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Your Article is Accepted. Academic Writing for Publication: A Deep Dive into International Research on Challenges and Strategies

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ABSTRACT

Background: Academic writing for publication (AWforP) has recently come to the fore because of the critical importance of scholarly publication to academia and the internationalization of science. A review of the scientific literature on AWforP found that it is underdeveloped and lacks comprehensive frameworks and models for AWforP challenges, AWforP strategies, or both.

Purpose: To contribute to bridging these gaps, this article aims to summarize and map the AWforP challenges and AWforP strategies identified in the scholarly empirical literature.

Method: A systematic Scopus/WoS literature review was used for data collection, identifying 15 relevant sources (n , sample size). The review was based on the PRISMA recommendations. Data were analyzed and summarized by deduction and meta-analysis based on chi-square heterogeneity test and meta-regression, then mapped by induction and K-means clustering.

Results: First, 31 challenges to AWforP and 36 strategies for AWforP were detected. Second, an original classification of AWforP challenges was introduced. The taxonomy of academic writing strategies was expanded with AWforP strategies. Third, AWforP challenges/strategies were ranked based on their frequency of mention in the sample. Semantic difficulties were the most prevalent challenge, and attending academic writing courses was the most advised strategy. Fourth, through meta-analysis, the sample was found to be moderately statistically heterogeneous ($I^2=60.97\%$), and the summary effect size was positive and statistically significant. Fifth, the sampled sources were mapped into five clusters based on the country of researchers studied ($SSE=10.511$).

Conclusion: This article conceptualizes empirical research on AWforP challenges and AWforP strategies by identifying, comprehensively systematizing, summarizing, and mapping them. Implementing the proposed taxonomy of AWforP challenges/strategies under the identified cluster specifics in the academic writing teaching and strategic research planning and control practices would improve researchers' publication activity and research management effectiveness at the university and national levels.

KEYWORDS

academic writing, writing for publication, scholarly publications, challenges and strategies, research management

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INTRODUCTION

The notification 'Congratulations! Your article has been accepted for publication' is strongly desired and valuable for researchers nowadays (Agathokleous, 2022). The exceptional significance of their scholarly productivity for academia in recent years is a primary reason (Frandsen et al., 2024; Lambovska, 2023). Over the past two decades, knowledge

production has become a central pillar of national (Carlsson & Wilén, 2024) and global research governance policies (Oancea, 2019). Publication activity in the Scopus/Web of Science (WoS) databases is now a key criterion for high accreditation scores (Veretennik & Okulova, 2023), university rankings (Lambovska & Todorova, 2023), and funding (Owan et al., 2023). As a result, publications in high-quality journals have become

vital to the establishment and academic success of scholars, university professors, and doctoral candidates (herein “researchers”) (Habibie, 2022; Jalongo, 2024). The quality of these publications largely depends on how well the authors’ ideas are expressed textually (Scholz, 2022), thereby bringing academic writing for publication (AWforP) to the forefront of the scientific literature. AWforP is a complex skill as a part of academic writing (Tikhonova et al., 2024). The complexity of academic writing stems from its linguistic and stylistic features: sentence structure, vocabulary, syntactic constructions, hedging devices, genre specificity, etc. (Biber, 2006). AWforP complexity is further amplified by its global nature, driven by the internationalization of science (Raitskaya & Tikhonova, 2020). Some authors even define AWforP as a challenging process (Du Plooy et al., 2024). The paramount importance and high complexity of AWforP for academia bring out identifying AWforP challenges and strategies as a top priority for all stakeholders, but primarily for research management bodies.

A review of the literature on AWforP shows that it is one of the emerging topics of interest in academic writing (Raitskaya & Tikhonova, 2022). Specifically regarding AWforP challenges and AWforP strategies, the following gaps in the Scopus/WoS scholarly literature were identified. First, the scholarly literature on AWforP challenges and strategies for AWforP is in its infancy. This conclusion is based on the fact that 57 records were found on the topic of this study, of which only 15 (Table 1) were relevant to it. Second, we failed to find a complete model or theoretical/conceptual framework of AWforP challenges and strategies to address them. Only the source (Ren & Hu, 2023) can be considered such an effort, but it is a community-specific case study lacking the specifics of a framework or generic model. Third, the literature review found no comprehensive systematization of or models for AWforP challenges, AWforP strategies, or both. This gap addresses both empirical and theoretical research. Source (Lim & Koay, 2024) is an exception, but only for rhetorical strategies to improve paper quality/acceptance.

To contribute to bridging the indicated gaps, albeit in a small way, this article aims to summarize and map the challenges and strategies for academic writing for publication identified in the scholarly empirical literature. Methodologically, we identify this research as a basic conceptual model of the “conceptual description” type (Meredith, 1993). A Scopus/WoS systematic literature review, deduction/induction, meta-analysis using meta-regression and chi-square heterogeneity test, and K-means cluster analysis underpin it.

The theoretical basis of this research covers the concepts of philosophy of science, linguistics, and knowledge management. Concepts of the philosophy of science were applied to specify the nature and type of this research as a conceptual model. Specifically, these are Meredith’s (1993) ideas of conceptual models and frameworks forming a logical and well-structured theory. From linguistics and knowledge

management, the concepts of Hyland (2021), Gillett et al. (2013), Tang et al. (2023), Teng and Yue (2023), and Bui et al.’s (2023) taxonomies were primarily used. We predominantly followed the concepts of the first three sources to classify the AWforP challenges, as we fully support the authors’ views. The taxonomies of the last two sources were employed as a basis for systematizing strategies for AWforP. In our opinion, these taxonomies propose the most complete classification of academic writing strategies.

In this study, four research questions clarify our tasks:

- RQ#1: What are the AWforP challenges and strategies for AWforP found in the scholarly empirical literature indexed by Scopus and Core Collection (WoS) databases before August 9, 2024?
- RQ#2: Which AWforP challenges are most prevalent, and which AWforP strategies are most advised in academia?
- RQ#3: What is the heterogeneity of practices in academia regarding AWforP challenges and strategies?
- RQ#4: How can we reasonably cluster studies on AWforP challenges and strategies from the perspective of effective AWforP management and control?

From a linguistics and educational perspective, this article is a pioneering effort to bridge the gap between the theory and practice of AWforP by conceptualizing empirical research on AWforP challenges and strategies. To our knowledge, this is the first study to identify, comprehensively systematize, summarize, and map AWforP challenges and strategies. It also complements and extends the current taxonomy of academic writing challenges and strategies toward scholarly writing for publication. In terms of the philosophy of science, this article suggests a conceptual descriptive model. Implementing the proposed toolkit in teaching academic writing and strategic research planning and control practices would improve researchers’ publication activity and research management at the university and national levels.

BASIC CONCEPTS

This section introduces the basic concepts underlying our study. Its two designations are to build conceptual foundations for the proposed taxonomy of AWforP challenges and AWforP strategies and to substantiate our inference about the nature of this study. Concepts from linguistics, knowledge management, and general management underpin the taxonomy of the AWforP challenges/strategies. We use these concepts to explain our understanding of the core of AWforP challenges/strategies and our approach to grouping them. The basic concepts in this context address the eponymous AWforP group of challenges/strategies. Con-

cepts from the philosophy of science are applied to clarify the nature of this study as a conceptual descriptive model.

In creating AWforP challenge groups, we drew primarily on Hyland's (2021) concepts of academic discourse and meta-discourse tools, Gillett et al.'s (2013) and Tang et al.'s (2023) ideas on academic writing features, and Üstünbaş's (2023) perspective on the nature of metalinguistic awareness/knowledge. The selection of concepts is mainly based on the high degree of correspondence between these authors' views and ours. Academic discourse is defined as ways of thinking about language and its use in academia (Hyland, 2021). Academic discourse covers the first AWforP challenge group of the proposed taxonomy (row 1, Table 2). Metalinguistic awareness/knowledge is viewed as cognizance of how a language works, including its structure, form and use (Üstünbaş, 2023). It covers the third AWforP challenge group here (row 3, Table 2).

In identifying AWforP strategies, we rely mostly on Teng and Yue's (2023) and Bui et al.'s (2023) taxonomies of academic writing strategies (cognitive, metacognitive, rhetorical, and social). In our view, these authors propose the most complete classification of academic writing strategies, summarizing the main prior concepts on this subject. Cognitive strategies directly address the writing process (Wischgoll, 2016), and the first AWforP strategy group here (row 1, Table 3). They cover organizing, connecting ideas, elaborating, summarizing, visualizing, inference, deducing, etc. (Bui et al., 2023; Supeno et al., 2024). Metacognitive strategies fall under metacognitive control (Teng & Yue, 2023) and facilitate aligning cognitive strategies with writing goals and the writing process monitoring (Wischgoll, 2016). They include drafting, information management, editing/revising, planning, monitoring, and evaluation (Bui et al., 2023; Rosdiana et al., 2023). Here, these strategies cover the second AWforP strategy group (row 2, Table 3). Rhetorical strategies help writers present their ideas in an understandable way (Bui et al., 2023), covering the third AWforP strategy group here (row 3, Table 3). These strategies include analogy, comparison, metadiscourse tools, formulating questions, analysis, organizing ideas, contrast, etc. (Chanamé-Chira et al., 2022). Social strategies cover seeking interplay/support from others, receiving feedback, information sharing, etc. (Bui et al., 2023; Supeno et al., 2024). They are included in the fourth AWforP strategy group, shown in row 4 of Table 3.

The basic concepts from the philosophy of science applied here address the conceptual model, the conceptual descriptive model, and the levels of conceptual models/frames. We mainly use and follow Meredith's (1993) concepts of models/frames as building blocks of coherent, logical and well-structured research methodological theory. A conceptual model is defined by Meredith (1993) as a set of concepts employed to describe or represent a process or object without ex-

plaining it. There are seven conceptual models according to Meredith (1993). Based on their explanatory power, they are grouped into three hierarchical levels (Dwayi, 2024). The first level is the lowest, covering conceptual models. The second (middle) level covers conceptual frameworks. Meta-frames/theories are at the third (highest) level. A conceptual descriptive model is a type of conceptual model that is least abstract and mostly descriptive (Meredith, 1993). It belongs to the lowest model level because of its least explanatory power (Lynn, 1976; Meredith, 1993).

METHODS

General Description of the Study

We carried out this study in three phases. In the first phase, AWforP challenges and strategies for AWforP were drawn from the literature, then systematised, and finally ranked. As a result, research questions 1 and 2 were answered. The second phase included a meta-analysis, and the third covered a cluster analysis. Research questions 3 and 4 were respectively answered in phases 2 and 3.

A systematic review of the literature (Phase 1) was employed to gather data. The data were analysed through deduction (Phase 1) and meta-analysis (Phase 2) methods. Induction (Phase 1) and K-means clustering (Phase 3) methods were applied to synthesise the findings of this paper.

The PRISMA rules were heeded in this review and meta-analysis. The latter was executed with the chi-square test of heterogeneity and meta-regression. The results were summarized in a Forest Plot diagram. IBM SPSS was applied to cluster the review data. The meta-analysis results and clusters were visualized through MS Excel.

Systematic Literature Review

PRISMA rules (Page et al., 2022) were employed for this systematic review. Using Lambovska and Raitskaya's (2022) approach, the review proceeded into five steps: identification, screening, eligibility, inclusion, and synthesis. Data statistics during the first four stages are presented in Figure 1 via a PRISMA flowchart.

In the (first) Identification step, a protocol for the review was written, and literature searches were carried out. In the review protocol (Figure 2), information (search) sources, the search phrase and strategies, and eligibility criteria (inclusion and exclusion) were described. Scopus & Core Collection of WoS scientometric databases were employed as search sources because of their scholarly nature and high coverage. We used a single search phrase obtained as a combination of keywords "academic writing", publication,

Figure 1
PRISMA flow chart

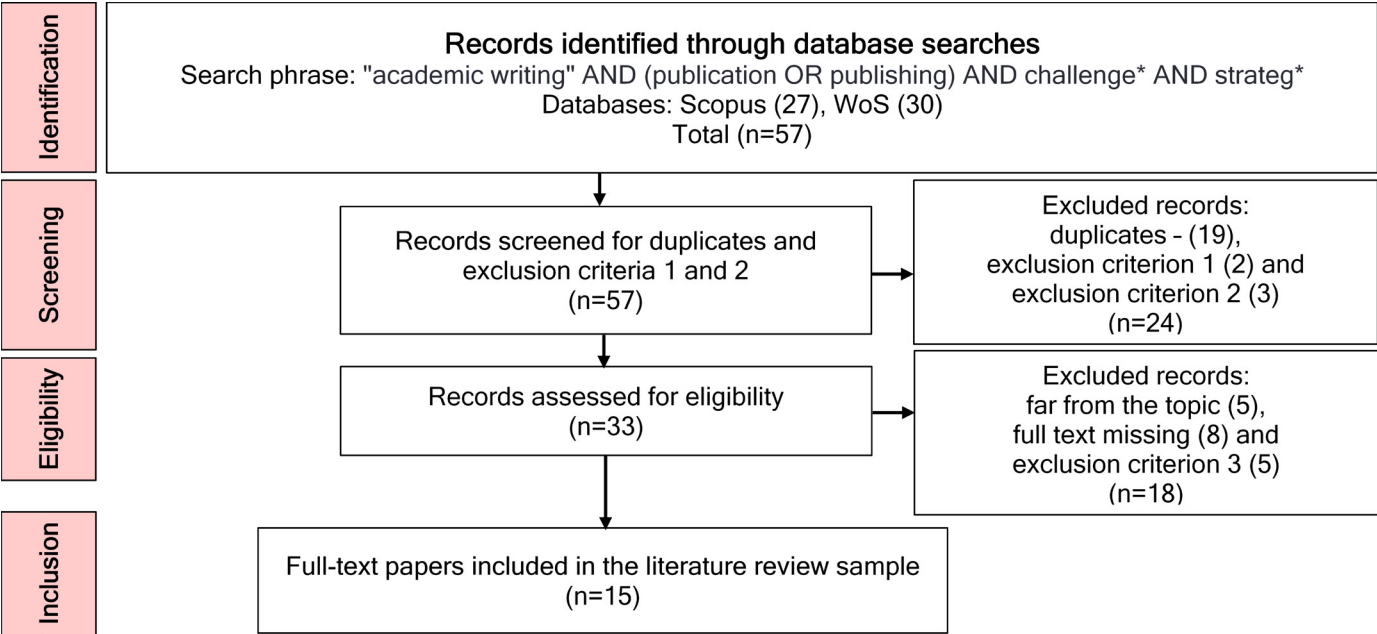
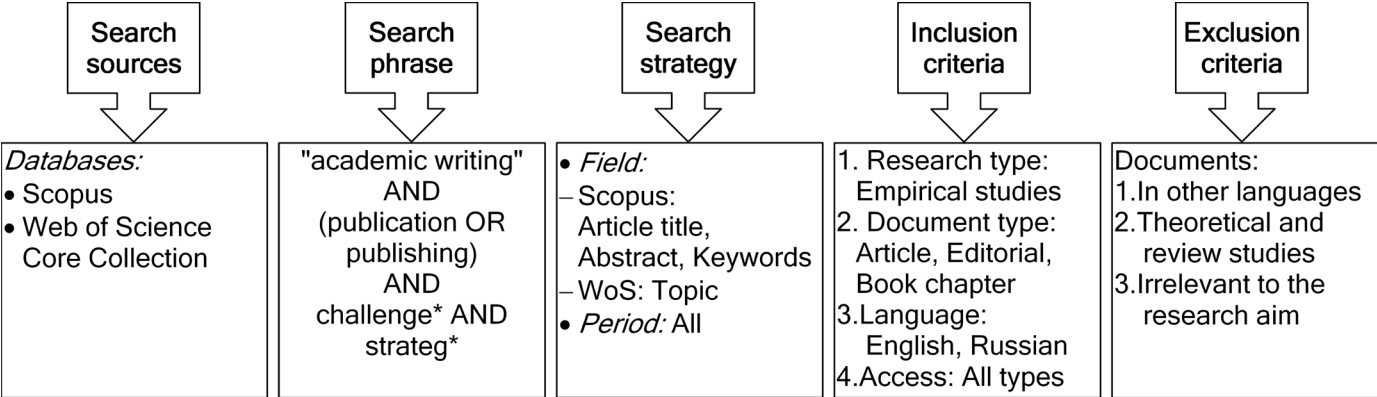


Figure 2
Protocol



publishing, challeng* and strateg*. These were chosen in line with the aim of this article. Our search strategy covered the entire indexing period of databases and the widest possible search fields, Topic (WoS) and Article Title, Abstract, and Keywords (Scopus). Eligibility criteria were mainly based on the nature of studies (theoretical/ empirical). We aimed to explore the practice of academia. Therefore, inclusion criterion 1 (research type) covered only empirical studies, and inclusion criterion 2 (document type) articles, editorials, and book chapters. Theoretical studies and reviews were excluded through exclusion criterion 2. Two languages were included in inclusion criterion 3, English and Russian. The Russian language allows covering papers from post-socialist countries. Their authors widely use Russian and are still poorly represented in Scopus & WoS.

Initial literature searches were carried out on June 10, 2024. Last updated on August 08, 2024. In the initial searches, we found 53 documents in Scopus & WoS (WoS: 28 and Scopus: 25). Later, four papers covering the search phrase were indexed in both databases (two for each). Thus, the total number of documents grew to 57. All 57 records were merged into one literature pool (herein "pool") and uploaded to Clarivate EndNote.

In the (second) Screening step, literature filtering was accomplished. First, the pool was checked for duplicate records. 19 duplicates were detected through the "find duplicates" feature. These were removed from the pool, which fell to 38 records. Then, this pool was reviewed for exclusion criteria 1 and 2. Regarding criterion 1, we found one record in Arabic and one in German. Three records were found un-

der criterion 2 (theoretical article, review and note). All five records were excluded for further review. As a result, the pool dropped to 33 records.

In the (third) Eligibility step, study selection was performed. The 33 records were analyzed for relevance to our research topic. Five documents were conflicting with the topic and were removed from the pool. We checked if the full text of the remaining 28 records was available. Of these, eight papers were not open access. Their full texts were not found in other databases or by queries to the authors, and these articles were excluded from the review. So, 20 papers are left in the pool. These papers were analyzed in detail according to exclusion criterion 3, using deduction and expert judgment methods. Five papers were found irrelevant to our research aim and removed from the pool. Each of the authors then performed a second in-depth review. Thus, the eligibility of the remaining 15 papers for this study was confirmed.

In the (fourth) Inclusion step, the sample of this study was formed. It covers the 15 eligible sources (Table 1). The remaining 23 sources (57 reduced by 19 duplicates and 15 eligible – “sample”) are shown in the Appendix below. Of these, two sources fall under criterion 1 (other languages), three under exclusion criterion 2 (theoretical sources), five were far from this topic, eight with full text missing, and five under exclusion criterion 3 (irrelevant to the research aim).

The (fifth) Synthesis step covered data extraction, systematization, and ranking. First, data extraction was done for AWforP challenges and AWforP strategies based on an in-depth analysis of the selected sources. We tabulated these results, thus answering question 1. Second, applying the induction method, the AWforP challenges (Table 2) and AWforP strategies (Table 3) were systematised into groups based on their nature and concepts from the previous section. The country of participants under study (here “researchers”) was also identified (Table 1). We use the term “undefined country” for the country of top-tier journal editors (sources [3], [8] and [9], Table 1) because their experience is not country-specific, but the term “international” for the sources [1], [4], and [7], (Table 1) addressing researchers from two or more countries. Third, AWforP challenges/strategies were ranked based on their total frequency of mention in the sample (Tables 2 and 3, columns Total). On this basis, in response to question 2, the most prevalent/advised AWforP challenges/strategies were identified. The top-ranked ones are shown in Figure 3.

Meta-Analysis

We ran a meta-analysis to estimate the statistical heterogeneity of the sample, thus answering research question 3. A systematic review and statistical estimation of its summary results are always covered by the meta-analysis (Higgins et al., 2023). Therefore, this meta-analysis was held as a fol-

low-up to our systematic review, in four steps under Milani et al.’s recommendations (2024) on the meta-analysis procedure. We adhered to the established methodology throughout the process. Meta-analysis variables were defined in the first step. We used two variables: the total mentions of AWforP challenges (AWPC) and the total mentions of AWforP strategies (SAWP). Their values are shown in the Source Total rows in Tables 2 and 3, respectively. Statistical heterogeneity (I^2) was assessed in the second step through the chi-square test. When evaluating it, we followed the notion of Andrade (2020) that heterogeneity is low when I^2 is below 50%, moderate when I^2 is between 50% and 75%, and high when I^2 exceeds 75%. The third step was choosing a method. We decided to use the meta-regression method because it can simultaneously model the effects. In addition, our sample size meets the requirements of more than 10 items (Andrade, 2020). In the fourth step, we assessed the summary effect size using Carlson et al.’s Rule 8 (2023). The summary results were pictured by a Forest Plot (Figure 4) portraying the summary effect size estimate, its confidence intervals (CI), and the variations between the sampled sources. The Forest Plot was created in MS Excel after Neyeloff et al.’s (2012) guidelines on using Excel for this purpose. We deliberately decided not to conduct the sensitivity analysis, as it would reduce the variety of AWforP challenges/strategies.

Cluster Analysis

The K-means method was applied to cluster the sampled sources. Research question 4 was thus answered. The data were processed in 10 iterations by IBM SPSS. AWPC (Country Total row, Table 2) and SAWP (Country Total row, Table 3) were used as cluster analysis variables. The sampled sources were clustered using the country of researchers studied (Table 1) and the two variables. We decided to group the sources based on their country coverage (the countries of origin of the researchers studied) into five clusters (Figure 5). Our decision was founded on a relatively balanced country distribution by clusters (Table 4) and a low value of the sum of squared errors – SSE (Blömer et al., 2016). As a rule, low SSE denotes high compactness of the clusters (Selmi et al., 2024). Here, we tried to balance the results of these criteria. Trials were conducted for two, three, four, and five clusters. The results for the five clusters were the most satisfactory in terms of these two criteria. We visualised the clusters and their centroids through MS Excel.

RESULTS

Sample of the Study

This subsection presents the sample of this study (Table 1). The sample covers 15 sources. The authors of the sources, their years of publication, document type, respondents and the respondents’ countries are also shown in Table 1.

Table 1
Research Sample Used

No	Source	Document type	Respondents	Country of Respondents
[1]	Bakla & Karakaş (2022)	Article	English-speaking researchers	International
[2]	Giraldo (2019)	Article	Columbian university professors	Columbia
[3]	Good & Pullins (2024)	Editorial	Top-tier journal editors	Undefined
[4]	Gupta et al. (2022)	Article	Non-native English-speaking (NNES) doctoral students (DS) and their faculty supervisors	International
[5]	Harvey et al. (2020)	Article	Australian health practitioners in clinical services	Australia
[6]	Langum & Sullivan (2020)	Article	Norwegian DS	Norway
[7]	Lillis & Curry (2022)	Article	NNES researchers	International
[8]	Lim & Koay (2024)	Editorial	Top-tier journal editors	Undefined
[9]	Martín (2017)	Editorial	Top-tier journal editor	Undefined
[10]	Niemelä & Naukkarinen (2021)	Article	Finish DS	Finland
[11]	Ren & Hu (2023)	Article	Chinese DS	China
[12]	Rezaei & Seyri (2019)	Article	Iranian DS	Iran
[13]	Shehata & Eldakar (2018)	Article	Egyptian researchers	Egypt
[14]	Subaveerapandiyan & Sinha (2024)	Article	Zambian university librarians	Zambia
[15]	Zhigalev et al. (2022)	Article	Russian DS	Russian Federation (RF)

Challenges and Strategies for Academic Writing for Publication

In response to question 1, we found 31 AWforP challenges and 36 AWforP strategies in the sample. These and their total, by-source and by-country, mentions are shown in Tables 2 and 3. In both tables, each mention of a challenge/strategy is counted once per source and is marked with the symbol √. The Total columns show the total mentions for each challenge/strategy (per row). The Source Total rows include the total mentions of all challenges/strategies in each source (per column), representing the values of the AWPC/SAWP variables used in the meta-analysis. The Country Total rows capture the total mentions of all challenges/strategies for each country, representing the values of the AWPC/SAWP variables used in the cluster analysis. For the undefined country, the AWPC/SAWP values reflect the total mentions in source columns [3], [8] and [9], and for the “international” item, they reflect those in columns [1], [4] and [7].

Further, AWforP challenges and strategies for AWforP were systematised into five and four groups, respectively, based on their nature and the basic concepts used here (see Basic Concepts section). The AWforP challenge groups (Table 2) are about academic discourse features, centre-periphery relations, (meta)linguistic knowledge, researcher behaviour, and research environment. The AWforP strategy groups (Ta-

ble 3) are for cognitive, metacognitive, rhetorical, and social strategies. Using the same principles of systematization, the AWforP challenge group of academic discourse features and all AWforP strategic groups were subdivided.

The Most Prevalent Challenges and Advised Strategies for Academic Writing for Publication

In response to question 2, the most prevalent (top-ranked) three AWforP challenges and the most advised AWforP strategies were found (Figure 3). The rankings are based on the total mentions of AWforP challenges and AWforP strategies, shown in the Total columns of Tables 2 and 3.

The top-ranked AWforP challenges were semantic difficulties (rank 1, 10 mentions – m.), lack of English language proficiency, difficulties with writing conventions in English, difficulty deciding on research structure (rank 2, 8 m.), grammar problems, and difficulty organizing texts (rank 3, 5 m.). The most advised strategies for AWforP in academia were attending academic writing courses (rank 1, 10 m.), ongoing support from superior/university, formal training at universities (rank 2, 7 m.), information management through corpus tools, providing access to resources, using peer feedback, and requesting proofreading/feedback (rank 3, 5 m.).

Figure 3
Top-ranked Challenges and Strategies for Academic Writing for Publication

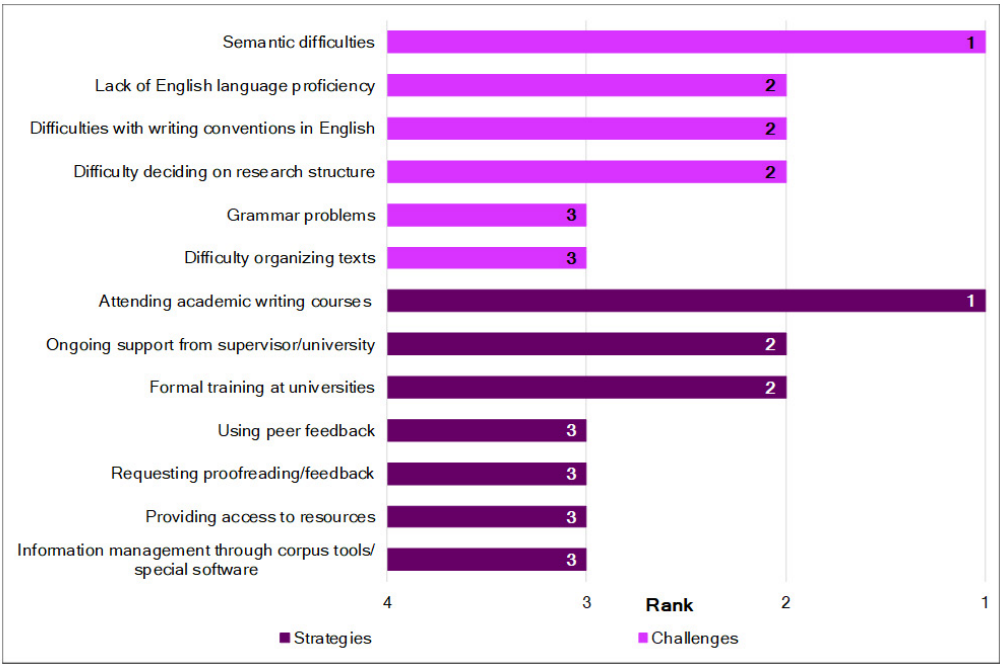


Table 2
Challenges to Academic Writing for Publication

Challenges to (AWPC)/ Sources and Countries		[1], International	[2], Columbia	[3], Undefined	[4], International	[5], Australia	[6], Norway	[7], International	[8], Undefined	[9], Undefined	[10], Finland	[11], China	[12], Iran	[13], Egypt	[14], Zambia	[15], RF	Total
1	Academic discourse features																
1.1	Complexity																
a	Difficulties in developing concepts				✓		✓										2
b	Difficulty conceiving research											✓			✓	✓	3
1.2	Writing structure and organization																
a	Difficulty deciding on the manuscript structure	✓			✓	✓	✓		✓			✓			✓	✓	8
b	Difficulty text organizing			✓	✓		✓				✓		✓				5
c	Difficulties with writing the Introduction/ Discussion			✓		✓	✓										3
1.3	Writing style																
a	Concise writing difficulties	✓			✓				✓								3
b	Difficulty finding the author’s “personal voice»						✓										1
1.4	Writing patterns in English																

Challenges to (AWPC)/ Sources and Countries		[1], International	[2], Columbia	[3], Undefined	[4], International	[5], Australia	[6], Norway	[7], International	[8], Undefined	[9], Undefined	[10], Finland	[11], China	[12], Iran	[13], Egypt	[14], Zambia	[15], RF	Total
a	Difficulties with conventions for writing (incl. the IMRaD model)				✓		✓			✓	✓	✓	✓	✓	✓		8
b	Difficulty translating some special expressions							✓									1
c	Difficulty understanding genres of academic writing	✓									✓	✓	✓				4
2	Centre-periphery relations																
2.1	Difficulties due to national (academic) culture									✓	✓		✓			✓	4
2.2	Difficulty conveying local debates in mainstream journals									✓							1
2.3	Dissatisfaction with the English language hegemony							✓					✓				2
2.4	Idiosyncratic forms of writing (in terms of international journals)									✓			✓				2
2.5	Lack of culture in international publishing													✓	✓		2
3	(Meta)linguistic knowledge																
3.1	Difficulty paraphrasing others' ideas	✓					✓										2
3.2	Gaps in linguistic terminology										✓	✓				✓	3
3.3	Grammar problems				✓						✓	✓			✓	✓	5
3.4	Lack of English language proficiency		✓			✓					✓	✓	✓	✓	✓	✓	8
3.5	Problems with academic metadiscourse tools										✓	✓				✓	3
3.6	Semantic difficulties	✓			✓	✓	✓	✓			✓	✓	✓		✓	✓	10
4	Researcher behaviour																
4.1	Competing priorities at work and home					✓											1
4.2	Experiencing writer's block	✓															1
4.3	Fear of international publishing													✓		✓	2
4.4	Lack of discipline		✓			✓											2
5	Research environment																
5.1	Difficulties with peer feedback	✓				✓					✓						3
5.2	Lack of (clear) communication with supervisors				✓									✓			2
5.3	Lack of instructions (for writing academic papers)												✓	✓	✓		3
5.4	Lack of resources		✓			✓										✓	3
5.5	Lack of support (financial, rewards, etc.)					✓								✓	✓		3
5.6	Political decisions of some journals												✓				1

Challenges to (AWPC)/ Sources and Countries	[1], International	[2], Columbia	[3], Undefined	[4], International	[5], Australia	[6], Norway	[7], International	[8], Undefined	[9], Undefined	[10], Finland	[11], China	[12], Iran	[13], Egypt	[14], Zambia	[15], RF	Total
Source Total	7	3	2	8	9	8	3	2	4	10	9	10	7	9	10	101
Country Total	18 ^a	3	8 ^b		9	8				10	9	10	7	9	10	101

Note. Sources match those in Table 1. ^a AWPC of the “international” item is the sum of columns [1], [4], and [7], ^b AWPC of the undefined country is the sum of columns [3], [8], and [9]

Table 3
Strategies for Academic Writing for Publication

Strategies (SAWP)/ Sources and Countries	[1], International	[2], Columbia	[3], Undefined	[4], International	[5], Australia	[6], Norway	[7], International	[8], Undefined	[9], Undefined	[10], Finland	[11], China	[12], Iran	[13], Egypt	[14], Zambia	[15], RF	Total
1 Cognitive strategies																
1.1 About the writing process																
a Applying novel research designs/methods											√					1
b Translating only the data necessary for the target publication							√									1
c Using dictionaries	√										√					2
1.2 About learning and training																
a Attending academic writing courses	√			√	√	√		√	√			√	√	√	√	10
b Formal training at universities				√				√	√			√	√	√	√	7
c Self-Study	√										√	√			√	4
2 Metacognitive strategies																
2.1 Planning																
a Leaving enough time for/between writing and proofreading	√				√											2
b Pre-writing activities	√	√														2
2.2 Drafting																
a Drafting the manuscript in the native language before its translation											√					1
2.3 Evaluation																
a Using a proofreading checklist				√							√	√				3
2.4 Information management through:																
a Corpus tools/special software	√			√	√						√			√		5

Strategies (SAWP)/ Sources and Countries		[1], International	[2], Columbia	[3], Undefined	[4], International	[5], Australia	[6], Norway	[7], International	[8], Undefined	[9], Undefined	[10], Finland	[11], China	[12], Iran	[13], Egypt	[14], Zambia	[15], RF	Total
b	Interactive technologies															✓	1
c	Using reading matrices		✓										✓				2
2.5	<i>Revising/Editing</i>	✓			✓							✓					3
3	Rhetorical strategies																
3.1	<i>Improving writing style</i>																
a	Borrowing linguistic expressions from published articles											✓					1
b	Balancing academic and literary styles						✓										1
c	Using metadiscourse tools	✓										✓					2
3.2	<i>Improving paper quality/acceptance</i>																
a	«Tell with the Title» (select a short, informative, and engaging title)			✓					✓								2
b	«Grasp attention with the Abstract» (write a brief but comprehensive summary)			✓					✓								2
c	«Craft the Keywords» (choose relevant keywords, incl. theoretical and methodological terms, and geographical/contextual features)								✓								1
d	«Sell the study in the Introduction» (hook the reader; highlight the topic's importance, literature gaps, and contributions of the study)								✓								1
e	«Build the ground with the Literature» (lay the theoretical/conceptual foundation)			✓					✓								2
f	«Clarify the Methodology» (detail the sample, data collection procedures/methods)			✓					✓								2
g	«Frame the findings with the Results» (visualize findings and interpret results)			✓					✓								2
h	«Dazzle with the Discussion» (write a meaningful discussion, clarify contributions)			✓					✓								2
i	«Culminate in the Conclusion» (summarize key contributions and results, highlight significance and impact of the study, discuss future work and limitations)								✓								1
j	«Strike with the References» (include seminal & recent, credible & relevant sources)								✓								1
4	Social strategies																
4.1	<i>University social strategies</i>																
a	Creating writing centres at the university				✓	✓					✓					✓	4
b	Ongoing support from the supervisor or university					✓	✓				✓		✓	✓	✓	✓	7
c	Promotion/reward system modification					✓								✓			2

Strategies (SAWP)/ Sources and Countries		[1], International	[2], Columbia	[3], Undefined	[4], International	[5], Australia	[6], Norway	[7], International	[8], Undefined	[9], Undefined	[10], Finland	[11], China	[12], Iran	[13], Egypt	[14], Zambia	[15], RF	Total
d	Providing access to resources				✓							✓		✓	✓	✓	5
e	Providing an appropriate environment/culture					✓										✓	2
4.2 Researchers' social strategies																	
a	Requesting proofreading/feedback	✓				✓	✓					✓	✓				5
b	Using peer feedback		✓		✓	✓					✓	✓					5
c	Using professional editing/proofreading services	✓			✓							✓	✓				4
d	Using writing retreats				✓							✓					2
Source Total		10	3	6	10	9	4	1	10	2	5	14	8	5	5	8	100
Country Total		21 ^a	3	18 ^b		9	4				5	14	8	5	5	8	100

Note. Sources match those in Table 1. ^a SAWP of the "international" item is the sum of columns [1], [4], and [7]. ^b SAWP of the undefined country is the sum of columns [3], [8], and [9].

Results of the Meta-Analysis

In response to question 3, the following results from the meta-analysis were found (Figure 4). First, the statistical heterogeneity (I^2) assessed by the chi-square test was 60.97%, a moderate value.

Second, the sample summary outcome was 1.29 (Summary column, Outcome row, Figure 4 legend), calculated by combining the effect sizes of the sampled sources, with a standard error (SE) of 0.54 - average for this sample (Summary column, SE row, Figure 4 legend).

Third, a Forest Plot diagram was created to depict the results of each source and the overall heterogeneity. It is shown in Figure 4. Each horizontal line in Figure 4 corresponds to the individual confidence interval of a particular source. The horizontal lines of four sources intersect the ordinate, thus increasing the heterogeneity of the sample. These are sources [2] ($R=100$, $CI=[-13.16;213.16]$), [3] ($R=33.33$, $CI=[-12.86;79.53]$), [7] ($R=300$, $CI=[-39.48;639.48]$), and [8] ($R=20$, $CI=[-7.72;47.72]$), where R is the effect size in %.

Fourth, the sample summary effect size, depicted by the summary diamond on the line closest to the abscissa, was $R=129.17$ (Summary column, Rate row, Figure 4 legend), $CI=[24.11;234.24]$.

Clustering the Sample on the Challenges and Strategies for Academic Writing for Publication

Five clusters were generated in response to question 4 (Figure 5 and Table 4). The clusters and their relative distribution in the sample by country are visualized in Figure 5a. Figure 5b depicts the cluster centres (centroids) and the location of their elements (countries covered). The content of the clusters (country coverage and sources included) and their SSE are shown in Table 4. Clusters were named after their values of total mentions of AWforP challenges (AWPC) and AWforP strategies (SAWP).

The clusters have the following features. Cluster 1 (labelled "medium-high") covered sources/countries reporting a medium value of total mentions of AWforP challenges (AWPC) and a high value of total mentions of AWforP strategies (SAWP). These are two items: the undefined country and China. The former corresponds to sources [3], [8], and [9] (Table 1), and the latter to [11]. The centroid coordinates of cluster 1 were (8.5;16), and its SSE was 4.124. Cluster 2 (labelled "maximum-maximum") included sources reporting AWPC and SAWP maximum values. These are three editorials ([1], [4], and [7]) combined into one item labelled "international". The centroid coordinates of cluster 2 were (18;21), and its SSE was zero (0). Cluster 3 (labelled "medium-medi-

um”) comprised sources reporting AWPC and SAWP medium values. These are sources [5], [12], and [15] addressing researchers from Australia, Iran, and the Russian Federation, respectively. The centroid coordinates of cluster 3 were (9.67;8.33), and its SSE was 1.885. Cluster 4 (labelled “minimum-minimum”) covered only one source - [2], the one reporting AWPC and SAWP minimum values. This source explores researchers from Colombia. The centroid coordinates of cluster 4 were (3;3), and its SSE was zero. Cluster 5 (labelled “medium-low”) comprised sources/countries reporting medium AWPC and low SAWP values. These are sources [6], [10], [13], and [14], respectively, addressing researchers from Norway, Finland, Egypt, and Zambia. The centroid coordinates of cluster 5 were (8.5;4.75), and its SSE was 4.502.

The summary SSE of the cluster map was 10.511. Three levels of SSE were observed for this cluster map: zero, medium, and higher. The SSE of clusters 2 and 4 is zero because they cover only one country/item whose AWPC and SAWP define the cluster centroid. Cluster 3 SSE (1.885) is medium for this cluster map. Clusters 1 and 5 have higher SSE values of 4.124

and 4.502, respectively. One possible reason is that these two clusters encompass the most sources - four each.

DISCUSSION

On the nature of this study

This research summarizes and maps AWforP challenges and strategies for AWforP by conceptualizing the empirical literature indexed by Scopus/WoS before August 09, 2024.

From a linguistics and education perspective, this research is a pioneering effort to address the absence of a comprehensive systematization, model or conceptual framework for AWforP challenges and AWforP strategies in the scholarly literature. In particular, it introduces a taxonomy of AWforP challenges and AWforP strategies. The first part of this taxonomy covers an original classification of AWforP challenges based on Hyland’s (2021), Gillett et al.’s (2013), and Tang et al.’s (2023) concepts and our experience as researchers. The second part of the taxonomy, regarding AWforP strat-

Figure 4
Forest Plot of the Sample

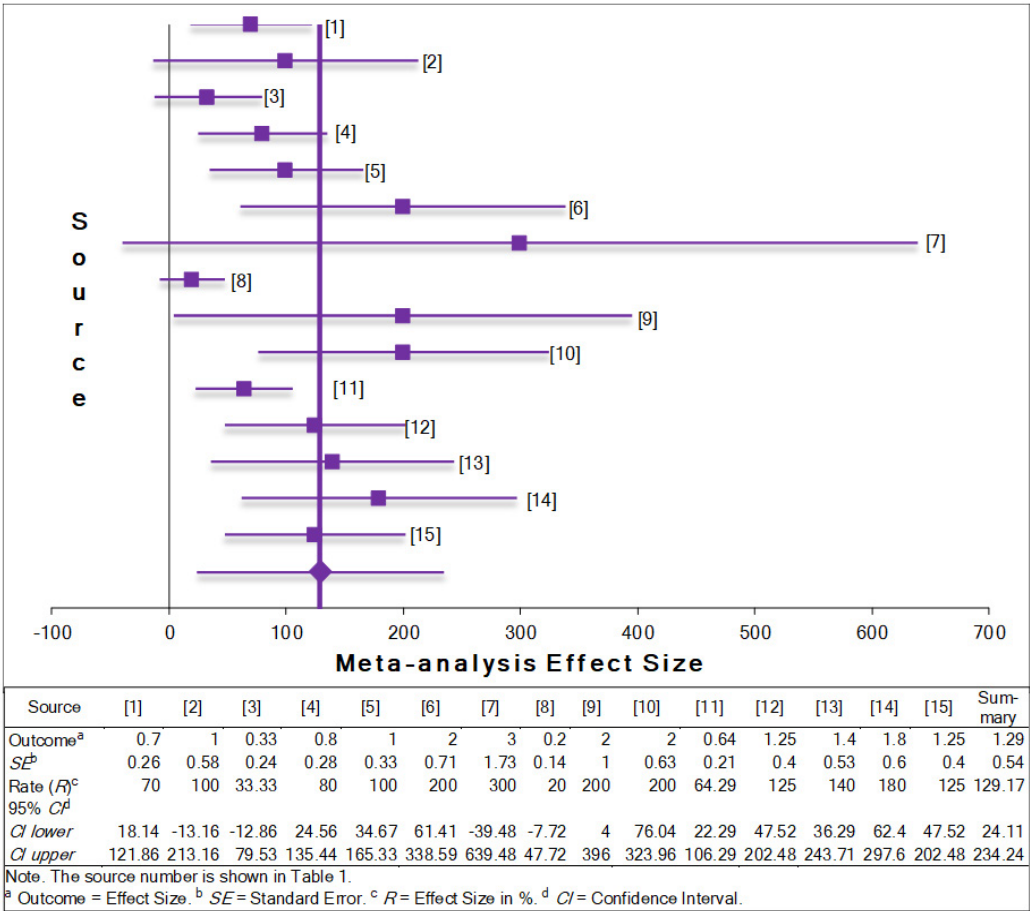


Figure 5
Clusters to the AWforP Challenges and Strategies

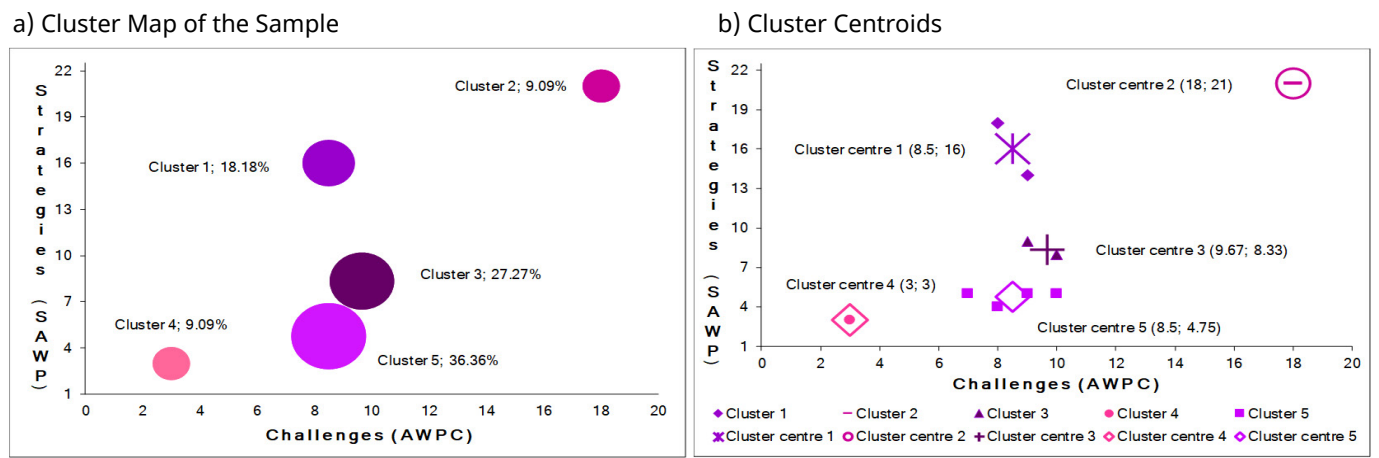


Table 4
Results of the Cluster Analysis

Indicator	Cluster 1 ("Medium-High")	Cluster 2 ("Maximum-Maximum")	Cluster 3 ("Medium-Medium")	Cluster 4 ("Minimum-Minimum")	Cluster 5 ("Medium-Low")	Total
SSE	4.124	0	1.885	0	4.502	10.511
Content of the clusters						
Country coverage	Undefined, China	International	Australia, Iran, Russia	Columbia	Norway, Finland, Egypt, Zambia	11
Literature source ^a	[3], [8], [9], [11]	[1], [4], [7]	[5], [12], [15]	[2]	[6], [10], [13], [14]	15

Note. ^a Sources match those in Table 1.

egies, can be considered an extension of Bui et al.’s (2023) and Teng & Yue’s (2023) taxonomies on academic writing strategies towards AWforP. This part also integrates the ideas of Chanamé-Chira et al. (2022), Rosdiana et al. (2023), Supeno et al. (2024) and Wischgoll (2016), and summarizes the concepts of all authors from the sampled sources. We would like to highlight the expansion of the group of rhetorical strategies in the proposed taxonomy with the subgroup for improving paper quality/acceptance based on Good and Pullins’s (2024) and Lim and Koay’s (2024) views.

From the point of view of the philosophy of science, it can be categorized methodologically as a basic conceptual model of the “conceptual description” type under Meredith (1993) or at a classificatory level under Lin (1976). The primarily descriptive and low abstract nature of this study presupposes this categorization.

From a managerial perspective, this study directly addresses activities and tools of strategic research planning and control at both university and national levels. Specifically, choosing a strategy is a strategic planning procedure, iden-

tifying challenges is an element of risk assessment, and taking corrective action against challenges/inappropriate strategies is a control influence known as “regulation” (Nedyalkova, 2020). The last two activities fall under strategic control (Zhelev & Kostova, 2024), while the third closes the control feedback loop (Nedyalkova, 2024) in strategic management.

Research Question 1

Our interpretation of the main findings on AWforP challenges/strategies follows: To begin with the AWforP challenges (31 items, Table 2). The group of AWforP challenges to the academic discourse features was the most numerous (10 items). Given our topic, this is a logical outcome, as this group covers key challenges to AWforP rather than academic writing in general. Another important point concerns the AWforP strategies (36 items, Table 3). They were systematized into four groups: cognitive, metacognitive, rhetorical, and social. Within the rhetorical strategy group, we separated the improving paper quality/acceptance subgroup, covering strictly specific strategies for writing scientific publica-

tions. We titled these strategies based on the leading ideas of their authors (Good & Pullins, 2024; Lim & Koay, 2024), editors of top-tier journals. In the context of the research topic, this subgroup and the rhetorical strategy group are logically the most numerous, with 10 and 12 items, respectively. Finally, the large number of AWforP challenges and AWforP strategies discovered through this research, particularly strategies to improve paper quality/acceptance, is evidence that academia has been excited about the topic and has been working on it in recent years.

Research Question 2

Regarding the ranking of AWforP challenges (Figure 3), the most prevalent ones (ranked 1st to 3rd, including semantic difficulties, grammar problems, difficulties with writing conventions in English, etc.) fall into the groups of challenges to academic discourse features and (meta)linguistic knowledge – three per group. Furthermore, these two groups were the most mentioned, with 38 and 31 mentions, respectively. The groups of research environment (15), centre-periphery relations (11), and researcher behaviour (six) follow. These results are reasonable because most researchers studied in this sample were non-native English-speaking or doctoral students (Table 1) and were not experienced enough in AWforP, including in international journals.

Regarding the ranking of AWforP strategies (Figure 3), the most advised strategies (ranked 1st and 2nd) were two cognitive learning/teaching strategies (attending academic writing courses and formal training at universities) and one social (ongoing support from superior/university). Three social strategies (providing access to resources, requesting proofreading/feedback and using peer feedback) and one metacognitive (information management through corpus tools) were ranked 3rd. Because of their nature, we view the top-ranked strategies as highly suitable for overcoming the most prevalent challenges. With 36 mentions, the social strategy group was the most advised. The groups of cognitive (25), rhetorical (20) and metacognitive strategies (19) follow. Notably, rhetorical strategies were not strongly recommended, including those to improve paper quality/acceptance. Given the most prevalent challenges and the researchers studied, these results are entirely logical and expected by us. The same goes for most AWforP strategies.

Research Question 3

Generally, the meta-analysis's main advantage is that it aggregates the results of multiple studies, thus providing a more reliable summary estimate than an individual study. In our research, the statistical heterogeneity of the sample ($I^2=60.97\%$) was moderate. This level of heterogeneity is typical of meta-analyses in the social sciences because most studies do not have identical empirical settings (Hansen, 2022). According to the results, four studies ([2], [3], [7], and [8]) from our sample increased its heterogeneity to the level

of 60.97%. These studies have statistically insignificant results because their horizontal lines intersect the Forest Plot ordinate (Figure 4). We intentionally did not eliminate these four sources through sensitivity analysis (Milani et al., 2020) as we aimed for a “deep dive” into this topic. The summary results of the meta-analysis give reason to conclude that the sample effect size is positive and statistically significant.

Research Question 4

Based on the cluster analysis results (Figure 5 and Table 4), the following interpretations can be made about the features of the cluster map: First, two types of clusters can be recognized in the cluster map based on the level of correspondence between the total mentions of AWforP challenges (AWPC, Table 2, Country Total row) and those of AWforP strategies (SAWP, Table 3, Country Total row). Clusters with high similarity in these indicators belong to the first type. These are clusters with two identical title elements, namely clusters 2 (“maximum–maximum”), 3 (“medium–medium”) and 4 (“minimum–minimum”). There is no similarity between AWPC and SAWP for the clusters of the second type. These are clusters with two different title elements, namely clusters 1 (“medium–high”) and 5 (“medium–low”). The second point is that two clusters stand out, the features of which differ significantly from the others in the cluster map. These are clusters 2 (“maximum–maximum”) and 4 (“minimum–minimum”). They address only one country and have zero SSE and similar extreme centroid coordinates of AWPC and SAWP as their titles suggest. Our next conclusion is that there are three clusters with similar centroid medium AWPC values but quite different SAWP. These are clusters 1 (8.5;16), 3 (9.67;8.33) and 5 (8.5;4.75). Clusters 1 and 5 even have the same AWPC value (8.5). Finally, the total SSE of the cluster map (10.511, Table 4) is relatively low for this moderately heterogeneous sample. Therefore, our findings regarding clustering can be deemed reliable.

Limitations

The main limitation of this research concerns the review protocol applied (Figure 2), namely its search sources, search phrase and inclusion and exclusion criteria (language, research type, and document type). Furthermore, this research does not consider the field of study of the sampled sources. Exploring the hidden effects and causes of correlations between the two variables of total mentions of AWforP challenges and AWforP strategies (AWPC and SAWP), including by source and country, is also beyond the scope of this study.

CONCLUSION

This article provides a “deep dive” (in-depth study) into international research on challenges and strategies for academic writing for publication. These were identified, system-

atised, summarized, and mapped therein, thus answering the research questions raised.

From a linguistics and education perspective, this research adds to academic writing theory by expanding knowledge about academic writing for publication. In particular, it proposes a taxonomy of challenges and strategies for academic writing for publication, thus complementing and extending the existing eponymous taxonomy in academic writing. In addition, this taxonomy enriches the toolbox of pedagogy, specifically the teaching of academic writing and the training of doctoral students. As far as the available literature suggests, this is the first study to identify and summarize the challenges and strategies of academic writing for publication. This summarization can be considered a more significant contribution to the topic than the contribution of the studies published to date. Further, the present research bridges the gap between the theory and practice of academic writing for publication by conceptualizing empirical studies on its challenges and strategies. From a management perspective, the proposed taxonomy expands the strategic research planning and control toolkit, especially that of the regulatory process as part of strategic research control, thus enriching research management knowledge.

In terms of practice, the following main implications of the present study can be outlined. First, the parties concerned (researchers, teachers, and university research managers) can choose appropriate strategies for writing academic publications from the taxonomy suggested here to increase publication quality and activity and, as a result, enhance university rankings and scores. Second, the parties concerned can borrow strategies from their or other cluster sources/countries. Third, the proposed taxonomy of academic writing challenges and publishing strategies can be incorporated into curricula of the academic writing and research methodology disciplines, taught to doctoral students. Fourth, university/government management can integrate the proposed taxonomy of challenges and strategies into their strategic research planning and control systems. This

would be particularly beneficial to the research regulatory systems. In conclusion, the results of this study can become a pillar of a road map to enhance the publication activity of researchers and research management effectiveness at the university and national levels.

We suggest future research on the topic be conducted in several directions. The first is to periodically perform analogous empirical literature studies to expand and complement the proposed taxonomy of challenges and strategies for academic writing for publications. Another direction is to develop and implement university-, community-, and country-specific taxonomies of this type. If they exist, we propose analyses of their features and implementation problems to be carried out and good practices to be promoted. The next direction covers developing methodologies for evaluating the effectiveness of strategies to overcome the challenges of academic writing for publications. Last but not least, studies could be conducted to explore the effects of applying such taxonomies on the researchers' publication activity and research management/governance effectiveness.

DECLARATION OF COMPETING INTEREST

None declared.

AUTHORS' CONTRIBUTIONS

Antoaneta Angelova-Stanimirova: conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, supervision, validation, visualization, writing – original draft, writing – review & editing

Maya Lambovska: methodology, visualization, writing – original draft, writing – review & editing

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APPENDIX

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