers, organizations, and publications in the subject. This is essential to comprehending the main players in the discussion of academic success and procrastination. Performance analysis helps lay the groundwork for cooperative efforts and the sharing of high-impact findings by identifying significant studies and active researchers.

Through the mapping of relationships between studies, concepts, and keywords, co-citation and co-occurrence analyses further enhance our comprehension of academic procrastination research. Co-citation analysis reveals prevailing theories and methodological methods by identifying groups of papers that have been regularly mentioned together [5]. Co-occurrence analysis, on the other hand, looks at how keywords occur together to reveal related topics and subfields. Kooren *et al*., [12] also elaborated that these approaches open the door for multidisciplinary research and provide insightful information about the organization of knowledge in the subject. When combined, these bibliometric resources offer a strong foundation for furthering studies on academic procrastination and how it affects academic achievement.

2.1 Search Strings

This bibliometric analysis employs a structured and systematic approach to explore the research landscape of academic procrastination. Using the PRISMA flowchart, the study initially identified 576 documents, which were then filtered based on specific criteria to yield 222 articles indexed in the Social Sciences Citation Index (SSCI) of the Web of Science (WoS) database. This rigorous filtering process underscores the importance of precision and relevance in bibliometric studies, ensuring that the final dataset reflects high-quality, impactful research [16].

The focus of the Inclusion criteria in Table 1 is on peer-reviewed English-language publications from 2015 to 2024. In line with increased concerns regarding the effects of academic procrastination on educational outcomes worldwide, this time span reflects a recent surge in study interest. By restricting the search to titles that end in “academic” and “procrastinate*,” the study focuses on studies that specifically deal with procrastination in educational settings. This focused search approach guarantees that the results are highly pertinent to comprehending the impact of procrastination on academic achievement in addition to improving the analysis’s specificity similar to Tao *et al*., [13].

Table 1
Inclusion criteria for bibliometric analysis

WoS Database	ALL
Time period	2015 to 2024
Search field	TI
Search keywords	"academic" AND "procrastinate*"
Document Type	Article
Language	English
Web of Science Index	Social Sciences Citation Index (SSCI)

The analysis gains benefit from concentrating on publications that are indexed by SSCI. This index is a well selected set of high-impact social science journals. This kind of concentration guarantees that the study includes the most significant and well examined contributions to the subject. The focus on English-language publications promotes a worldwide viewpoint on academic procrastination by facilitating more accessibility and comparability [15].

Following these methodological guidelines will help this bibliometric analysis identify important patterns, significant writers, and new themes in the research on academic procrastination. Strong co-citation and co-occurrence studies that provide deeper insights into the relationship between procrastination and academic performance are made possible by the use of PRISMA and clearly defined inclusion criteria [7]. The study is well-positioned to significantly advance educational research and practice thanks to its methodical approach.

3. Results

The PRISMA flowchart (Figure 1) and the trend numbers (Figure 2) that go with it give a visual depiction of the citation and publication activity from 2015 until 2024. The dynamic character of academic procrastination as a research topic is further highlighted by this analysis, which similarly shows an upward tendency in research production. The increasing awareness of procrastination's effects on academic achievement, student welfare, and institutional results is reflected in trends in publication volume and citation impact.

The trend analysis of academic procrastination demonstrates the increasing significance of the discipline and the range of scholarly interest it has attracted. The dataset, which comprises 222 articles and was taken from the Web of Science database, shows a high degree of research activity. Together, these publications have received 3,753 citations, including 3,021 citations (not including self-citations), demonstrating their considerable influence and impact. Academic and professional circles continue to be interested in the topic, as seen by the average citation count of 16.91 per item.

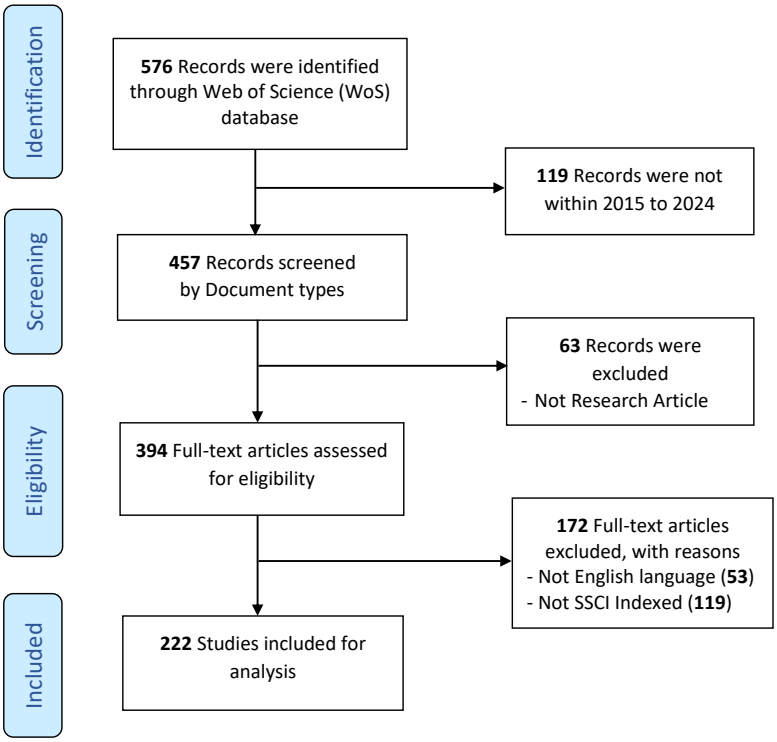

Fig. 1. PRISMA flowchart

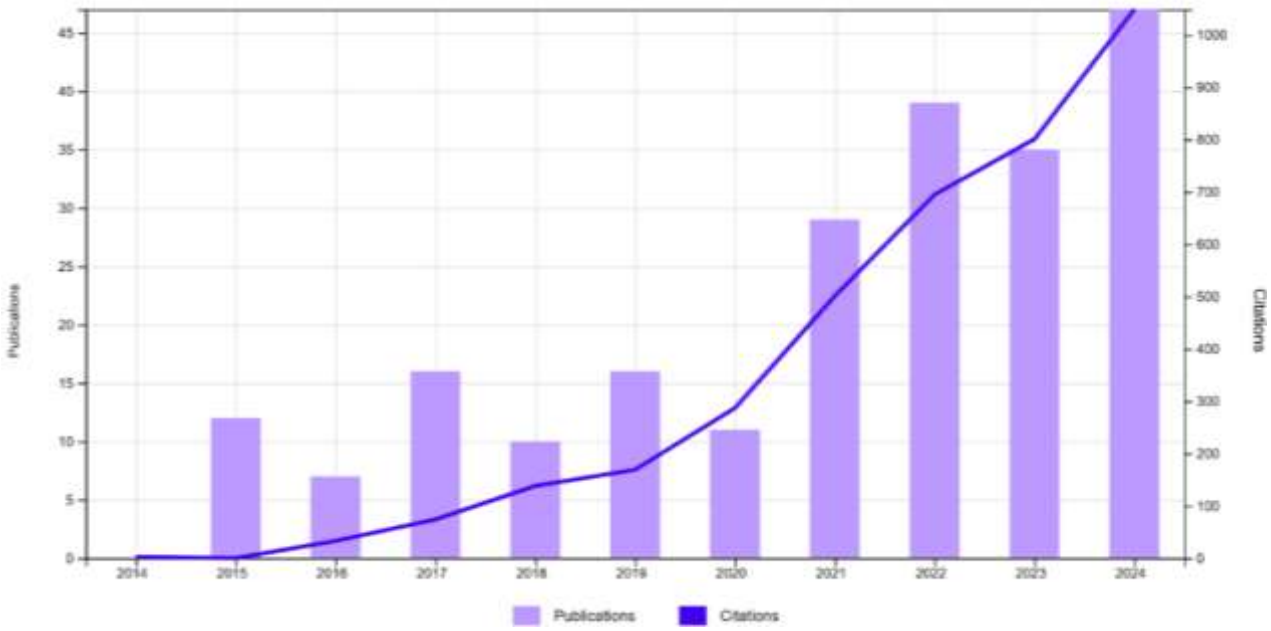

Fig. 2. Quantity of publications and citations between 2015 and 2024

With at least 33 articles cited 33 times or more, an H-index of 33 indicates a significant and steady intellectual contribution to the area. This measure indicates the caliber and breadth of the academic procrastination research being done. Furthermore, it illustrates how key articles can influence and propel conversations in this field. A broad influence across a variety of academic areas is suggested by the data, which also shows 2,078 citing articles—or 1,906 when self-citations are taken out.

This bibliometric analysis provides insights into significant contributions, new themes, and the development of research in this area by methodically examining these tendencies. Finding gaps,

establishing future research objectives, and encouraging interdisciplinary collaborations are all made possible by these insights, which are crucial for reducing the negative consequences of procrastination in educational contexts.

3.1 Performance Analysis

This performance analysis emphasizes how academic procrastination research is interdisciplinary and collaborative. Prominent institutions, top journals, and influential authors' contributions demonstrate a vibrant and internationally interconnected research community. These results offer a guide for further research, motivating scholars to expand on existing understanding while tackling uncharted territory in order to improve educational outcomes worldwide.

3.1.1 Documents

The most cited work, by Kim and Seo [17], examines the relationship between procrastination and academic performance through a meta-analysis, garnering 394 citations. This study's substantial impact reflects the ongoing interest in evidence-based reviews within this domain. Other highly influential articles, such as Steel and Klingsieck [18] on psychological antecedents garnered 196 citations and Yang *et al.*, [19] on the role of smartphones in procrastination earning 123 citations. These works demonstrate how academic procrastination intersects with various psychological and technological dimensions, offering a robust foundation for future studies.

3.1.2 Sources

Journals such as *Frontiers in Psychology* and *Personality and Individual Differences* have been pivotal in disseminating research on academic procrastination. *Frontiers in Psychology* leads with 31 publications and 414 citations, indicating its centrality to this field. Similarly, *Personality and Individual Differences* has the highest citation count (618), emphasizing the role of individual traits in academic procrastination. *Learning and Individual Differences* has also been instrumental, with 10 documents and 363 citations, showcasing its influence on educational psychology.

3.1.3 Authors

Grunschel, C., stands out as a leading author, with seven documents cited 239 times and a total link strength of 83. Fries, S., with six documents and 221 citations, is another key contributor, focusing on motivational regulation strategies. Both authors provide critical insights into self-regulation and well-being in procrastination contexts. Balkis, M., with three documents and 100 citations, examines the intersections of procrastination, self-regulation, and academic satisfaction, offering practical implications for educational settings.

3.1.4 Organizations

Institutions like Beijing Normal University and Henan University lead in output and influence, with Beijing Normal University producing 10 documents and earning 119 citations. Other notable institutions include the University of Augsburg and the University of Munster, each contributing four to five documents with citations of 46 and 49, respectively. These organizations underscore collaborative efforts in exploring motivational and behavioural aspects of procrastination.

3.1.5 Countries

China dominates the research landscape with 84 documents and 736 citations, followed by the USA with 23 documents and 458 citations. Germany stands out with 570 citations across 17 documents, showcasing high-quality research with global relevance. Spain and Turkey also make substantial contributions, with 16 and 14 documents indicating the global nature of procrastination research. This geographical distribution highlights regional priorities and resource investment in tackling procrastination as an educational challenge.

3.2 Co-Citation Analysis

The ten most cited publications in the co-citation study (Table 2) are fundamental to the knowledge of academic procrastination. The most significant meta-analysis is Steel's [20] review, which has the highest link strength of 1,532 and 166 citations. This paper establishes a theoretical and empirical basis by presenting procrastination as a failure of self-regulation, which directs future research to concentrate on behavioural and psychological causes. The study by Solomon and Rothblum [21], which has 117 citations and a link strength of 1,082, is also crucial because it provides a preliminary framework for analysing the incidence of procrastination and its cognitive-behavioural consequences.

Table 2
Co-citations (top 10 articles)

Rank	Authors	Title	Citations	Total Link Strength
1	Steel [20]	The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure	166	1532
2	Solomon and Rothblum [21]	Academic procrastination: Frequency and cognitive-behavioral correlates	117	1082
3	Kim and Seo [17]	The relationship between procrastination and academic performance: A meta-analysis	91	920
4	Klassen *et al.,* [22]	Academic procrastination of undergraduates: Low self-efficacy to self-regulate predicts higher levels of procrastination	64	757
5	Tice and Baumeister [23]	Longitudinal Study of Procrastination, Performance, Stress, and Health: The Costs and Benefits of Dawdling	60	708
6	Schraw *et al.,* [24]	Doing the things we do: A grounded theory of academic procrastination	48	523
7	Klingsieck [25]	Procrastination: When Good Things Don't Come to Those Who Wait	43	516
8	van Eerde [26]	A meta-analytically derived nomological network of procrastination	42	571
9	Wolters [27]	Understanding procrastination from a self-regulated learning perspective	42	543
10	Sirois and Pychyl [28]	Procrastination and the priority of short-term mood regulation: Consequences for future self	41	522

Based on this foundation, Kim and Seo's [17] meta-analysis, which has been mentioned 91 times and has a link strength of 920, establishes a direct correlation between procrastination and academic performance. These works collectively outline the fundamental elements of procrastination

research, highlighting its complexity and usefulness in educational contexts. Additional noteworthy contributions include Klassen *et al.*'s [22] investigation of self-efficacy and its predictive function in procrastination, which emphasizes the significance of self-regulation in academic settings and has 64 citations and a link strength of 757. Tice and Baumeister [23] broaden this viewpoint by investigating the long-term effects of procrastination on stress and health. They are cited 60 times with a link strength of 708, indicating that procrastination has repercussions outside the classroom.

With 48 and 43 citations, respectively, the research by Schraw *et al*., [24] and Klingsieck [25] explore motivational and affective aspects, providing a greater knowledge of the internal dynamics of procrastination. Sirois and Pychyl [28] and Wolters [27] highlight the importance of self-regulated learning and mood control, whereas van Eerde's [26] meta-analysis charts the associations between procrastination and personality factors. With their varied approaches and theoretical contributions, these publications collectively shed light on the intricate interactions between the various elements that contribute to academic procrastination and offer a thorough road map for further study and interventions.

3.2.1 Co-Citation analysis by clusters

The co-citation analysis of academic procrastination, illustrated in Figure 3, provides valuable insights by categorizing significant research into three thematic clusters. Each cluster (Table 3) represents a focused area of study, addressing distinct facets of procrastination and its underlying causes. This classification facilitates a deeper understanding of the field, enabling researchers to identify gaps in the literature, design targeted interventions, and contribute to the expansion of knowledge to effectively address the challenges associated with academic procrastination.

Cluster 1 includes 20 articles, with foundational works like Solomon and Rothblum [21], Klassen *et al.,* [22], and Schraw *et al.,* [24]. Solomon and Rothblum's seminal study emphasize the prevalence and cognitive-behavioural correlates of academic procrastination, while Klassen *et al.* highlight the role of self-efficacy in self-regulation, a key predictor of procrastination behaviours. Schraw *et al.* contribute by developing a grounded theory of academic procrastination, focusing on its psychological underpinnings. Other important studies, such as Balkis and Duru [29], explore the connection between procrastination, self-regulation failures, and emotional well-being, while Chu and Choi [30] introduce the concept of "active procrastination," which redefines procrastination as a potentially positive strategy under certain conditions. Collectively, this cluster focuses on behavioural and cognitive approaches to understanding procrastination, establishing a foundation for intervention strategies.

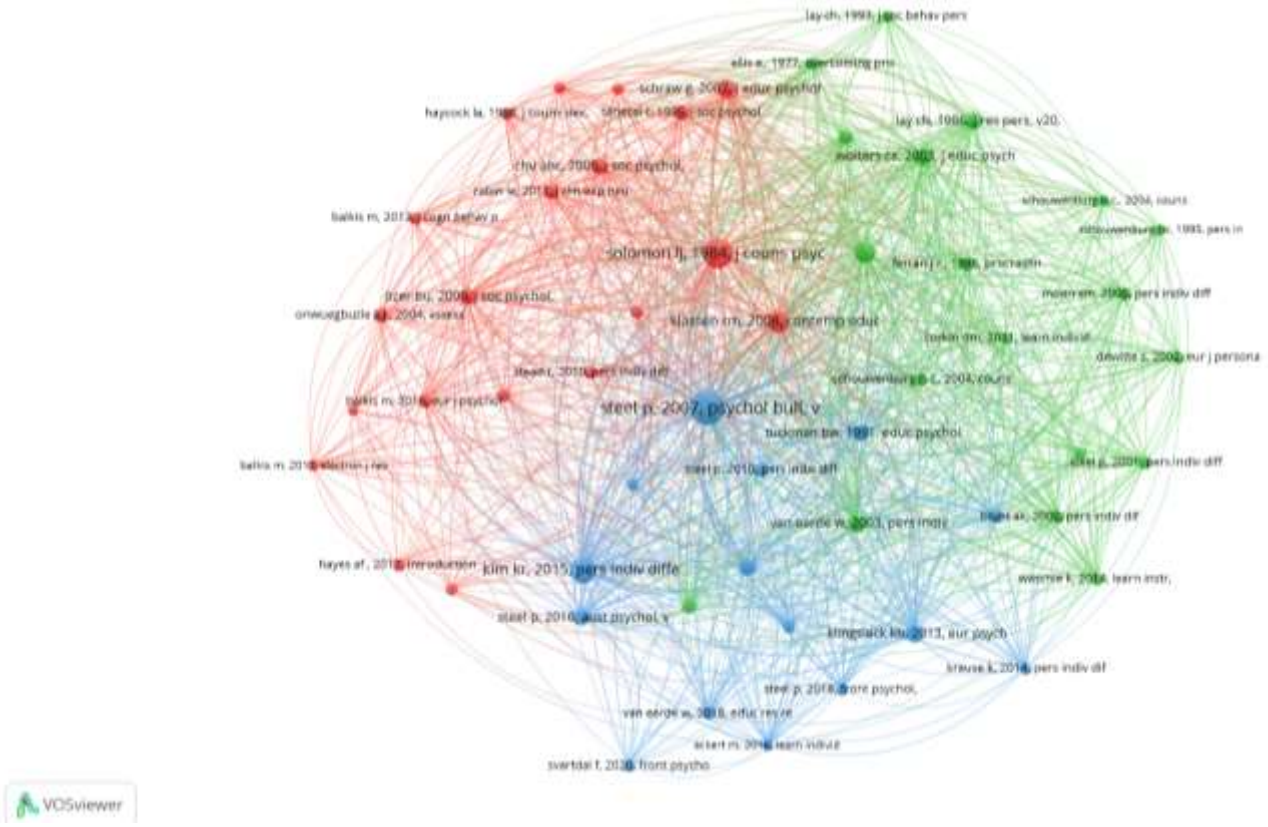

Fig. 3. Co-citation analysis (VOSviewer Visualization)

Cluster 2 includes 19 articles, featuring influential studies like Tice and Baumeister [23], van Eerde [26], and Wolters [27]. Tice and Baumeister's longitudinal analysis examine the broader implications of procrastination on stress, health, and performance, underscoring its long-term costs. Van Eerde's meta-analysis integrates personality traits and procrastination, mapping a nomological network that links procrastination with conscientiousness and impulsivity. Wolters' work explores procrastination from a self-regulated learning perspective, emphasizing the importance of metacognitive strategies in mitigating procrastination. Other studies in this cluster, such as Dewitte and Schouwenburg [31], delve into the tension between immediate temptations and long-term goals, providing a nuanced understanding of procrastination's psychological dynamics. This cluster primarily addresses the relationship between procrastination, personality traits, and long-term outcomes.

Cluster 3 includes 15 articles, led by Steel [20], Kim and Seo [17], and Sirois and Pychyl [28]. Steel's comprehensive meta-analytic review positions procrastination as a failure of self-regulation, offering a theoretical framework that unites various aspects of procrastination research. Kim and Seo's meta-analysis focus on the direct impact of procrastination on academic performance, reinforcing the link between procrastination behaviours and outcomes. Sirois and Pychyl's work emphasizes the role of mood regulation, arguing that procrastination often stems from a desire to prioritize short-term emotional relief over long-term goals. Additional contributions from Klingsieck [25] and van Eerde and Klingsieck [32] explore interventions and theoretical revisions, pushing the field toward practical applications. This cluster highlights the theoretical and emotional dimensions of procrastination, providing a deeper understanding of its root causes and consequences.

Table 3
Co-citation cluster on academic procrastination

Cluster No and Colour	Cluster Labels	No. of Articles	Representative Publications
Cluster 1 (Red)	Academic Procrastination and Behavioural Frameworks	20	Solomon and Rothblum [21]; Klassen *et al.,* [22]; Schraw *et al.,* [24]; Balkis and Duru [29]; Chu and Choi [30]
Cluster 2 (Green)	Long-Term Effects and Personality Correlates	19	Tice and Baumeister [23]; van Eerde [26]; Wolters [27]; Dewitte and Schouwenburg [31]
Cluster 3 (Blue)	Theoretical Foundations and Mood Regulation	15	Kim and Seo [17]; Steel and Klingsieck [18]; Steel [20]; Klingsieck [25]; Sirois and Pychyl [28]; van Eerde and Klingsieck [32]

3.2.2 Co-occurrence analysis

The co-occurrence analysis of academic procrastination-related keywords in Table 4 yields five theme clusters, each of which represents a different area of literary attention. These clusters in Fig. 4 demonstrate the complexity of academic procrastination by addressing its behavioural, psychological, theoretical, and educational aspects. Table 5 offers a roadmap for further study, highlighting the value of interdisciplinary approaches in comprehending and reducing procrastination. Every cluster offers distinct perspectives, ranging from personal characteristics and emotional states to more general educational and performance-related results.

Table 4
The 15 most frequent keywords in the co-occurrence analysis

Rank	Keyword	Occurrences	Total Link Strength
1	Academic procrastination	145	614
2	Performance	95	512
3	Procrastination	52	263
4	Achievement	50	296
5	Motivation	41	243
6	Students	40	208
7	Self-efficacy	39	218
8	Anxiety	39	216
9	Self-regulation	32	163
10	College-students	30	180
11	Adolescents	29	146
12	Depression	28	139
13	Efficacy	27	150
14	Stress	26	151
15	Personality	25	143

Cluster 1 revolves around keywords such as “self-efficacy,” “students,” “motivation,” “college-students,” and “education.” It focuses on the role of self-efficacy and motivation in shaping academic behaviours and outcomes. The presence of “engagement” and “strategies” highlights the importance of interventions designed to boost student engagement and equip them with effective learning strategies. This cluster also includes “gender,” suggesting an interest in gender-based differences in procrastination tendencies. By emphasizing factors like self-efficacy and educational strategies, this cluster underscores the importance of fostering confidence and motivation in students to reduce procrastination and enhance academic success.

Keywords such as “academic procrastination,” “anxiety,” “depression,” “stress,” and “adolescents” dominate this Cluster 2. It explores the psychological and emotional factors associated with procrastination, particularly among adolescents. Terms like “life satisfaction” and “prevalence” point to studies examining the broader impact of procrastination on mental health and overall well-being. This cluster sheds light on the bidirectional relationship between procrastination and emotional states, emphasizing how anxiety and depression can both cause and result from procrastination. It highlights the need for holistic approaches to addressing procrastination that also consider students’ psychological health.

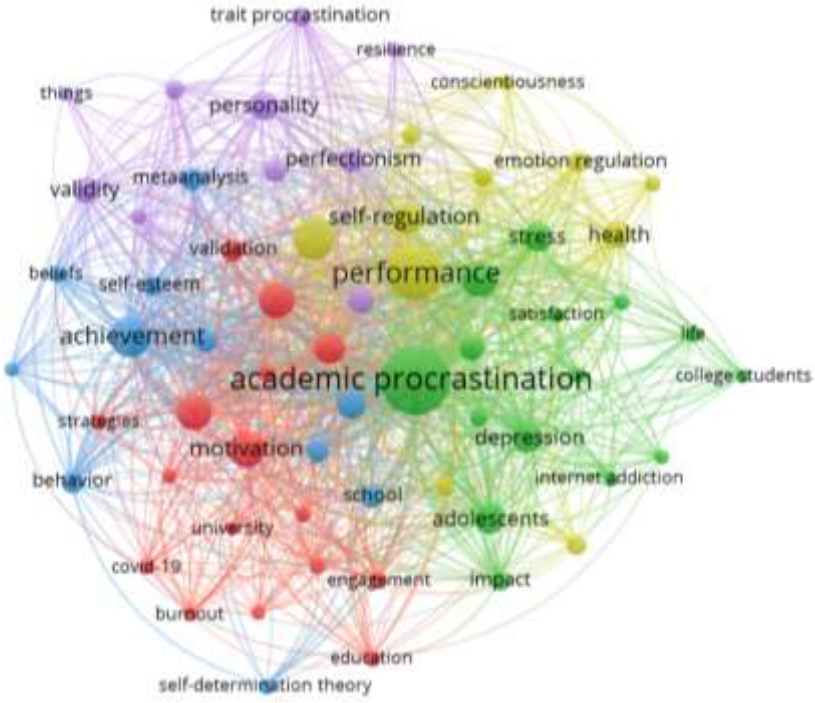

Fig. 4. Co-Occurrence Analysis (VOSviewer Visualization)

The keywords “achievement,” “efficacy,” “school,” “academic performance,” and “self-esteem” characterize this Cluster 3. It focuses on the tangible outcomes of procrastination, particularly its effects on academic performance and achievement. Terms like “gender differences” and “behavior” indicate studies that investigate demographic variations and behavioural correlates of procrastination. The inclusion of “meta-analysis” suggests that this cluster is supported by extensive reviews synthesizing research findings, making it foundational for understanding procrastination’s impact on educational outcomes.

Cluster 4 emphasizes “performance,” “procrastination,” “self-regulation,” and “self-control.” It explores the mechanisms by which procrastination impacts academic performance, with a particular focus on self-regulation as a critical skill. The keyword “predictors” indicates an interest in identifying factors that influence procrastination, such as personality traits or environmental conditions. The presence of “health” broadens the cluster’s scope to include the physical and psychological health implications of poor self-regulation and procrastination, emphasizing the importance of integrated interventions.

Keywords such as “perfectionism,” “personality,” “model,” and “validity” define Cluster 5. It focuses on individual personality traits and their relationship to procrastination. The inclusion of “scale” indicates the development and validation of measurement tools for studying procrastination and related constructs. This cluster emphasizes the theoretical and methodological underpinnings of

procrastination research, particularly the role of perfectionism and personality traits in predisposing individuals to procrastination.

Table 5
Co-occurrence analysis of keywords on academic procrastination

Cluster nombor and Colour	Cluster Label	Number of Keywords	Representative Keywords
1 (Red)	Self-Efficacy and Educational Strategies	16	'self-efficacy,' 'students.' 'motivation,' college-students,' 'validation,' 'intelligence,' 'engagement,' 'gender,' 'strategies,' 'education'
2 (Green)	Psychological and Emotional Dimensions	15	'academic procrastination,' 'anxiety,' 'depression,' 'adolescents,' 'stress,' 'life satisfaction,' 'impact,' 'life,' 'prevalence,' 'associations'
3 (Blue)	Academic Achievement and Behavioral Outcomes	11	'achievement,' 'efficacy,' 'gender-differences,' 'school,' 'academic performance,' 'self-esteem' 'behavior,' 'meta analysis'
4 (Yellow)	Performance and Self-Regulation	11	'performance,' 'procrastination,' 'health,' 'self-regulation,' 'predictors,' 'self-control'
5 (Purple)	Perfectionism and Personality Models	10	'perfectionism,' 'personality,' 'model,' 'validity,' 'scale'

4. Discussion

This bibliometric examination of academic procrastination and its effects on academic performance offers important insights for furthering research and practice, both theoretically and practically. Theoretically, this study highlights the complex relationship between procrastination and personality traits, emotional regulation, and self-regulatory deficiencies. The negative emotional states linked to procrastination are mediated by stress coping strategies and self-efficacy, according to recent study on the subject of academic writing self-regulation [33]. Additionally, concepts like "self-regulation," "motivation," and "self-efficacy" regularly surface as crucial components in comprehending procrastination, according to co-occurrence studies [13].

The findings have important practical ramifications for mental health practitioners, educators, and legislators. Research indicates that interventions that focus on self-efficacy and self-regulation, including organized time management workshops, have the potential to decrease procrastination and the negative effects it has on academic achievement [34]. According to Graff and Barenholtz [35], procrastination-causing emotional factors like anxiety and depression can also be addressed with emotional regulation methods like cognitive behavioural therapy.

Curriculum design is another area with real-world applications, as assignments can be set up to promote gradual advancement rather than last-minute completion. Digital solutions such as task management apps and learning analytics can help students maintain their academic performance by tracking and controlling their procrastinating habits [36]. Pointed out by Chen *et al*., [37], comprehending the demographic aspects of procrastination, such as variations in its frequency between genders, can also aid in the development of customized therapies.

Therefore, in addition to contributing to the theoretical knowledge of academic procrastination, this bibliometric analysis offers practical advice for resolving its effects on academic performance. Through the integration of interdisciplinary approaches and evidence-based strategies, educators

and policymakers may promote both student well-being and academic performance. In order to further create effective procrastination therapies, future study should investigate longitudinal and diverse demographic studies.

5. Conclusion

The research landscape on academic procrastination and its effects on academic performance is thoroughly outlined by this bibliometric analysis, which concludes. Through a methodical review of important research, patterns, and co-occurrences, the analysis emphasizes how important behavioural, psychological, and contextual elements are in comprehending procrastination. The complex character of procrastination is highlighted in foundational works like Steel [20] and Solomon and Rothblum [21], while more contemporary publications highlight its connections to academic success, self-control, and mental health.

The results show important theoretical and applied ramifications. The analysis theoretically emphasizes the necessity of multidisciplinary methods that incorporate environmental, emotional, and cognitive viewpoints. Additionally, it points out gaps in the evidence, especially when it comes to discussing the long-term effects of procrastination and the efficacy of different therapeutic techniques. Furthermore, the co-citation and co-occurrence studies highlight how crucial it is for institutions and scholars to work together to address the varied and worldwide effects of procrastination. In order to expand on current knowledge and answer open concerns, this analysis offers a path for future research by identifying important authors, prominent works, and subject clusters.

Thus, this bibliometric study advances our knowledge of academic procrastination by combining existing and new research and suggesting future lines of inquiry. In order to help students, teachers, and legislators combat procrastination, it emphasizes the value of proactive and evidence-based strategies. The ultimate goal of this research is to promote well-being and academic achievement so that students can realize their full potential in increasingly challenging learning contexts.

Academic procrastination poses significant challenges to students' mental health and academic performance, making it a critical area of study under SDG 3: Good Health and Well-being. Through the identification of key trends, influential literature, and thematic clusters, the research underscores the importance of adopting multidisciplinary approaches that consider emotional, cognitive, and environmental factors. The findings highlight the necessity of implementing evidence-based interventions and fostering collaborative efforts to address the adverse impacts of procrastination. These strategies aim to enhance self-regulation, reduce stress, and support well-being within educational contexts, ultimately enabling students to achieve academic and personal success in increasingly complex learning environments.

References

[1] Alaya, M. Ben, U. Ouali, S. Ben Youssef, A. Aissa, and F. Nacef. "Academic procrastination in university students: Associated factors and impact on academic performance." *European Psychiatry* 64, no. S1 (2021): S759-S760. https://doi.org/10.1192/j.eurpsy.2021.2013

[2] Kuftyak, Elena. "Procrastination, stress and academic performance in students." *Arpha Proceedings* 5 (2022): 965-974. https://doi.org/10.3897/ap.5.e0965

[3] Shi, X. "College students academic procrastination behavior and its impact on academic performance." *Lecture Notes in Education Psychology and Public Media* 12, no. 1 (2023): 234-244. https://doi.org/10.54254/2753-7048/12/20230816

[4] Hussain, Khalid, Zafar Iqbal Baloch, Muhammad Fayyaz, Ubedullah Rahimoon, and Tanseer Ahmed. "Academic Procrastination and its Association with Academic Achievement among Undergraduate Health Sciences' Students." *Journal of Shalamar Medical & Dental College-JSHMDC* 4, no. 2 (2023): 90-96. https://doi.org/10.53685/jshmdc.v4i2.187

[5] Diotaiuti, Pierluigi, Giuseppe Valente, Stefania Mancone, and Fernando Bellizzi. "A mediating model of emotional balance and procrastination on academic performance." *Frontiers in Psychology* 12 (2021): 665196. https://doi.org/10.3389/fpsyg.2021.665196

[6] Saxena, Shilpi, and Satish Chandra. "Academic Procrastinating Behaviors Among College Students." *International Journal for Multidisciplinary Research* 6, no. 3 (2024): 1-8. https://doi.org/10.36948/ijfmr.2024.v06i03.22026

[7] Xu, Huimin, Jianhua Qu, Xiao Ma, and Yuting Ling. "Prediction and visualization of academic procrastination in online learning." In *Proceedings of the 2021 6th International Conference on Distance Education and Learning*, pp. 133-139. 2021. https://doi.org/10.1145/3474995.3475017

[8] Asio, John Mark R. "The relationship between academic procrastination and academic performance of freshmen students from a teacher education institution." *Journal of Humanities and Social Sciences* 2, no. 3 (2020): 105-115. https://doi.org/10.36079/lamintang.jhass-0203.156

[9] González-Brignardello, Marcela Paz, Angeles Sánchez-Elvira Paniagua, and M. Ángeles López-González. "Academic procrastination in children and adolescents: A Scoping review." *Children* 10, no. 6 (2023): 1016. https://doi.org/10.3390/children10061016

[10] Zaid, Najmi Najiha Mohd, Nura'in Mat Isa, and Afina Nazira Afnizul. "Academic Procrastination among University Undergraduates: Role of Self-Efficacy and Self-Motivation." *Selangor Humaniora Review* 5, no. 1 (2021): 84-92. https://share.journals.unisel.edu.my/ojs/index.php/share/article/view/128

[11] Girdhar, K., M. Ola, and V. Sharma. "Impact of academic procrastination on academic performance." *Print) International Journal of Social Science and Humanities Research* 8, no. 1 (2020): 42–47. https://www.researchpublish.com/papers/impact-of-academic-procrastination-on-academic-performance

[12] Kooren, Niek Sebastiaan, Christine Van Nooijen, and Fred Paas. "The Influence of Active and Passive Procrastination on Academic Performance: A Meta-Analysis." *Education Sciences* 14, no. 3 (2024): 323. https://doi.org/10.3390/educsci14030323

[13] Tao, Xue, Hafiz Hanif, Hamsa Hameed Ahmed, and Nader Ale Ebrahim. "Bibliometric analysis and visualization of academic procrastination." *Frontiers in psychology* 12 (2021): 722332. https://doi.org/10.shi3389/fpsyg.2021.722332

[14] Wider, Walton, Leilei Jiang, Jiaming Lin, Muhammad Ashraf Fauzi, Jingjing Li, and Choon Kit Chan. "Metaverse chronicles: a bibliometric analysis of its evolving landscape." *International Journal of Human–Computer Interaction* 40, no. 17 (2024): 4873-4886. https://doi.org/10.1080/10447318.2023.2227825

[15] Sharma, Gunjan, and Kushagra Kulshreshtha. "Exploring research trends of procrastination: a bibliometric analysis during 2010 to 2020." *Benchmarking: An International Journal* 30, no. 10 (2023): 4487-4513. https://doi.org/10.1108/bij-10-2021-0578

[16] Yan, Bo, and Xiaomin Zhang. "What research has been conducted on procrastination? Evidence from a systematical bibliometric analysis." *Frontiers in psychology* 13 (2022): 809044. https://doi.org/10.3389/fpsyg.2022.809044

[17] Kim, Kyung Ryung, and Eun Hee Seo. "The relationship between procrastination and academic performance: A meta-analysis." *Personality and individual differences* 82 (2015): 26-33. https://doi.org/10.1016/j.paid.2015.02.038

[18] Steel, Piers, and Katrin B. Klingsieck. "Academic procrastination: Psychological antecedents revisited." *Australian Psychologist* 51, no. 1 (2016): 36-46. https://doi.org/10.1027/1016-9040/a000138

[19] Yang, Zeyang, Kathryn Asbury, and Mark D. Griffiths. "An exploration of problematic smartphone use among Chinese university students: Associations with academic anxiety, academic procrastination, self-regulation and subjective wellbeing." *International Journal of Mental Health and Addiction* 17 (2019): 596-614. https://doi.org/10.1007/s11469-018-9961-1

[20] Steel, Piers. "The nature of procrastination: a meta-analytic and theoretical review of quintessential self-regulatory failure." *Psychological bulletin* 133, no. 1 (2007): 65. https://doi.org/10.1037/0033-2909.133.1.65

[21] Solomon, Laura J., and Esther D. Rothblum. "Academic procrastination: frequency and cognitive-behavioral correlates." *Journal of counseling psychology* 31, no. 4 (1984): 503-509. https://doi.org/10.1037/0022-0167.31.4.503

[22] Klassen, Robert M., Lindsey L. Krawchuk, and Sukaina Rajani. "Academic procrastination of undergraduates: Low self-efficacy to self-regulate predicts higher levels of procrastination." *Contemporary educational psychology* 33, no. 4 (2008): 915-931. https://doi.org/10.1016/j.cedpsych.2007.07.001

[23] Tice, Dianne M., and Roy F. Baumeister. "Longitudinal study of procrastination, performance, stress, and health: The costs and benefits of dawdling." *Psychological science* 8, no. 6 (1997): 454-458. https://doi.org/10.1111/j.1467-9280.1997.tb00460.x

[24] Schraw, Gregory, Theresa Wadkins, and Lori Olafson. "Doing the things we do: a grounded theory of academic procrastination." *Journal of Educational psychology* 99, no. 1 (2007): 12-25. https://doi.org/10.1037/0022-0663.99.1.12
[25] Klingsieck, Katrin B. "Procrastination: When Good Things Don't Come to Those Who Wait." *European psychologist* 18, no. 1 (2013): 24-34. https://doi.org/10.1027/1016-9040/a000138
[26] van Eerde, Wendelien. "A meta-analytically derived nomological network of procrastination." *Personality and individual differences* 35, no. 6 (2003): 1401-1418. https://doi.org/10.1016/S0191-8869(02)00358-6
[27] Wolters, Christopher A. "Understanding procrastination from a self-regulated learning perspective." *Journal of educational psychology* 95, no. 1 (2003): 179-187. https://doi.org/10.1037/0022-0663.95.1.179
[28] Sirois, Fuschia, and Timothy Pychyl. "Procrastination and the priority of short-term mood regulation: Consequences for future self." *Social and personality psychology compass* 7, no. 2 (2013): 115-127. https://doi.org/10.1111/spc3.12011
[29] Balkis, Murat, and Erdinç Duru. "Procrastination, self-regulation failure, academic life satisfaction, and affective well-being: underregulation or misregulation form." *European Journal of Psychology of Education* 31 (2016): 439-459. https://doi.org/10.1007/s10212-015-0266-5
[30] Chun Chu, Angela Hsin, and Jin Nam Choi. "Rethinking procrastination: Positive effects of" active" procrastination behavior on attitudes and performance." *The Journal of social psychology* 145, no. 3 (2005): 245-264. https://doi.org/10.3200/SOCP.145.3.245-264
[31] Dewitte, Siegfried, and Henri C. Schouwenburg. "Procrastination, temptations, and incentives: The struggle between the present and the future in procrastinators and the punctual." *European Journal of personality* 16, no. 6 (2002): 469-489. https://doi.org/10.1002/per.461
[32] van Eerde, Wendelien, and Katrin B. Klingsieck. "Overcoming procrastination? A meta-analysis of intervention studies." *Educational Research Review* 25 (2018): 73-85. https://doi.org/10.1016/j.edurev.2018.09.002
[33] Wang, Huihui, Zhonglin Wen, Yang Wang, Xiqin Liu, and Jinyan Xie. "The association between procrastination in academic writing and negative emotional states during the COVID-19 pandemic: the indirect effects of stress coping styles and self-efficacy." *Anxiety, Stress, & Coping* (2024): 1-14. https://doi.org/10.1080/10615806.2024.2339985
[34] Elsayed Abdullah, Sarah, Yasmeen Mohamed Shehata, Fatma Hussein Ramadan, and Shadia Ramadan Morsy. "Relationship Between Academic Procrastination Behavior and Self-Regulation Among Nursing Students." *Alexandria Scientific Nursing Journal* 26, no. 2 (2024): 63-77. https://doi.org/10.21608/asalexu.2024.361318
[35] Graff, Meir, and Elan Barenholtz. "An Imagination–Procrastination Link? The Role of Efficacy Beliefs, Visual Imagery, and Affect in Academic Procrastination." *Psychological Reports* (2023): 00332941231168559. https://doi.org/10.1177/00332941231168559
[36] Åsberg, Katarina, and Marcus Bendtsen. "Evaluating the effectiveness of a brief digital procrastination intervention targeting university students in Sweden: study protocol for the Focus randomised controlled trial." *BMJ open* 13, no. 7 (2023): e072506. https://doi.org/10.1136/bmjopen-2023-072506
[37] Chen, Peng Sheng, Jing Li, and Seung-Yong Kim. "Structural relationship among mobile phone dependence, self-efficacy, time management disposition, and academic procrastination in college students." *Iranian Journal of Public Health* 50, no. 11 (2021): 2263. https://doi.org/10.18502/ijph.v50i11.7582