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A Comparative Analysis of English Abstracts and Summaries of Chinese Research Articles Indexed by the Taiwan Social Science Citation Index: Arts Education, Sports & Exercise, and Management Journals as Examples

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Research Article

A Comparative Analysis of English Abstracts and Summaries of Chinese Research Articles Indexed by the Taiwan Social Science Citation Index: Arts Education, Sports & Exercise, and Management Journals as Examples

Min-Chun Ku

Abstract

In addition to English abstracts, several journal publishers in Taiwan provide English summaries (or extended abstracts) along with Chinese research articles. English summary is a unique research genre emerged in response to foreign readers' needs for Taiwanese scholarship. It resolves the problems caused by the inadequacy of English abstracts and the difficulties in translating full research articles into English. This study took the initiative to analyze and compare English abstracts and summaries to understand their structural and compositional differences. English abstracts and summaries provided by three of the six journals indexed by the Taiwan Social Science Citation Index (TSSCI) in 2016 and 2017 were content analyzed. These include: Research in Arts and Education (RAE), Sports & Exercise Research (SER), and NTU Management Review (NTU MR). Disciplinary differences were reflected in the structure and composition of abstracts and summaries. RAE authors wrote unstructured summaries unanimously. SER enforced the structured approach strictly. SER abstracts and summaries exhibited consistent IMRC structure. RAE and SER authors focused on reporting their studies and provided practical suggestions in summaries. NTU MR authors elaborated the contributions their studies made, limitations, and future research directions in summaries. The IMRAD/IMRD structure was decomposed and combined with the sections outlined in the NTU MR guideline.

Keywords: *Genre analysis, English abstracts, English summaries, Extended abstracts, Scholarly communication*

Introduction

Some Chinese journals published in Taiwan provide both English abstracts and summaries along with Chinese articles. Different journals take different approaches to instruct authors to write quality summaries. Some take the structured approach, while some give authors freedom in determining what should

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be included and how different components should be structured. Among all the journals indexed by the 2015 and 2017 TSSCI, only six provide both English abstracts and summaries. These include: *Research in Arts Education* (*RAE*), *Sports and Exercise Research* (*SER*), *NTU Management Review* (*NTU MR*), and three journals in the library and information science (LIS) discipline. One of the three LIS journals—*Journal of Educational Media & Library Sciences* (*JoEMLS*)—pioneered in providing English summaries. English summaries first appeared in *JoEMLS* in Volume 45, Issue 1 in October 2007. Subsequently, other two LIS journals—*Journal of Library and Information Studies* (*JLIS*) and *Journal of Library and Information Science Research* (*JLISR*)—started to provide English summaries. English summaries first appeared in *NTU MR* in Volume 23, Issue 2 in June, 2012. *NTU MR* published two issues every year at that time. It started to publish three issues annually since 2013. Seven or eight articles were published in each issue. Research articles, including tables, figures, and Chinese and English abstracts, should be written within 15,000 words. Authors can adjust the length of abstracts according to that of original articles. Authors are required to provide English summaries written within 1,200-1,500 words after receiving close-to-acceptance letters. They also have to translate Chinese citations into English. English summaries should faithfully present the information (data). Authors have to have their summaries edited by professionals to receive acceptance letters. *NTU MR* provides a guideline to instruct authors to write quality English summaries. It suggests that authors write informative summaries. Such summaries should contain the following sections: 1. Purpose/Objective: A concise introduction that states the main purpose of the study; 2. Design/Methodology/Approach: Introduce the design or methods implemented to conduct the study; 3. Findings: Present test results or possible solutions conclusively; 4. Research Limitations/Implications: Identify the limitations that authors have faced and include important suggestions and relevant implications; and 5. Originality/Contribution: State the contributions the study makes and provide insights for future research (*NTU Management Review* [*NTU MR*], 2019).

English summaries started to appear in *RAE* in Volume 14, December 1, 2014. *RAE* is a biannual journal that publishes two volumes every year. Four articles that fall into different areas of arts education, including visual arts education, music education, dance education, drama and design, are published in each volume. Chinese abstracts should be written within 350 words, while English abstracts should be written within 250 words. This indicates *RAE* has noticed translation results in the changes in word counts. Authors who submit in Chinese are required to provide English summaries written within 750-1,000 words for the second round of review. Additionally, to prepare for the review

of being indexed by the Social Science Citation Index (SSCI), *RAE* requires authors to translate or transliterate Chinese citations into English (*Research in Arts Education* [*RAE*], n.d.). *SER* started to provide English summaries for foreign readers to browse and cite in Volume 18, Issue 1 on March 31, 2016. *SER* also wishes to be indexed by international citation indexes (*Sports & Exercise Research* [*SER*], n.d.). It is a quarterly journal that publishes four issues every year. In addition to editorials, it publishes eight articles in each issue. *SER* has relatively rigorous submission requirements. Authors should not cite anecdotic evidence or research output that has not been peer-reviewed, including theses, textbooks, and conference papers. The articles authors cite should be published within 5 years. Authors cannot cite more than 30 articles. Chinese and English abstracts should be written within 500 words. When Chinese submissions are accepted, authors are required to add English citations following the original Chinese citations. They have to submit English summaries written within 800-1,000 words. An example of English summary that contains a table is available on *SER*'s website. An English summary should have the introduction, method, results, and conclusions sections. Tables and/or figures should be concise and translated into English. Authors should only include the bibliographies cited in English summaries in their references. The editorial board invites domain experts to provide revision suggestions. Authors have to revise their summaries to have their articles published (*SER*, 2019).

Journal publishers provide English summaries as part of the preparation for international citation index providers' review. As a unique research genre, English summaries extend the functions of abstracts from guiding foreign readers to select studies of their interests to informing them of how specific studies were carried out and the results. They embody the efforts that journal publishers make to gain international recognition as well as the challenges they face to have their journals indexed by international citation indexes. English summaries facilitate scholarly communication between Taiwan and the rest of the world. However, our understanding of this genre is limited. To date there has no study that investigated the structure and composition of English summaries. It is important to bridge this gap. Thus, this study aimed at uncovering the structure and components of English summaries and comparing them with English abstracts.

This study is part of a larger project that compared English abstracts and summaries provided by TSSCI-indexed journals. The author content analyzed abstracts and summaries of the six journals based on previous studies that analyzed abstracts and different sections of research articles across disciplines. This paper reports the results of analyzing *RAE*, *SER*, and *NTU MR*. The results of analyzing the three LIS journals have been reported in the other article partly

because they share identical disciplinary characteristics with minor differences.[1] In addition to analyzing abstracts and summaries, the author also interviewed members of editorial boards and authors to understand how English abstracts and summaries have been edited and the writing difficulties authors have faced respectively. However, the response rate was extremely low when recruiting editors and authors of *RAE*, *SER*, and *NTU MR*. Only two *NTU MR* authors were interviewed. Members of *NTU MR*'s editorial board did not participate partly because they did not involve in editing English abstracts and summaries. Authors were required to take full responsibilities. An important member of the *SER* editorial board and three professors who have served on the *RAE* editorial boards participated in interviews. The small number of interviewees and their under-representativeness made it difficult to uncover patterns within and across disciplines. Nevertheless, these interviewees provided insight into how English abstracts and summaries were written and processed. Thus, interview results will be used to help interpret the results of content analysis.

What follows is the structure of this article: The author reviews previous studies on abstracts and different sections of research articles to form the analytical framework in the next section. Research on the composition of research articles is reviewed because there is a paucity of literature on English summaries. How English abstracts and summaries were collected and analyzed is then described in detail. The results of analyzing English abstracts in three journals are presented, followed by those of analyzing summaries. Fourth, comparisons between English abstracts and summaries are made. Limitations of this study and future research directions conclude this article.

Literature Review

Research articles are organized hierarchically. Each article is composed of distinct sections. Each section is composed of moves and each move is composed of steps. A move can be viewed as a communicative act (Lorés, 2004). It is a text segment that performs a specific communicative function. It is also a semantic unit relevant to authors' purposes. It is composed of a bundle of linguistic features, which render a uniform orientation and signal the content of a discourse (Nwogu, 1997; Ruiying & Allison, 2003). A move may be realized by a series of sentences, a sentence, a clause, a phrase, or a word (Pho, 2008). A step or multiple steps help realize the function of moves (Joseph, Lim, & Nor, 2014). Steps are organized in specific sequences. They represent the rhetorical choices that authors make (Ruiying & Allison, 2003). How often a move or step appears in a corpus determines whether it is obligatory, quasi-obligatory, or optional

[1] Please see Ku (2019) for further reference.

(Joseph et al., 2014). Such frequency tends to be determined arbitrarily by genre researchers. Textual boundaries of moves can be distinguished based on content and linguistic criteria. For example, "play an important role" and "critical" are often used to "claim the centrality of the topic" (Kanoksilapatham, 2005). Some English summaries are composed of sections that are differentiated by headings, while some are not. Regardless of whether there are distinct sections, English abstracts and summaries of Chinese research articles are composed of moves and steps.

Abstracts

Definitions and types of abstracts

The International Standard Organization (ISO, 1976) defined an abstract as "an abbreviated, accurate representation of the contents of a document, without added interpretation or criticism and without distinction as to who wrote the abstract." The American National Standard Institute defined an abstract as "an abbreviated, accurate representation of a document which should be published with it and which is also useful in secondary publications and services" (American National Standard for writing abstracts, 1977, p. 252). National Information Standards Organization (NISO, 2015, p. 1) defined an abstract as "a brief, objective representation of the contents of a primary document or an oral presentation." The above definitions emphasize that abstracts should reflect the original documents without distortion. The authorship should not be revealed and value judgements should not be included. ISO (1976) and NISO (2015) advised that abstracts should not be confused with summaries. NISO (2015, p. 2) defined a summary as "a brief restatement within a document (usually at the end) of its salient findings and conclusions intended to complete the orientation of a reader who has studied the preceding text." This indicates a summary is part of the original document. Unlike an abstract, it cannot be separated from the original document. NISO's definition deviates from the English summaries this study investigated. The ones this study investigated represent the whole documents and capture their essence. Because almost all the TSSCI-indexed journals that provide English abstracts and summaries use the term summary, including *RAE*, *SER*, *NTU MR*, *JoEMLS*, and *JLISR*, this study used it, despite the definitional differences (Ku, 2019). Only *JLIS* uses the term extended abstract.

Abstracts should provide essential information regarding the studies that have been carried out. They perform several functions. They allow readers to: 1. understand what a document is about quickly. Readers are informed of the topic or main arguments; 2. judge its relevance to their tasks at hand; and 3. decide whether it is necessary to read the entire document (ISO, 1976; NISO, 2015) or whether to pursue detailed information in original articles (Pho, 2008), which

may require translation. Abstracts are searchable in electronic environments. Authors should include terminology that aids in searching (NISO, 2015). Journal publishers tend to require authors to provide abstracts along with original research articles upon submission nowadays. Abstracts also allow readers to access documents written in another language. Many journal publishers in Taiwan require authors who submit in Chinese to provide both Chinese and English abstracts. The problem of abstracts written by non-English native speakers often lies in the lack of authorial voice (Pho, 2008).

Types of abstracts

Abstracts could also be classified based on functions. There are two types of abstracts, including: indicative abstracts and informative abstracts (ISO, 1976; NISO, 2015). Some abstracts contain both informative and indicative elements. Indicative abstracts point out the nature and scope of the research article. Readers can understand the subject and findings, but they are not able to understand how the process was carried out (Lorés, 2004). Indicative abstracts are suited to less-structured or lengthy documents, such as editorials and books. They could also be used to indicate what are included in documents that do not contain methodology and results (ISO, 1976; NISO, 2015). Indicative abstracts should reveal the purpose and scope of the discussion, background information, the approaches that authors adopted, and major arguments. Informative abstracts are suited to documents that contain inquiries, surveys, or experimental studies. They condense original documents and reflect authors' tone and contents (ISO, 1976; NISO, 2015). It is expected that informative abstracts conform the rhetoric structure of research articles, that is, the IMRAD/IMRD (introduction, method, results, and discussion) structure (Lorés, 2004; NISO, 2015). Unfortunately, only 9.40% TSSCI-indexed and 11.37% SSCI-indexed journal abstracts were informative (Chen, 2013).

Structure and components of abstracts

Abstracts could be divided into two types based on the degree of structuration, including unstructured, narrative abstracts and structured abstracts. First, narrative abstracts are written in one or more paragraphs. They are organized in logical sequence and can be read smoothly. However, they have been found to be deficient in that they did not report study design variables and data accurately (Zhang & Liu, 2011). Salager-Meyer (1990) found medical English abstracts suffered from several problems, including: the lack of fundamental moves (e.g., purpose or conclusions) or two or more necessary moves, illogical sequence of move arrangement, and conceptual overlap in paragraph structure. Abstracts in SSCI-indexed journals did not provide sufficient information in one of the IMRD components, except for sociology journals. Some TSSCI-indexed

journals in law and LIS did not contain informative results in their abstracts (Chen, 2013). Second, structured abstracts, which have been introduced from science to social sciences and humanities disciplines, contain distinct headings that differentiate sections (Hartley, 2004; U.S. National Library of Medicine, 2018). The Ad Hoc Working Group for Critical Appraisal of the Medical Literature proposed structured abstracts, which should contain the following sections: objective, design, setting, patients or participants, interventions, measurements and main results, and conclusions. Hartley argued structured abstracts in journals should be written with the following headings: aims, methods, results, and conclusions (Zhang & Liu, 2011). It has been found the quality of structured abstracts was better than that of unstructured abstracts (Hartley, 2004; Taddio et al., 1994). The completeness and clarity of structured abstracts in software engineering were higher than conventional abstracts (Budgen et al., 2008). However, the IMRD structure are not always applicable to certain disciplines. For example, methods were not applicable to certain TSSCI-indexed journals in law and economics and SSCI-indexed journals in law, psychology, economics, and management (Chen, 2013). While structured abstracts are able to provide writing instructions, it is important to develop a cross-disciplinary framework that allows authors to decide which components to include and how they are presented and combined (Lin, Lin, Shaw, Chang, & Chen, 2016).

Both top-down and bottom-up approaches have been taken to unfold the move structure of abstracts. The former refers to distinguishing moves based on content or function. The latter is based on linguistic cues, such as verb tense (Pho, 2008). Pho (2008) took the top-down approach to identify the rhetorical moves of abstracts of empirical research in applied linguistics and educational technology. The framework he used contained the following five moves: situating the research, presenting the research, describing the methodology, summarizing the findings, and discussing the research. The three moves in the middle were obligatory. Pho (2008) also found disciplinary differences in generic structure. The move "discussing the research" was more common in applied linguistics. Liddy (1991) proposed a typical structure of empirical abstracts based on a three-phase study of psychology abstracts. Three types of components comprised the structure, including: prototypical, typical, and elaborated components. Prototypical and typical components include: Relation to other research, purpose: hypothesis, methodology: subjects: sample selection, methodology: procedures: conditions, methodology: data collection, results: discussion, conclusions: implications and references. Cross and Oppenheim (2006) analyzed the move structure of 12 protozoological abstracts. They identified five moves, including: relation to other research, purpose, methodology, summarizing the results, and discussing

the research. Move 5 contained two sub-moves, including conclusions and recommendation. Kelly and Yin (2007) suggested researchers provide informative abstracts. The moves they suggested include: Background and context, purpose/objective/research questions/focus of study, setting, population/participants/subjects, intervention/program/practice, research design, data collection and analysis, findings/results, and conclusions/recommendations. Lorés (2004) found most linguistics abstracts were informative. They contained the following sections and moves: 1. Introduction: Outline the author's purpose, study goals or problems; 2. Methods: Indicate the ways the problems were studied, including the data collected and the methodology; 3. Results: Summarize general findings; and 4. Discussion: Interpret the results, and indicate implications and how findings can be applied. Lin et al. (2016) identified the information elements that should be included in monograph abstracts from humanities scholars' perspectives, including: 1. Problem statement; 2. Target or materials being analyzed (e.g., works, creators, or historical materials); 3. Research methods or theoretical perspectives (e.g., theories drawn on, authors' ways of thinking, or interpretation of texts or materials); 4. Relations with existing research; and 5. New insight, outcomes, or conclusions.

Moves and Steps that Comprise Different Sections of Research Articles

Previous studies have analyzed the composition of research articles in different disciplines and areas of studies. While some analyzed the whole research articles, some focused on specific sections. Nwogu (1997) investigated the structure of prestigious medical research papers. The moves and steps he identified are presented in Table 1 (Nwogu, 1997). To uncover the complete rhetoric structure, Kanoksilapatham (2005) analyzed the IMRD sections of biochemistry research articles published in top five journals in 2000. Table 2 presents the sections, moves, and steps he identified (Kanoksilapatham, 2005). This structure helped the present study develop the coding scheme, so it appears in this and the previous article. Kanoksilapatham (2005) found cyclic patterns in the introduction sections. Moves 1, 2, and 3 recurred as the complexity of a study increased. Both disciplinary and cultural variations affected the structure of the introduction sections.

The introduction section

Swales' (1990, 2004) analyzed the introduction sections of research articles. The moves and steps he identified are presented in Table 3 (Swales, 1990, 2004).

Swale's results have been adopted and extended. Drawing on Swales' Create-A-Research-Space (CARS) model, Posteguillo (1999) analyzed the organization of research articles in computer science. The IMRD structure was not

Table 1 Rhetoric Structure of Medical Research Articles

Introduction	Methods	Results	Discussion
Move 1: Present background information	Move 4: Describe data-collection procedure	Move 7: Indicate consistent observation	Move 9: Highlight overall research outcome
Step 1: Reference to established knowledge in the field	Step 1: Indicate source of data	Step 1: Highlight overall observation	Move 10: Explain specific research outcomes
Step 2: Reference to main research problems	Step 2: Indicate data size	Step 2: Indicate specific observations	Step 1: State a specific outcome
Move 2: Review related research	Step 3: Indicate criteria for data collection	Step 3: Account for observations made	Step 2: Interpret the outcome
Step 1: Reference to previous research	Move 5: Describe experimental procedures	Move 8: Indicate non-consistent observations	Step 3: Indicate significance of the outcome
Step 2: Reference to limitations of previous research	Step 1: Identification of main research apparatus		Step 4: Contrast present and previous outcomes
Move 3: Present new research	Step 2: Recount experimental process		Step 5: Indicate limitations of outcomes
Step 1: Reference to research purpose	Step 3: Indicate criteria for success		Move 11: State research conclusions
Step 2: Reference to main research procedure	Move 6: Describe data-analysis procedures		Step 1: Indicate research implications
	Step 1: Define terminologies		Step 2: Promote further research
	Step 2: Indicate process of data classification		
	Step 3: Identify analytical instrument/ procedure		
	Step 4: Indicate modification to instrument/ procedure		

Source: Nwogu (1997, p. 133).

applicable and no structural patterns were identified. Nevertheless, three sections, including introduction, results, and discussion/conclusions, appeared frequently. Step 1B of Move 3 and Step 3 of Move 1 appeared the most frequently in the introduction sections. Cyclical patterns were found in Move 2. Samraj (2002) analyzed the introduction sections in wildlife behavior and conservation biology. Wildlife behavior introductions were similar to CARS model, but background moves were included to describe the features of the species under investigation. Gaps in previous research justified the present studies. Conservation biology introductions contained more centrality claims and were strong in persuasion. The lack of biodiversity and species extirpation indicated the importance of the present studies. Such differences could be partly attributed to the applied versus theoretical orientation of the two disciplines and their length. Joseph et al. (2014) also adopted Swales' CARS model to investigate the introduction sections

Table 2 Rhetoric Structure of Biochemistry Research Articles

Introduction	Methods	Results	Discussion
Move 1: Announce the importance of the field	Move 4: Describe materials	Move 8: State procedures	Move 12: Contextualize the study
Step 1: Claim the centrality of the topic	Step 1: List materials	Step 1: Describe aims and purposes	Step 1: Describe established knowledge
Step 2: Make topic generalizations	Step 2: Detail the source of the materials	Step 2: State research questions	Step 2: Present generalizations, claims, deductions, or research gaps
Step 3: Review previous research	Step 3: Provide the background of the materials	Step 3: Make hypotheses	Move 13: Consolidate results
Move 2: Prepare for the present study	Move 5: Describe experimental procedures	Step 4: List procedures or methodological techniques	Step 1: Restate methodology (purposes, research questions, hypotheses restated, and procedures)
Step 1: Indicate a gap	Step 1: Document established procedures	Move 9: Justify procedures or methodology	Step 2: State selected findings
Step 2: Raise a question	Step 2: Detail procedures	Step 1: Cite established knowledge of the procedure	Step 3: Refer to previous literature
Move 3: Introduce the present study	Step 3: Provide the background of the procedures	Step 2: Refer to previous research	Step 4: Explain differences in findings
Step 1: State purpose(s)	Move 6: Detail equipment (optional)	Move 10: State results	Step 5: Make overt claims or generalizations
Step 2: Describe procedures	Move 7: Describe statistical procedures (optional)	Step 1: Substantiate results	Step 6: Exemplify
Step 3: Present findings		Step 2: Invalidate results	Move 14: State limitations of the study
		Move 11: State comments on the results	Step 1: Limitations about the findings
		Step 1: Explain the results	Step 2: Limitations about the methodology
		Step 2: Make generalizations or interpretations of the results	Step 3: Limitations about the claims made
		Step 3: Evaluate the current findings	Move 15: Suggest further research (optional)
		Step 4: State limitations	
		Step 5: Summarize	

Source: Kanoksilapatham (2005, pp. 290-291) & Ku (2019, p. 47).

of forestry research articles. Forestry introductions were similar to the CARS model. Cyclic patterns of moves occurred, which contributed to the differences in the number of moves. The appearance of Move 1 and Move 3 in all the forestry introductions they investigated made them resemble wildlife behavior and civil engineering introductions. All the moves were obligatory. Two steps were obligatory; two were quasi-obligatory; and five were optional.

Ozturk (2007) explored whether there were sub-disciplinary variations in the introduction sections in second language acquisition and second language writing based on Swales' CARS model. These are subdisciplines of applied linguistics. The length of the introduction sections and whether an area of study was established affected cyclic patterns and the appearance of moves. For example,

Table 3 Moves and Steps of the Introduction Sections

Introduction	
Move 1: Establish a territory	Step 1: Claim centrality
	Step 2: Make topic generalizations
	Step 3: Review items of pervious research
Move 2: Establish a niche	Step 1A: Counter-claim
	Step 1B: Indicate a gap
	Step 1C: Raise questions
	Step 1D: Continue a tradition
	Step 2: Present positive justification
Move 3: Present the present work/ Occupy the niche	Step 1: Announce the research purposively or descriptively
	Step 1A: Outline purposes
	Step 1B: Announce the present research
	Step 2: Present hypotheses, questions and assumptions (optional)
	Step 3: Definitional clarifications (optional)
	Step 4: Summarize methods (optional)
	Step 5: Announce principal findings/outcomes
	Step 6: State the value of the present research
	Step 7: Outline the structure of the paper

Source: Swales (1990, pp. 141-142, 2004, p. 230).

as an established field, second language acquisition introductions followed the M1-M2-M3 structure. In contrast, as an emerging field, second language writing introductions contained more "topic generalization" and "literature review". Two types of structure were found, including M1-M2-M1-M3 and M1-M3.

The methods section

Lim (2006) investigated the communicative functions of the methods sections of management research articles. The rhetorical moves and constituent steps he identified are presented in Table 4 (Lim, 2006).

The results and discussion sections

Holmes (1997) compared the moves that comprised the discussion sections in three disciplines, including: history, political science, and sociology. The structure he adopted contains the following moves: 1. Background information; 2. Statement of results; 3. (Un)expected outcome; 4. Reference to previous research; 5. Explanation of unsatisfactory result; 6. Generalization; 7. Recommendation; and 8. Outline parallel or subsequent developments. There were no obligatory moves. The discussion sections started with either move 1 or 2. All the moves have closed the sections except for move 1. The most frequently appeared moves were moves 6 and 2. Disciplinary variations were found in the move structure. For example, while sociologists preferred move 2, political scientists preferred move 6. Move 8 only appeared in history. Cyclic patterns were found in political science, but not in history. The results sections of the research articles in computer science that Posteguillo (1999) analyzed include the following moves:

Table 4 Moves and Steps of the Methods Sections

Methods	
Move 1: Describe data collection procedure/s	Step 1: Describe the sample Step 1A: Describe the location of the sample Step 1B: Describe the size of the sample/population Step 1C: Describe the characteristics of the sample Step 1D: Describe the sampling technique or criterion
	Step 2: Recount steps in data collection
	Step 3: Justify the data collection procedure/s Step 3A: Highlight advantages of using the sample Step 3B: Show representativity of the sample
Move 2: Delineate procedure/s for measuring variables	Step 1: Present an overview of the design
	Step 2: Explain method/s of measuring variables Step 2A: Specify items in questionnaires/databases Step 2B: Define variables Step 2C: Describe methods of measuring variables
	Step 3: Justify the method/s of measuring variables Step 3A: Cite previous research method/s Step 3B: Highlight acceptability of the method/s
Move 3: Elucidate data analysis procedure/s	Step 1: Relate (or "recount") data analysis procedure/s
	Step 2: Justify the data analysis procedure/s
	Step 3: Preview results

Source: Lim (2006, p. 287).

1. Metatextual categories: Pointer and structure of sections; 2. Presentational categories: Procedural, hypothesis restated, and statement of data; 3. Comment categories: Comparison of findings with literature, evaluation, further research suggested, implications, and summarizing. Williams (1999) analyzed the results sections of eight research reports in medicine. The communicative categories comprising his model were similar to Posteguillo's (1999). Only the steps comprising moves 2 and 3 slightly varied. These include: 2. Presentational categories: Procedural, statement of findings/result, substantiation of finding, and non-validation of finding; and 3. Comment categories: Explanation of findings, comparison of findings with literature, evaluation of findings re hypothesis, and implications of findings. Williams' (1999) model is adequate for interdisciplinary analysis.

Peacock (2002) compared the discussion sections across seven disciplines, including: physics and material science, biology, environmental science, business (marketing and management), language and linguistics, public and social administration, and law. The structure he adopted contains the following moves: information move (background about theory/research aims/methodology), statement of result (in numerical values or with references to graphs or tables), finding (without references to graphs or tables), (un)expected outcome, reference to previous research, explanation (reasons for unexpected results), claim (a generalization derived from the results), limitation, and recommendation (suggestions for future research). Cyclic patterns include: 1. Introduction:

Moves 1, or 1 + 5, or 2/3; 2. Evaluation: Moves 2/3 and 5, 7 and 5, or 5 and 7; and 3. Conclusion: Moves 3 and 7, or 9. No moves were obligatory. The most frequently appeared moves include: claim, finding, reference to previous research, and recommendation. Information move appeared more frequently in physics and biology. Reference to previous research and cyclic patterns appeared more frequently in language and linguistics. Cyclic patterns also appeared more frequently in law, but less frequently in physics and environmental science.

Ruiying and Allison (2003) studied how research articles in applied linguistics presented their results and drew conclusions. They examined the results, discussion and subsequent sections of 20 research articles. The moves and steps they identified are presented in Table 5 (Ruiying & Allison, 2003). The above sections were inter-related. Cyclic patterns were also identified in these sections. Authors reported their results and commented on their results. Their primary communicative purposes determined the sections and corresponding headings.

Table 5 Moves and Steps of the Results and Discussion Sections

Results/Discussion	
Move 1: Preparatory information	
Move 2: Reporting results	
Move 3: Commenting on results	Step 1: Interpreting results
	Step 2: Comparing results with literature
	Step 3: Evaluating results
	Step 4: Accounting for results
Move 4: Summarizing results	
Move 5: Evaluating the study	Step 1: Indicating limitations
	Step 2: Indicating significance/advantage
	Step 3: Evaluating methodology
Move 6: Deductions from the research	Step 1: Making suggestions
	Step 2: Recommending further research
	Step 3: Drawing pedagogic implication
Conclusion	
Move 1: Summarizing the study	
Move 2: Evaluating the study	Step 1: Indicating significance/advantage
	Step 2: Indicating limitations
	Step 3: Evaluating methodology
Move 3: Deductions from the research	Step 1: Recommending further research
	Step 2: Drawing pedagogic implication
Pedagogic implications	
Move 1: Summarizing the study	
Move 2: Dealing with pedagogic issues	Step 1: Indicating necessity for pedagogic change
	Step 2: Drawing pedagogic implications
Move 3: Evaluating the study	Step 1: Indicating limitation
	Step 2: Indicating significance/advantage
Move 4: Deductions from the research	Step 1: Recommending further research

Source: Ruiying and Allison (2003, pp. 374, 376).

Research Methods

Data Collection

To ensure the recency and topic diversity of the corpus, Chinese research articles published in *RAE*, *SER*, and *NTU MR* published in 2016 and 2017 were selected for analysis. Regardless of the types of research, authors are required to provide English summaries for their Chinese articles. Thus, different types of research articles were included. English research articles and editorials were excluded. To facilitate comparisons across disciplines, full texts of Chinese research articles were downloaded from the Airiti Library database. English abstracts and summaries were copied from full texts and pasted on Word files. Dedoose, a cross-platform application for analyzing qualitative data, was adopted to facilitate data analysis. Two separate projects were created—one for analyzing abstracts and the other for summaries. Table 6 illustrates the number of research articles analyzed (Ku, 2019). The number of articles varied in three journals because the number of issues they published each year and the number of articles published in each issue were different. This partly reveals the size of the three disciplines they represent respectively.

Table 6 Journals and Number of Articles Included

Journal titles	*N* in 2016	*N* in 2017	Total
RAE	8	8	16
SER	23	25	48
NTU MR	21	23	44
Total	52	56	108

Source: Ku (2019, p. 49).

Table 7 presents the number of abstracts that fall into different categories of word counts. The word counts of *RAE* abstracts range from 138 to 286. Two abstracts had more than 250 words. The average is 194 words. The word counts of *SER* abstracts range from 135 to 378. None exceeded the word limit. The average is 243 words. The word counts of *NTU MR* abstracts range from 70 to 234. *NTU MR* abstracts were shorter than *SER* and *RAE* abstracts. This probably

Table 7 Number of Abstracts with Word Counts

Word counts/Journals	*RAE*	*SER*	*NTU MR*
70-100	0	0	2
101-150	3	2	14
151-200	7	8	26
201-250	4	19	2
251-300	2	12	0
301-350	0	5	0
351-400	0	2	0
Total	16	48	44

could partly be attributed to the former's requirements. Authors adjusted the length of abstracts according to that of original articles. Short abstracts might have become the disciplinary norm.

Table 8 presents the number of summaries that fall into different categories of word counts. Section headings, tables, and in-text citations were included in word counts. Bibliographical references were excluded. The word counts of *RAE* summaries range from 644 to 1,124. The average is 865 words. Six summaries did not meet the requirements. Three has less than 750 words and three has more than 1,000 words. The word counts of *SER* summaries range from 456 to 1,483. The average is 790 words. The word counts of *NTU MR* summaries range from 564 to 1,725. The average is 1,227 words. Overall, *NTU MR* summaries were longer than *RAE* and *SER* summaries.

Table 8 Number of Summaries with Word Counts

Word counts/Journals	*RAE*	*SER*	*NTU MR*
401-500	0	2	0
501-600	0	9	1
601-700	3	9	1
701-800	3	6	0
801-900	3	12	1
901-1,000	4	4	1
1,001-1,100	1	2	5
1,101-1,200	2	0	6
1,201-1,300	0	2	13
1,301-1,400	0	1	9
1,401-1,500	0	1	3
1,501-1,600	0	0	2
1,601-1,700	0	0	1
1,701-1,800	0	0	1
Total	16	48	44

Data Analysis

Content analysis was implemented to analyze English abstracts and summaries (Neuendorf, 2002). Data analysis involved developing and revising the coding scheme, code, examine, and revise coding decisions iteratively. It was an evolving process in which the coder's understanding of the corpus increased. The coder must be able to read English without comprehension difficulties. The coder also had to understand previous genre research and the present study to develop the coding scheme. Thus, the author analyzed the corpus by herself. Abstracts were analyzed first, followed by summaries. Abstracts were read several times and compared. The sections, moves, and steps identified by previous studies, which were discussed in the literature review section, were applied and adapted according to the corpus. The internal reliability of the coding was ensured by developing the coding scheme based on a solid foundation of

previous research on abstracts and research articles (Miles, Huberman, & Saldaña, 2014; Savolainen, 2011). Including diverse types of topics and research helped ensure the applicability of the findings (Miles et al., 2014). A coding scheme that detailed definitions of different coding categories with examples was developed based on all the abstracts analyzed. Check-coding refers to repeating the coding process with an independent coder and verifying the coding of selected cases (Regents of the University of Michigan, 2019). It was adopted because it suited lone researcher and this study served as the first attempt to unfold the structure and composition of English summaries (Savolainen, 2011). Additionally, it enhances definitional clarity and reliability (Miles & Huberman, 1994). Thus, after the coding scheme was fully developed, excerpts assigned to different codes were scrutinized. Confusing coding categories, such as "state purpose(s)" and "specify research themes", were differentiated and excerpts assigned to these codes were re-coded. Interviews also informed data analysis. An *RAE* author who has served on the editorial board contended English summaries should contain theoretical framework, not literature review. Thus, "theoretical framework" was added to the coding scheme. All abstracts were analyzed again to ensure the accuracy of coding decisions. The coding scheme was then used to analyze summaries. Additional coding categories, including: justify methods/participants, restate methodology, summarize the study, and the steps comprising significance, were developed. Definitions of several categories, including describe tasks/treatment/procedures and state time frame, were expanded to encompass variations found in English summaries across disciplines. Original coding decisions made on abstracts were revised based on the changes of the coding scheme. Some excerpts were recoded. Appendix presents the coding scheme (Ku, 2019). There were minor differences in the structural position of the step "state hypotheses" and finer categorization of different types of "significance" in the coding schemes that this article and previous article present (Ku, 2019). The position of "state hypotheses" was relatively unstable. They appeared in different sections in different summaries. *NTU MR* authors tended to enumerate the contributions their studies made in a long paragraph. Thus, different types of contributions were compared to develop the codes. All abstracts and summaries were analyzed at least twice to ensure intra-coder consistency. Excerpts of different coding categories were scrutinized several times and corrected to ensure the accuracy of coding decisions.

Abstracts and summaries were analyzed at corresponding levels of granularity. All the abstracts were coded at the move and step levels because they were unstructured. They did not have distinct sections differentiated by headings. Structured summaries were coded at the section, move, and step levels because they contained all of these. Unstructured summaries were coded at the move and

step levels. Because genre is dynamic, ever-evolving, this study did not aim to produce statistical results generalizable to English abstracts and summaries of the three journals. Descriptive statistics was used for subsequent analysis.

Summaries were also analyzed along four dimensions, including: types of research they reported, whether they were structured, whether they contained tables and/or figures, and whether they contained citations. Table 9 presents the results of this analysis (Ku, 2019). Several dimensions emerged from interviews. Although most interviewees were LIS faculty, these dimensions were applicable across disciplinary boundaries. Additionally, several interviewees served on the editorial boards. They have handled English abstracts and summaries of different types of social science research. For example, when asking the differences between abstracts and summaries, an interviewee responded, "summaries have citations, tables and figures, while abstracts do not." Thus, visual presentation and citations were applied for data analysis. Formula, especially unnumbered ones, were excluded. Only numbered tables and figures were included in visual presentation.

Table 9 Number and Dimensions of English Summaries

Dimensions/Journal titles		*RAE*	*SER*	*NTU MR*
Research types	Empirical research	12 (75%)	48 (100%)	42 (95.5%)
	Conceptual discussion	4 (25%)	0	2 (4.5%)
Structuration	Structured	0	48 (100%)	34 (77.3%)
	Unstructured	16 (100%)	0	10 (22.7%)
Visual presentation	With tables and/or figures	1 (6.3%)	22 (45.8%)	3 (6.8%)
	Without tables and/or figures	15 (93.8%)	26 (54.2%)	41 (93.2%)
Citations	With citations	5 (31.3%)	48 (100%)	34 (77.3%)
	Without citations	11 (68.8%)	0	10 (22.7%)

Source: Ku (2019, p. 63).

All *SER* summaries reported empirical research. *RAE* had more summaries that reported conceptual discussion than *NTU MR*, although the number of *RAE* articles was lower than that of *NTU MR* articles. There were more qualitative studies and conceptual discussion in *RAE*. These probably demonstrate different journals' research orientation. According to the three journals' submission requirements, both *SER* and *NTU MR* take the structured approach, while *RAE* does not. However, *SER* enforced it strictly, while *NTU MR* did not. *RAE* authors wrote unstructured summaries unanimously, despite there was little instruction for authors. Only a *RAE* summary contained figures. *RAE* only sets up word limits for English summaries. No requirements with regard to the content were specified. Writing unstructured, narrative summaries without tables and figures might have become the norm among authors. The percentage of *RAE* summaries that did not contain citations was high, as opposed to *NTU MR*. All *SER*

summaries contained citations. This could be attributed to *SER*'s requirements for English summaries and the example it provides. The percentage of *SER* summaries that contained tables and/or figures was the highest among three journals. This probably could be attributed to the example it provides.

Results and Discussion

Structure and Components of English Abstracts

Table 10 presents the frequency of sections, moves, and steps that comprised the English abstracts and summaries this study analyzed (Ku, 2019). The most frequently appeared moves and steps in abstracts across three journals include: state purpose(s), summarize individual results, describe subjects, describe the data being collected, practical applications, employ data collection methods, claim the centrality of the topic, and propose a new approach/draw on theories. Although frequencies are not equivalent to importance, they still demonstrate the most essential information to report in abstracts were purposes, study results, and target of the study. Most abstracts in three journals contained "state purpose(s)" and "summarize individual results". These two steps seem to be obligatory.

Table 10 Frequency of Moves and Steps in English Abstracts (A) and Summaries (S)

Sections	Moves	Steps	*RAE*		*SER*		*NTU MR*	
			A	**S**	A	S	A	S
Introduction	Announce the importance of the field	Describe background	2	4	0	5	2	11
		Claim the centrality of the topic	8	10	5	22	8	18
		Make topic generalization	0	4	1	4	4	8
		Review previous research	2	7	8	53	0	28
	Prepare for the present study	Indicate a gap(s)	3	8	2	27	7	20
		Indicate the problem(s)	2	7	5	24	5	31
	Introduce the present study	State purpose(s)	16	16	48	47	44	45
		Propose a new approach/Draw on theories	6	6	6	16	20	15
		Specify research themes	0	2	2	11	2	8
		List research questions	0	3	0	0	0	3
		State hypotheses	1	0	1	2	6	6
		Clarify definition/coverage/assumption	1	7	0	8	8	16
		Describe expected contributions	0	5	0	4	0	4
		Describe procedure	0	1	0	2	1	8
		Present findings	2	2	0	1	1	6
	Outline the structure of the article		0	3	0	0	2	12
Literature Review	The main body		0	0	0	1	0	12
	Theoretical framework		0	4	0	2	3	9
Methods	Justify methods/participants		0	1	0	1	0	6
	Describe the overall data collection approach		4	7	0	1	5	12
	Describe pretest/pilot study		1	0	0	0	1	1
	Obtain IRB		0	0	0	8	0	0
	Select data collection site		0	1	0	4	1	4
	Describe sampling or exclusion criteria		1	6	4	10	0	13

	Describe subjects		6	18	41	51	17	33
	Collect data	Employ data collection methods	6	12	18	26	5	19
		Describe the data being collected	5	12	21	39	14	41
		Describe data source	0	0	0	1	2	16
		Describe experiment design	1	1	6	11	0	0
		Assign subjects	0	3	17	21	1	1
		Describe tasks/treatment/procedures	2	4	26	34	1	4
		State time frame	3	11	21	54	8	26
		Develop research instruments	1	11	3	19	0	5
		Employ specific measurement	2	3	4	11	4	5
		Employ data collection equipment	1	3	6	8	0	0
	Analyze data	Employ data analysis methods/measurements	1	13	15	44	12	46
		Describe the data being analyzed	0	1	13	3	4	2
		State the purpose of data analysis	2	2	4	11	9	12
		Adopt data analysis software	0	1	2	10	0	5
	Verification		0	3	1	5	1	9
Results	Summarize individual results		15	13	49	22	41	22
	Evaluate system performance		0	0	0	0	1	1
	State comments on the results	Explain findings	1	2	1	7	1	3
Discussion	Consolidate results	Restate methodology	0	1	0	0	0	0
		Summarize results	0	9	0	39	1	22
		State selected findings	0	0	0	0	0	3
		Refer to previous literature	0	9	0	11	0	20
		Compare results with literature	1	6	0	9	0	12
	Suggest further research		1	0	0	0	0	2
Conclusions	Make overt claims or generalizations		1	7	41	40	4	12
	Summarize the study		0	3	0	1	0	6
	Significance	Be the first	0	0	1	2	1	7
		Study in a unique context	0	0	0	0	1	3
		Describe what has been accomplished	1	1	0	0	2	30
		Draw on specific perspectives	0	0	0	0	1	6
		Fill a gap(s)	0	0	0	1	0	15
		Relate to/extend previous studies	0	0	0	1	4	13
		Solve the problem	0	0	0	0	0	1
		Implications	4	6	3	7	4	30
	Limitations	Limitations about the scope	1	0	0	1	0	17
		Limitations about the findings	0	1	0	0	0	19
		Limitations about the methodology	0	1	0	1	0	23
	Suggestions	Practical applications	8	15	19	25	9	10
		Future research needs	0	11	1	11	2	54
	Indicate content		3	2	0	0	14	3
Other section headings			0	0	0	0	0	66

Source: Ku (2019, pp. 64-66).

The most frequently appeared moves and steps in *RAE* abstracts include: state purpose(s), summarize individual results, practical applications, claim the centrality of the topic, and employ data collection methods. The high frequency of "practical applications" indicates the results of *RAE* studies were exploited to

provide suggestions that help improve practices. *RAE* authors tended to announce the importance of their studies by "claiming the centrality of the topic". *RAE* abstracts started with "describe background", "claim the centrality of the topic", or "state purpose(s)". Most *RAE* abstracts ended with "practical applications". Three ended with "indicate content". Almost all *RAE* abstracts contained "state purpose(s)" and "summarize individual results". They seem to be obligatory. "Claim the centrality of the topic" and "practical applications" seem to be quasi-obligatory because they appeared in some *RAE* abstracts.

The most frequently appeared moves and steps in *SER* abstracts include: summarize individual results, state purpose(s), describe subjects, make overt claims or generalizations, describe tasks/treatment/procedures, state time frame, and describe the data being collected. These reflect *SER*'s strong focus on empirical research, especially experimental or quantitative studies that involved human or animal subjects. Authors tended to summarize different parts of results and then drew a generalized claim as conclusions. Several *SER* abstracts started with "claim the centrality of the topic", but most started with "state purpose(s)". Some ended with "practical applications". Only one ended with "future research needs". Some skipped "describe the overall data collection approach" and proceeded to "describe experimental design". These authors reported the experimental design they implemented without pointing out they adopted the experiment methods first. "The purpose of this study was to determine the effects of Chlorella supplementation for four weeks on exercise-induced muscle damage and maximal muscle strength during recovery. In this randomized, double-blind, placebo-controlled study, 24 college badminton players were recruited" could serve as an example. This indicates experiment was a frequently implemented method. The number and types of participants and their demographic data were reported explicitly in consistent forms in *SER* abstracts. Parenthesis was used to report demographic data of participants. "Twenty-four university students, major in physical education (age: 22.0 ± 1.7 yr, height: 172.7 ± 4.9 cm, bodyweight: 66.9 ± 7.0 kg)" could serve as an example. This allows readers to extract and compare results across studies effectively, which could facilitate the development of systematic reviews. Most *SER* abstracts contained the following steps: state purpose(s), describe subjects, summarize individual results, and make overt claims or generalizations. These steps seem to be obligatory. The number of these moves and steps was close to the number of *SER* abstracts analyzed. *SER* abstracts followed a clear IMRC structure. As revealed by an interviewee who has served on the editorial board for a long time, *SER* abstracts and summaries were edited by an Indian. He probably has been trained to identify and include these components in specific forms. Some also contained the following steps: employ

data collection methods, describe tasks/treatment/procedures, state time frame, assign subjects, and practical applications. These seem to be quasi-obligatory. Indicative components did not appear. All *SER* abstracts were informative.

The most frequently appeared moves and steps in *NTU MR* abstracts include: state purpose(s), summarize individual results, propose a new approach/ draw on theories, describe subjects, describe the data being collected, and indicate content. The high frequency of "propose a new approach/draw on theories" indicates authors heavily drew on existing theories and models to achieve their purposes. The high frequency of "indicate content" reveals some abstracts were both indicative and informative. These abstracts ended with pointing out what was discussed and/or provided in the end of original research articles. Review articles that analyzed journal articles tended to contained this step. Several *NTU MR* abstracts started with either "claim the centrality of the topic" or "describe background", but most started with "state purpose(s)". Some ended with "indicate content", "practical applications", or "future research needs". Most *NTU MR* abstracts contained "state purpose(s)" and "summarize individual results". They seem to be obligatory. "Propose a new approach/draw on theories", "describe subjects", and "describe the data being collected" seem to be quasi-obligatory because they were included in some abstracts.

Several moves and steps tended to co-occur. "State purpose(s)" and "propose a new approach/draw on theories" co-occurred 25 times. Most appeared in *NTU MR*. Several appeared in *SER* and *RAE*. These authors indicated the theories, models, perspectives, or concepts they adopted in their purpose statements. "Describe tasks/treatment/procedures" and "state time frame" co-occurred 17 times. Almost all appeared in *SER*. Only one appeared in *RAE*. It did not appear in *NTU MR*. Temporal aspects of the treatments in experimental studies cannot be separated from the treatments. "Subsequent community-based health promotion program was performed (110 min per day, once per week, for 14 weeks) by exercise intervention group" could serve as an example. "Describe the data being collected" and "state time frame" co-occurred 14 times. These appeared mostly in *NTU MR* and *SER* abstracts. It only appeared in *RAE* abstracts once. *NTU MR* and *RAE* authors pointed out when the data were published or when they collected the data when reporting the data they collected. "The news related to competitive interactions among these companies in 2005 to 2012 are collected" could serve as an example. The above co-occurrences took place in the introduction and methods sections. Adjacent steps were inter-related and they tended to be realized together in a sentence or a series of sentences.

Comparing the frequency of moves and steps comprising *RAE*, *SER*, and *NTU MR* abstracts reveals the following results: 1. "Announce the importance

of the field: Review previous research" appeared more frequently in *SER* than in *RAE* and *NTU MR*. The results of previous studies were described in *SER* to indicate the importance of the phenomena being investigated. 2. "Propose a new approach/Draw on theories" appeared more frequently in *NTU MR* than in *RAE* and *SER*. *NTU MR* studies tended to draw on one or more concepts, perspectives, frameworks, models, and theories. In-text citations appeared several times when this step appeared, although most abstracts did not contain citations.[2] 3. "Clarify definition/coverage/assumption" appeared more frequently in *NTU MR*, while it rarely appeared in *RAE* and *SER*. These include the targeting market, industry, or area of study under investigation, such as the semiconductor industry in Taiwan, Asia markets, healthcare service design, and travel service. 4. "State hypotheses" appeared more frequently in *NTU MR*. These studies involved hypotheses testing. Terms including "hypothesize", "argue", "assume", and "propose" signaled the rhetorical functions of this step.

5. "Describe subjects" appeared more frequently in *SER*. Most *SER* studies reported empirical, quantitative studies that involved human or animal subjects. Subjects in other two journals were embedded in other steps. Readers have to find who the subjects were. "Informal interviews were conducted with the mother" could serve as an example. 6. "Employ data collection methods" appeared more frequently in *SER*, while it rarely appeared in *NTU MR*. The former primarily reported the number of valid questionnaires *SER* authors obtained. This step also includes other methods, such as semi-structured interviews and documentary analysis. An *NTU MR* author stated in the interview that regression analysis was the most common method in the management discipline. Authors only have to report the methods they adopted or the data they used when these were unique. This probably explains why this step rarely appeared in *NTU MR* abstracts. 7. "Describe the data being collected" appeared more frequently in *SER* and *NTU MR*. The former includes: blood samples, muscle biopsy samples, and data collected by specific measurements (e.g., "stature, wright and a battery of fitness"). The latter primarily includes the journals authors collected and analyzed to write their review articles. 8. "Describe experiment design" appeared more frequently in *SER*. These include: cross-over design, counterbalanced and measures design and within-subject design. 9. "Assign subjects", "describe tasks/ treatment/procedures", and "state time frame" appeared rather frequently in *SER*. Many *SER* abstracts reported experimental studies. 10. "Employ data collection

[2] The abstract text from the article "Behavioral Intention of Earnings Management: The Explanation of Agency Problem, Moral Development and Theory of Planned Behavior" could serve as an example: Based on Ajzen (1985) Theory of Planned Behavior (TPB) and the concept of agency Theory as well as moral development.

equipment" appeared more frequently in *SER*. These include: a mega high-speed camera, the dual energy X-ray absorptiometry, a motion capture system and two force plates, portable heart rate monitor (Polar RS800CX), and so on. These were used to measure and collect data. 11. "Employ data analysis methods/ measurements" appeared frequently in *SER* and *NTU MR*, while it rarely appeared in *RAE*. These include: content analysis, discourse analysis, structural equation modeling, and so on. 12. "Describe the data being analyzed" appeared more frequently in *SER*. These include: "the joint moment, joint work and joint power of lower limb" and the elements found in blood samples. 13. "State the purpose of data analysis" appeared more frequently in *NTU MR*.

14. "Summarize individual results" appeared more frequently in *SER* and *NTU MR* than in *RAE*. This roughly reflects the number of abstracts analyzed. 15. "Make overt claims or generalizations" appeared more frequently in *SER*. Most *SER* abstracts contained concluding claims that addressed the purpose(s) of the study. "This study concluded that Tai Chi exercise could improve stability and walking speed of the elderly due to superior energy generation in the hip and knee" could serve as an example. 16. Overall, "significance" appeared more frequently in *NTU MR*. The guideline it provides probably contributed to it. This might also be a disciplinary norm. 17. "Practical applications" appeared more frequently in *SER*. It also appeared frequently in *RAE* given the number of abstracts included in *RAE* was lower. Practical advices were provided based on either the results or concluding claims. "We recommend that aquatic resistance plyometric training could be applied with tapering, which may be beneficial to maintain the specific physical fitness in the longer season" could serve as an example. 18. "Indicate content" appeared more frequently in *NTU MR*, but it did not appear in *SER* abstracts. These tended to point out the concluding contents of the original articles, including theoretical and practical implications and suggestions for future research. *SER* abstracts were informative, while some *NTU MR* and *RAE* abstracts were both informative and indicative.

Structure and Components of English Summaries

Sections of English summaries

Structured summaries were composed of sections, moves, and steps, while unstructured ones were composed of moves and steps. Table 11 presents the frequency of sections that appeared in summaries (Ku, 2019). The number of sections reflects the degree of structuration of the three journals. They exhibited contrasting features. All *RAE* summaries were unstructured, so there were no section headings. Almost all *SER* summaries conformed the IMRC structure, except for one summary. Only one summary did not have the conclusion section. All of the section headings in *SER* summaries were the same. Authors

used conventional IMRC section headings consistently. This indicates that *SER* enforced the structured approach strictly.

Table 11 Frequency of Section Headings in English Summaries

Journals/Sections	*RAE*	*SER*	*NTU MR*
Introduction	0	48	34
Literature review	0	0	3
Methods	0	48	27
Results	0	48	26
Discussion	0	0	2
Conclusions	0	47	9
Other section headings	0	0	66

Source: Ku (2019, p. 68).

Although *NTU MR* takes the structured approach, it was not enforced strictly. Some authors have consulted the guideline that *NTU MR* provides, some did not. Those who have consulted it interpreted it differently. Most authors directly used the section headings outlined in the guideline (e.g., Design/Methodology/Approach). Only a few authors selected one or two terms from the suggested headings to create their own headings. Some authors combined conventional IMRD headings with the headings outlined in the guideline. "Purpose/objective" was frequently used to denote the "introduction" section. "Purpose", "objective", "introduction and study purpose", "introduction and literature review", "introduction and contribution" were also used. These indicate the main purpose of this section was to describe the study purpose. These also reflect the literature review sections have been incorporated in the introduction sections. "Design/Methodology/Approach" was frequently used to denote the methods sections. Other headings, including "data and methodology", "research model", "samples and study procedure", "data and findings", "methodology" and "research methods" were also used. These indicate the importance of describing the data/sample used in these studies. "Findings" was frequently used as a section heading. The term "results" only appeared several times. The discussion section almost disappeared in *NTU MR* summaries. It only stood out as a section by itself once. It was combined with the conclusion section once. Some *NTU MR* summaries ended with the conclusion sections. Many ended with the "research limitations/implications" and "originality/contributions" sections. Limitations, implications, originality, and contributions were decomposed and combined to form sections. One of these stood out as separate sections in some cases, such as "implications" and "research limitations". Finally, two *NTU MR* authors did not follow the structural sequence outlined in the *NTU MR* guideline. The contribution sections followed the introduction sections. They probably used these to replace the step "describe expected contributions".

Moves and steps comprising different sections of English summaries

The most frequently appeared moves and steps in summaries across three journals include: state purpose(s), describe subjects, employ data analysis methods/measurements, describe the data being collected, state time frame, summarize results or summarize individual results, employ data collection methods, and practical applications. These slightly differ from the most frequently appeared moves and steps in abstracts. Sometimes "employ data analysis methods/measurements" were omitted in abstracts, but they were included in summaries. Thus, its frequency increased. Additionally, authors took different approaches to write summaries. Some described individual results in detail, while some just presented the final, overall results. Thus, "summarize results" frequently appeared. The frequency of "propose a new approach/draw on theories" reduced in summaries probably because the theories or models authors adopted were realized in "review previous research" and "theoretical framework". Most summaries contained the following steps: state purpose(s), describe subjects, data analysis methods, and summarize results. They seem to be obligatory.

The most frequently appeared moves and steps in *RAE* summaries include: describe subjects, state purpose(s), practical applications, summarize individual results, employ data analysis methods/measurements, employ data collection methods, and describe the data being collected. These reflect the importance of human subjects and *RAE* results yielded practical advice. Most *RAE* summaries started with "claim the centrality of the topic". A few started with "describe background". Most ended with "future research needs". Two ended with "indicate content". Most *RAE* summaries contained the following steps: state purpose(s), describe subjects, summarize individual results or summarize results. These seem to be obligatory. Some contained more moves and steps in the methods sections.

The most frequently appeared moves and steps in *SER* summaries include: state time frame, review previous research, describe subjects, state purpose(s), employ data analysis methods/measurements, make overt claims or generalizations, and describe the data being collected. When the treatments were given and how often the treatments were reported in detail in experimental studies. Citations appeared when authors reviewed previous research. The length of the *SER* introduction sections varied. Some were long, while some were short. Literature review was incorporated in the introduction sections in a few summaries. "Review previous research" was used to point out the importance of the issue, indicate the gaps in previous literature, and serve as the literature review sections. Just like abstracts, *SER* summaries tended to describe subjects in similar forms. Terms including "this study concluded" and "our findings indicate" frequently appeared to signal the step "make overt claims or generalizations".

Most *SER* summaries started with "claim the centrality of the topic". Only a few started with "describe background". Most ended with "practical applications". Some ended with "future research needs". Most *SER* summaries contained the following moves: review previous research, state purpose(s), describe subjects, summarize results, and make overt claims or generalizations. These seem to be obligatory. The consistent appearance of these steps probably resulted from the well-trained editor, *SER*'s rigorous requirements, and the example it provides. Many *SER* summaries contained moves and steps in the method and introduction sections, including: employ data analysis methods/measurements, state time frame, employ data collection methods, and describe tasks/treatment/procedures. These seem to be quasi-obligatory. Just like *SER* abstracts, *SER* summaries did not contain indicative components. All were informative.

The most frequently appeared moves and steps in *NTU MR* summaries include: significance, suggestions, limitations, state purpose(s), employ data analysis methods/measurements, describe the data being collected, describe subjects, summarize individual results or summarize results, indicate the problem(s), and review previous research. The frequency of significance, limitations, and suggestions were much higher than those in *RAE* and *SER* summaries. This probably could be attributed to the guideline it provides. *NTU MR* authors wrote long paragraphs to report research limitations/implications and originality/contribution. However, some wrote very short paragraphs for the findings sections. Limitations and future research needs tended to be written in sequence. The former suggested the latter. "First of all, this study focused on manufacturing firms and did not investigate the cognition and relative responses of distributors. Future studies can expand our research by providing two-side view of manufacturer-distributer relationship" could serve as an example. A paragraph tended to contain multiple "limitations and future research needs" cyclical patterns. Most *NTU MR* summaries started with "claim the centrality of the topic". Some started with "describe background". Most ended with "future research needs". Most *NTU MR* summaries contained the following steps: state purpose(s), data analysis methods, summarize results or summarize individual results, and implications. These seem to be obligatory.

Adjacent steps in the methods sections frequently co-occurred. Several adjacent steps in the introduction and results sections also co-occurred. "Describe the data being collected" and "state time frame" co-occurred 42 times in three journals. "Describe tasks/treatment/procedures" and "state time frame" co-occurred 32 times. Most appeared in *SER*. Only a few appeared in *RAE* and *NTU MR*. "Review previous research" and "indicate the problem(s)" co-occurred 29 times. Most appeared in *SER* and *NTU MR* with citations. Only two appeared in

RAE without citations. "Refer to previous literature" and "compare results with literature" co-occurred 24 times in three journals. Citations appeared when these co-occurrences took place. "State purpose(s)" and "propose a new approach/draw on theories" co-occurred 20 times in three journals. Most appeared in *NTU MR*. "Describe subjects" and "state time frame" co-occurred 20 times in three journals. "Employ data collection methods" and "describe the data being collected" co-occurred 19 times. These appeared more frequently in *RAE* and *SER*. Only a few appeared in *NTU MR*. "Data analysis methods" and "state the purpose of data analysis" co-occurred 17 times. These only appeared in *SER* and *NTU MR*. "Data analysis methods" and "state the purpose of data analysis" co-occurred 17 times in *SER* and *NTU MR*. "Data analysis methods" and "data analysis software" co-occurred 17 times in *SER* and *NTU MR*. "Assign subjects" and "describe subjects" co-occurred 16 times. Most appeared in *SER*. Four appeared in *RAE*. None appeared in *NTU MR*. "Employ data collection methods" and "describe subjects" co-occurred 16 times in three journals. Most appeared in *SER*. "Review previous research" and "indicate a gap(s)" co-occurred 14 times. Most appeared in *SER*. Three appeared in *NTU MR* and one in *RAE*. "Employ data collection methods" and "describe subjects" co-occurred 14 times in three journals. The above co-occurrences reflect the inseparable relationships between co-occurring steps. Co-occurring steps were realized together in a sentence or a series of sentences. In some cases, co-occurring steps relied on each other to realize their rhetoric functions. For example, previous research was reviewed to indicate the problem(s) authors intended to address in their studies. Sometimes proposing a new approach was the study purposes. Sometimes drawing on specific theories helped achieve study purposes.

Comparing the frequency of moves and steps appeared in summaries in *RAE*, *SER*, and *NTU MR* reveals the following results: 1. Authors of the three journals took two approaches to justify their studies, including "review previous research" and "claim the centrality of the topic". The former appeared more frequently in *SER* and *NTU MR*. In this way, the introduction sections of *SER* and *NTU MR* summaries were similar to wildlife behavior introductions (Samraj, 2002). In contrasts, "claim the centrality of the topic" appeared more frequently in *RAE* summaries. The approach that *RAE* authors took to justify their studies was similar to conservation biology authors (Samraj, 2002). 2. "Review previous research" appeared the most frequently in *SER*. It also appeared frequently in *NTU MR*. Selected results of previous studies were stated to point out the importance of the present studies. 3. Authors of the three journals indicated the gaps that haven't been filled out and/or the problems they indented to address to justify their studies. "Indicate a gap(s)" appeared more frequently in *SER*, while

"indicate the problem(s)" appeared more frequently in *NTU MR*. 4. "Propose a new approach/Draw on theories" appeared more frequently in *SER* and *NTU MR*. It seems literature review was incorporated in this step. Citations appeared with the theories and models authors drew on. 5. "Specify research themes" appeared more frequently in *SER* and *NTU MR*. What was covered in the investigation was elaborated. 6. "List research questions" did not appear in *SER*. What was investigated probably was reported by either "stating purpose(s)" or "specifying research themes". 7. "State hypotheses" appeared more frequently in *NTU MR*. Most appeared in the introduction sections. Only one appeared in the methods section. 8. "Clarify definition/coverage/assumption" appeared in three journals. Citations appeared when some *SER* and *NTU MR* authors defined key concepts or stated the assumptions of their studies. 9. "Describe expected contributions" appeared more frequently in *RAE*. "The results of this study are hoped to contribute to visual arts education in Taiwan and to shed the light on the development of this field as a whole" could serve as an example. 10. "Describe procedure" appeared more frequently in *NTU MR*. How the studies were carried out were briefly described in the introduction sections. "In this paper, a simulation and a survey data analysis are used to demonstrate the performances of these index statistics under multicollinearity" could serve as an example. 11. "Present findings" appeared more frequently in *NTU MR*. An overview of the final results was provided in the introduction sections. "This study suggests that a firm can establish or improve its customer relations management strategy effectively by examining of the determinants of customer profit contribution" could serve as an example. 12. "Outline the structure of the article" appeared more frequently in *NTU MR*, especially in review articles and conceptual discussion.

13. "Literature review: The main body" and "theoretical framework" appeared more frequently in *NTU MR*. It rarely appeared in *SER*. Citations appeared in this move in some summaries. 14. "Justify methods/participants" appeared more frequently in *NTU MR*. These include data collection and analysis methods. 15. "Describe the overall data collection approach" appeared more frequently in *RAE* and *NTU MR*. These primarily include experimental studies and case studies that encompassed multiple data collection methods. 16. "Describe sampling or exclusion criteria" appeared in three journals. These include the sampling strategies that authors adopted (e.g., stratified sampling, cluster sampling, and purposive sampling) and the selection criteria of subjects (e.g., "The exclusive criteria of the subject were including the neuromusculoskeletal injury or previous surgery in lower extremity or trunk"). 17. "Describe subjects" appeared rather frequently in three journals. These include: naturalistic inquiry, case studies, theory-driven and data-driven approaches, ethnographic work,

and so on. 18. "Employ data collection methods" appeared in three journals. It appeared the most frequently in *SER*. These primarily include survey research and other qualitative methods, such as observation and interview. 19. "Describe the data being collected" appeared more frequently in *SER* and *NTU MR*. These two journals accepted more empirical research. Authors spelled out what was collected, including the amount, types, and nature of data. 20. "Describe data source" appeared the most frequently in *NTU MR*. These include the databases where journal articles were obtained and websites and anonymous companies from which data were obtained. 21. "Describe experiment design", "assign subjects", and "describe tasks/treatment/procedures" appeared the most frequently in *SER*. These studies adopted experimental methods. These steps rarely appeared in *NTU MR*. 22. "State time frame" appeared the most frequently in *SER* because it was embedded in "describe tasks/treatment/procedures". It also appeared frequently in *RAE* and *NTU MR*, especially in review articles that reviewed journal articles published in a period of time. 23. "Develop research instruments" appeared more frequently in *RAE* and *SER*. The instruments include: questionnaires, parent-child music activities, movie clips, and art-education-therapy-oriented program. 24. "Employ specific measurement" appeared the most frequently in *SER*. These measurements include different types of scales that participants filled out and indices. 25. "Employ data collection equipment" appeared the most frequently in *SER*. These equipment include: a diagnostic ultrasound system, ultimate frag suit, Polar Sport Tester, Vicon Motion System, and so on. Different types of equipment helped measure and collect data. *NTU MR* authors did not use any equipment, so this step did not appear. 26. "Employ data analysis methods/measurements" appeared frequently in three journals. How data were analyzed were described step by step in some *NTU MR* summaries. 27. "State the purpose of data analysis" appeared more frequently in *SER* and *NTU MR*. What was estimated, calculated, tested, or determined was described. 28. "Adopt data analysis software" appeared the most frequently in *SER*. These include: different versions of SPSS, R software, Expert Choice 2000 software, and Kubios HRV analysis software (version 2.2). 29. "Verification" appeared the most frequently in *NTU MR*. These include: reliability, Delphi method, convergent and discriminant validity, and how bias was avoided.

30. "Explain findings" appeared the most frequently in *SER*. The cause of what was found was explained. "Might be", "may", "due to", and "was related to" were used to describe possible causes. 31. "Summarize results" appeared the most frequently in *SER*. Instead of spelling out findings in detail, some authors chose to present the final results. 32. "Refer to previous literature" and "compare results with literature" appeared in three journals, but the most

frequently in *NTU MR*. Results were compared with what was found in previous studies. Similarities and differences were highlighted. Citations appeared when "referring to previous literature". 33. "Make overt claims or generalizations" predominantly appeared in *SER*. Most *SER* summaries contained this step. "Our study concludes that aerobic performance of recreational cyclists enhanced by 30-min ischemia preconditioning, which is associated with increased peak oxygen consumption" could serve as an example. 34. Not many summaries contained "summarize the study". 35. "Significance" appeared predominantly in *NTU MR*, especially "implications", "describe what has been accomplished", and "fill a gap(s)". This could be attributed to the guideline it provides. Different types of contributions that authors have made through their studies were enumerated. "Implications" was the most frequently mentioned significance in three journals. 36. "Limitations" predominantly appeared in *NTU MR*, especially "limitations about the methodology". This could also be attributed to the guideline it provides. 37. "Practical applications" appeared more frequently in *SER* and *RAE*. Study results of these two journals were exploited to provide suggestions for improving practices. 38. "Future research needs" appeared the most frequently in *NTU MR*. This tended to co-occur with "limitations". 39. "Indicate content" did not appear in *SER* summaries. "Outline the structure of the article" did not appear in *SER* summaries, neither. These indicate *SER* summaries were informative. In contrast, some *RAE* and *NTU MR* summaries contained both informative and indicative elements.

Tables and/or figures in English summaries

This study further analyzed the extent to which English summaries contained tables and/or figures. Table 12 illustrates the number of tables and figures that appeared in different sections (Ku, 2019). Tables and figures were predominantly used to present results. Only one *RAE* summary that reported empirical research contained figures. Figures were used to describe the test the author conducted on participants in the methods section and illustrate the results in the results section. The problem with this summary was that the numbering of figures began with "Figure 12" and ended with "Figure 16". These figures should be renumbered when being extracted from the original article. *SER* contained the

Table 12 Number of Tables and Figures in English Summaries

Journals	Sections	*N* of tables	Sections	*N* of figures
RAE			Methods	1
			Results	4
SER	Methods	1	Methods	1
	Results	37	Results	8
NTU MR	Results	6	Results	3

Source: Ku (2019, p. 71).

highest amount of tables and/or figures. This could be attributed to its explicit submission requirement and the example it provides. *SER*'s strong preference for experimental and quantitative studies probably also contributed to it. Statistical results might be better presented by tables and/or figures. The scarcity of tables and figures in *NTU MR* summaries probably could be attributed to the lack of tables and/or figures and instruction in its guideline and submission requirement.

Comparisons between English Abstracts and Summaries

The number of moves and steps appeared in summaries is higher than those appeared in abstracts. "State purpose(s)", "describe subjects", and "summarize individual results" were the most frequently appeared steps in abstracts and summaries across three journals. "Describe the data being collected" and "practical applications" were also among the most frequently steps in abstracts and summaries, although their frequencies varied. Moves and steps that only appeared in summaries include: list research questions, describe expected contributions, literature review: the main body, justify methods/participants, obtain IRB, select data collection site, restate methodology, summarize results, state selected findings, refer to previous literature, and summarize the study. With higher word limits, authors were able to elaborate. Moves and steps comprising the discussion sections were included, although these tended to be written in the results sections. Previous literature was referred in different sections.

Comparing the frequency of moves and steps that comprised abstracts and summaries reveals the following results: 1. "Propose a new approach/draw on theories" and "indicate content" appeared more frequently in *NTU MR* abstracts than in summaries. The use of specific theories or models highlighted the uniqueness of a study. Word limits affected the number of indicative elements in *NTU MR* abstracts and summaries. 2. Frequencies of "develop research instruments", "employ data analysis methods/measurements", "verification", and "future research needs" were much higher in summaries than in abstracts. 3. "Describe the data being analyzed" appeared more frequently in *SER* abstracts than in summaries.

Conclusions

The types of research that three journals accepted, the maturity of the three disciplines, frequently implemented data collection and analysis methods, are reflected in the structure and composition of English abstracts and summaries. With the involvement of the editorial board and strict enforcement of the structured approach, *SER* abstracts and summaries exhibited relative consistent structure and composition. In contrast, the editorial board's focus on Chinese research articles, authors' responsibilities in proving their summaries have

been edited by native English speakers, the interpretations authors made to the guidelines, and disciplinary norms shaped the diverse configuration of *RAE* and *NTU MR* summaries.

Journal publishers may consider whether to have editorial boards edited English abstracts and summaries to enhance the structural and compositional consistency. They will need to consider how authors wish to present their works as well as foreign readers' needs for effective navigation of English abstracts and summaries. Providing a consolidated set of guidelines with a good example of English summary probably could achieve better instructional effectiveness. Editorial boards should provide clear guidance regarding whether and how authors could choose among different options. Authors could adapt to their unique studies. The use of tables and/or figures should be explicitly encouraged. Given that some journals accept studies that adopt relatively diverse research methods and those report conceptual discussion and system development, the types of studies, sections, and conditions that suite indicative components should be clearly specified. This study also suggests editorial boards explicitly state their purposes in providing English summaries, the efforts they have made to have their journals indexed by foreign databases and citation indexes, and what authors could do to contribute. The two *NTU MR* authors interviewed did not think foreign scholars would read *NTU MR*. One even stated it is a fantasy that providing English summaries would help enhance the international visibility of authors' work. She described it as a "wonderful imagination". Several LIS authors have received submission invitations from foreign journals and foreign readers' questions regarding detailed findings of their studies. Testimonies regarding the effectiveness of English summaries in enhancing authors' international visibility need to be discovered and publicized to encourage authors. Authors should also shoulder responsibilities in promoting their work. As suggested by a LIS interviewee, when presenting relevant works in conferences or uploading their works to personal websites, institutional or open repositories such as ResearchGate, authors may indicate "English summary attached".

This study suffered from the following limitations: 1. It only analyzed English abstracts and summaries. Original research articles were not analyzed (Ku, 2019). Therefore, it is unclear how representative and informative English summaries were and the extent to which they differed from original articles. The example that *SER* provides and the guideline that *NTU MR* provides guided authors to write English summaries. Authors might have adapted to the guideline. However, the structure and composition of their research articles might be different. Comparing among abstracts, summaries, and original articles would help develop a holistic understanding of their differences, although there will be

language issues because original articles were written in Chinese. 2. Sometimes a coding decision was made based on how an excerpt was related to other texts within a given summary. As a result, some excerpts were not as typical as others in a given coding category. 3. Different coding categories were treated as mutually exclusive. However, different sections, moves, and steps were inter-related, especially adjacent ones. For example, limitations were divided into three types, including: about the findings, about the methodology, and about the scope (Kanoksilapatham, 2005). As manifested in several *NTU MR* summaries, limitations about the methodology contributed to limitations about the findings. These inter-relationships have challenged data analysis because it was difficult to determine which code should be applied. Moreover, sometimes a move or a step could be viewed as equivalent to others. Authors expressed what was investigated in different ways. For example, "list research questions" and "specify research themes" are convertible.

Future research could be undertaken in the following directions: 1. Compare the citations in English summaries and those in original research articles: This will allow us to understand the extent to which citations have been dropped. It is also crucial to unfold the characteristics of citations that were kept and dropped, and where citations appeared in summaries and their functions. How trustworthy a study is without citations in summaries should be explored from foreign readers' perspectives (Ku, 2019); 2. Compare the tables and/or figures in English summaries and those in original articles: This will help understand the extent to which tables and/or figures were removed and characteristics of those that were kept; 3. Compare English abstracts and summaries between journals indexed and not indexed by TSSCI (Ku, 2019); 4. Longitudinal studies should be conducted to understand the evolution of English summaries since their commencement (Ku, 2019); and 5. Foreign readers' perspectives regarding what should be included in English summaries and how different components should be structured should be investigated to inform the development of writing guidelines. It is also important to understand how informative an English summary should be to grant use and citations (Ku, 2019).

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Appendix

The Coding Scheme

Sections	Moves	Steps	Definitions	Shortened excerpts (Abstract/Summary)
Introduction	Announce the importance of the field	Describe background	Provide background or contextual information important to the conduct of the present study	Abstract: Multimedia Music has been recently introduced as an elective within the arts area as part of Taiwan's 12-year basic education.
				Summary: In recent years, the securities authority in Taiwan has been encouraging the firms listed in the Taiwanese Stock Exchange (TWSE) and GreTai Securities Market (GTSM) to purchase directors' and officers' liability insurance (D&O insurance hereafter).
		Claim the centrality of the topic	Describe how widespread or important an issue/problem/ phenomenon is	Abstract: Visual arts-related graduate programs have multiplied in Taiwan in recent years.
				Summary: Also worthy of discussion and comparison is the fact that the varying dimensions of the different types of media platform result in different effects in conveying messages.
		Make topic generalization	Describe what happens generally	Abstract: The subordinates' attribution of intention about leaders' behavior will affect their emotion and behavior.
				Summary: Human minds are not necessarily rational. A well-designed incentive may influence behavior towards the desired direction.
		Review previous research	Describe what previous research has done or found	Abstract: Based on the capability theorizing, studies have investigated how a following firm can improve its operational performance by learning from a leading firm's best practices.
				Summary: Many studies have shown that our viewing behavior is affected by stimuli and mental status on a static image.
	Prepare for the present study	Indicate a gap(s)	Describe what previous research has not addressed or state there is a lack of relevant research	Abstract: But the effects on gait among elderly are still unknown
				Summary: Little is known about the effect of dynamic characteristics of a video and a viewer's internal status for viewing moving images.
		Indicate the problem(s)	Point out the practical problems that need to be addressed or solved	Abstract: Aging degrades muscle strength, postural balance and walking stability.
				Summary: The difficulty in the development of social communication and interaction is regarded as one of the most significant deficits in individuals with autism spectrum disorder (ASD).
	Introduce the present study	State purpose(s)	Point out the overarching goal, aim or purpose of the present study	Abstract: This study analyzed the effect of competitors' activities on the bancassurance strategy from the competitive dynamics perspective.
				Summary: The objective of this study was to design a novel and effective opinion sentence identification technique.

Propose a new approach/ Draw on theories	Describe the concepts, models, theories, or perspectives that the present study draws on or develop a new approach to solve specific problems	Abstract: Drawing on the attribution theory of leadership process
		Summary: This study adopted competitive dynamics
Specify research themes	Detail the aspects of a phenomenon or sub-topics under investigation	Abstract: Four quality improvement programs, including “Improving Infrastructure”, “Enhancing Service Quality”, “Advancing the Profession Interpretation”, and “Strengthening Environmental Management”, were proposed for estimating the economic benefits.
		Summary: The focus of this paper is on the performances of the relevant statistics from the RWA and the DA, as well as several index of effect sizes, under three effects of multicollinearity (enhancement, suppression, and redundancy) (Friedman and Wall, 2005).
List research questions	Enumerate the research questions that the present study will answer	Abstract: None
		Summary: Our two research questions follow: 1. What are the major theoretical perspectives and methodological approaches in IT adoption and implementation research developed over the past 15 years?
Clarify definition/ coverage/assumption	Define important concepts, or specify the scope of the present study or article, or describe the assumptions on which the study was based	Abstract: This study focuses on the theme of healthcare service design.
		Summary: We define “perceived destructive behavior” as any negative action of distributors that is perceived by the manufacturers as damaging the channel functioning performance.
		Summary: Given that the aesthetic experience may vary with the cultural environment within which an individual is situated and that it is beyond the scope of this research to canvas all the different aesthetics formed in different cultural environments.
State hypotheses/ propositions	Develop the hypotheses that will be tested in the present study	Abstract: We hypothesize that the market gives a premium for firms whose upstream firms disclose favorable news through conference calls, regardless of whether it is financial or nonfinancial information.
		Summary: The following research hypotheses have been guided this study: 1.There is a statistically groups (PBL vs. LLG) difference exit on creative teaching behaviors and creative thinking abilities for the pre-service PE teachers.
Describe expected contributions	State how the results of the present research may contribute to theories and/or practices	Abstract: None
		Summary: By doing so, we hope that we can explore and understand the phenomena of athletes’ social stress.
Describe procedure	Provide an overview of how the study was conducted	Abstract: In accordance with the HECM (Home Equity Conversion Mortgage) program, this study decomposes the collateralized property value into six components.
		Summary: The researcher interviewed the recruited student during internship, taught her artistic skills in the process...

		Present findings	Briefly describe the results of the study	Abstract: The research presents how the teacher educator guides the teachers to transform their knowledge through strategies.
				Summary: Seven academic aspects of service experience research are identified with directions for future research: customer/employee emotion, service employee management, service environments...
	Outline the structure of the article		Describe how the article or a specific section is organized and point out what is discussed in different sections	Abstract: Initially, we review and summarize the empirical studies of derivatives markets in Taiwan regarding futures market, options market and market mechanism.
				Summary: This paper is organized as follows. A review of M&A is provided in Section 2. Section 3 offers a review of strategic alliances.
Literature Review	The main body		Review previous research that is relevant to the present study	Abstract: None
				Summary: Prior literature investigates the effect of conservatism on attributes of earnings... Most studies find that conservatism does affect earnings persistence (Chen et al., 2014).
	Theoretical framework		Develop and present the theoretical framework along with literature review	Abstract: This study decomposes the above three factors into multi-dimensions in examining accountants' behaviors with regard to earnings management, moral development, and agency problem conditions to provide a comprehensive understanding of the behavioral intentions of earnings management.
				Summary: This study adopts a collective risk model to construct a lifetime cancer insurance pricing model.
Methods	Justify methods/ participants		State the rationale behind adopting a specific data collection method or why a specific population was recruited	Abstract: None
				Summary: The use of qualitative methods is appropriate because the transformation of institutional logics is a poorly understood phenomenon in which the causal dynamics are not immediately apparent.
	Describe the overall data collection approach		The overall approach/ methodology that the author adopts to data collection and/or analysis, including experiments, case study, grounded theory, quantitative or qualitative approach	Abstract: Using qualitative-based action research procedures
				Summary: We conducted an eye-tracking experiment using an eye-tracker with 500 Hz sampling rate.
	Describe pretest/pilot study		Indicate how the pretest or pilot study has been conducted, including participants, instruments, and time frame	Abstract: To develop more suitable research model and questionnaires, in-depth interviews were conducted with nine High Court and District Court officers.
				Summary: To refine the proposed research model and the measurement of research constructs, in-depth interviews were conducted with nine High Court and District Court personnel.
	Obtain IRB		The study has been approved by the IRB	Abstract: None
				Summary: This study was approved by the local Institutional Review Board (IRB).

Select data collection site		Indicate the physical setting in which the study took place	Abstract: None
			Summary: At the main rest areas on this route
Describe sampling or exclusion criteria		Indicate the sampling techniques and/or the conditions/criteria that determined what data were excluded	Abstract: Under stratified sampling and cluster sampling
			Summary: On further stratifying our sample
Describe subjects		There were two types of subjects, including the target of the study (e.g., projects, organizations, archives, journal articles) and human participants through which the target was investigated	Abstract: Participants in this study were 196 students in elective tennis course (M = 165, F = 31, Mean age = 19.9) from a university of northern Taiwan.
			Summary: A large Taiwanese pharmaceutical company
Collect data	Employ data collection methods	Describe the specific methods implemented to collect data (e.g., interviews, focus groups, survey)	Abstract: For the research design, the authors use focus groups to collect data about service encounter failures.
			Summary: A simulation and a survey data analysis are used
	Describe the data being collected	Detail what data have been collected, including participants' experiences or opinions, journal articles, observational notes, etc.	Abstract: We focus on articles published in TSSCI journals after the year 2000.
			Summary: We focus on articles published in 16 TSSCI journals after the year 2000, collecting more than 140 papers to conduct the survey
	Describe data source	Indicate where the data were obtained, such as specific databases	Abstract: Using data from Taiwan's life insurance companies from 2005 to 2013
			Summary: In the CEPS Chinese digital journal database
	Describe experiment design	State the specific experimental design the study adopted	Abstract: In this randomized, double-blind, placebo-controlled study
			Summary: In the cross-over study design
	Assign subjects	Describe how the subjects were assigned into different groups in experiments	Abstract: Fifteen Division I male basketball players from Chinese Culture University (CCU) (age: 19.8 ± 0.9 yr, height: 186.1 ± 5.7 cm, weight: 82.9 ± 5.7 kg) were randomly assigned into ARPT and C (control) groups.
			Summary: Randomly assigned to receive a double-blind design test
	Describe tasks/ treatment/procedures	Describe what participants were instructed to do, the treatments different groups received, or how the data were collected in different phases	Abstract: Participants in four groups were asked to drink 500 mL of respective beverage for 7 days one hour before the experiment.
			Summary: Each participant performed 30 free throws under two conditions, the no anxiety intervention (NAI) condition and the anxiety intervention (AI) condition.

	State time frame	Describe the temporal aspect of data and/or data collection, including the period during which data were collected and how long participants received treatments	Abstract: After the pre-tests, participants in both training groups performed two 60-min training sessions per week for 8 weeks.
			Summary: The research period is from 2005 to 2011.
	Develop research instruments	Describe how research instruments were developed, such as questionnaires and experimental interfaces	Abstract: All participants completed questionnaires regarding their justice perceptions, trust in coach, collective efficacy, competence and coaching involvement perceptions.
			Summary: The authors synthesized the gathered information to design ability-appropriated parent-child music activities
	Employ specific measurement	Indicate the measurements used to design research instruments	Abstract: It used eye tracking technique and Pleasure-Arousal-Dominance (PAD) emotion measurement scale to analyze browsing movements and aesthetic emotions of 40 participants.
			Summary: All participants were asked to complete tripartite efficacy scale and sport performance scale
	Employ data collection equipment	Indicate the facilities used to collect data	Abstract: Portable heart rate monitor (Polar RS800CX) was used to collect the series of heart rate beats throughout the experiment.
			Summary: A diagnostic ultrasound system was used
Analyze data	Employ data analysis methods/measurements	Describe the methods or measurements used to analyze data	Abstract: Moreover, this study employs structured content analysis
			Summary: We conducted hierarchical regression analyses to test our hypotheses
	Describe the data being analyzed	Indicate what aspects of data were analyzed	Abstract: The blood samples were assessed for the pH value, carbonate ions, oxygen partial pressure, carbon dioxide partial pressure and excess base value changes.
			Summary: To analyze browsing movements and aesthetic emotions
	State the purpose of data analysis	Describe what was expected to identify or discover from the collected data	Abstract: Employ content analysis to identify critical incidents, and combine the method of sequential critical incident analysis to interpret how the prospects develop their self-recovery mechanisms
			Summary: To determine the proper number of groups which can represent different types of driver behavior
	Adopt data analysis software	Indicate the software or application used to facilitate data analysis	Abstract: The Kwon 3D and DASYLab 6.0 software were applied to analyze the kinematic data, ground reaction force and center of pressure.
			Summary: By using SPSS statistical software
Verification		Indicate how the quality of the research was ensured or the results were verified	Abstract: Analytic Hierarchy Process is adopted to confirm the relative weight of measurement items for diverse cloud computing service suppliers.
			Summary: For verification, Delphi method is employed to create a questionnaire repeatedly until the experts reached a consensus..

Results	Summarize individual results		Detail the findings	Abstract: Results indicated that 4 weeks detraining significantly improved the relative peak torque of knee extension with angular velocity set at 60° • S-1 and 180° • S-1.
				Summary: The results found are as follows: There are significant differences and similarities between adolescents and adults in terms of their preference judgement factors toward illustration styles; cognitive assessment is the most important factor for preference judgement
	Evaluate system performance		Describe whether the proposed approach/ technique/system outperformed previous ones	Abstract: Our empirical evaluation results suggest that the proposed R-OSI technique achieves promising performance.....
				Summary: To evaluate the effectiveness of the proposed R-OSI technique, a data set comprising of 4,500 consumer review sentences regarding digital cameras was collected from Amazon and Google Shopping.....
	State comments on the results	Explain findings	Indicate possible causes that lead to what has been found	Abstract: This phenomenon may be caused from the fact of generational differences in adapting to the visual cultural environment
				Summary: This effect is due to the correlation of cash flows between long-term care insurance and life insurance from the same insured
Discussion	Consolidate results	Summarize results	Describe the overall findings	Abstract: None
				Summary: The empirical results show that customer average order scale, total annual order amount, and new product purchase ratio all positively and significantly impact customer profit contribution, which are consistent with the predictions of H1, H2, and H4 respectively. Conversely, customer maintenance cost has a negative impact on customer profit contribution, which supports H3.
		State selected findings	Highlight specific findings	Abstract: None
				Summary: 4.3 Reconstructing the Construct Domain Having based our analysis on Robinson and Bennett (1995) framework, we discovered that some constructs of deviant workplace behavior proposed after 1995 were absent from their model.
		Refer to previous literature	Mention previous research, such as what has been found	Abstract: None
				Summary: As Welch and Wilkinson (2005) indicated, perceived conflicts do not constitute improving signals of network cooperative efficiency
		Compare results with literature	Describe the differences between the present study and previous research, usually in findings	Abstract: And this echoes previous studies
				Summary: Similar with the findings of previous research on classical or integrated tax systems, this study supports the assertion that tax reforms affect dividend payouts
	Suggest further research		Indicate what requires more investigation	Abstract: But still needs to be confirmed in the future studies
				Summary: These analyses still demand a value integration model with humanity at the center to comprehensively explain value exchange and creation

Conclusions	Make overt claims or generalizations		Generalize findings to draw conclusions	Abstract: This study concludes that acute oral supplementation of carnitine immediately after exercise can enhance the glycogen recovery in exercised human skeletal muscle.
				Summary: (3) Aesthetic experience enhances sensitivity as a valuable quality in life
	Summarize the study		The conclusion starts with a brief description of the study	Abstract: None
				Summary: This study reviewed the literature on external growth strategies, including M&A, joint ventures and strategic alliances. Moreover, we pointed out the characteristics of the Taiwanese sample.....
	Significance	Be the first	The study is the first to examine specific phenomena, adopt specific theories, find something, or to make other pioneering achievements.	Abstract: This is the first study to demonstrate that 14-week community based health promotion program enhanced the strength and CF in non-frailty elderly and improved DS in pre-frailty elderly.
				Summary: First, we believe we are the first to use the Lerner index as a proxy to examine the impact of concentration and efficiency on market competition in the insurance industry.
		Study in a unique context	The study explores an issue or was conducted in a particular context.	Abstract: Our study contributes to entrepreneurship literature by highlighting the importance of managers' stewardship orientation.....in the context of family business.
				Summary: Japan has had a series of mergers and acquisitions in addition to regulatory changes since 1996, which provides the perfect research environment for us to examine the potential factors affecting market competition.
		Describe what has been accomplished	Point out what has been done and/or achieved	Abstract: Based on the deduction drawn from sequential critical incident analysis and hermeneutic mode of interpretation, the finding enhances our understanding of self-recovery.....
				Summary: In the theoretical aspect, we show that to estimate the weights of the anchor currencies in the basket, the correct specification is to use the rates of change in exchange rates and to write exchange rates in quantity term.
		Draw on specific perspectives	The study adopts specific theories, models, concepts, and/or perspectives.	Abstract: This research has firstly combined related theoretical foundations from different fields into a conceptual framework
				Summary: This study explores factors that contribute to the successful use of judicial information systems in Taiwan's Judicial Yuan from the perspectives of task-technology fit and Social Cognitive Theory.
		Fill a gap(s)	The study bridges the gaps found in previous studies.	Abstract: None
				Summary: The results can compensate for the research gap of past studies, which did not directly provide the evidence of claim service quality.
		Relate to/extend previous studies	The study is in some ways related to previous literature (e.g., taking different approaches) or it extends previous studies by adding new things.	Abstract: Previous studies on reverse mortgages focused on the analysis of reverse mortgage insurances. This study has instead provided a process that enables lenders to specifically evaluate profit and effectively recognize potential risks.
				Summary: We extend this line of research by proposing that entrepreneurs can recognize opportunities in the constraints lying within incumbents' strengths and dominance.

	Solve the problem	The study addresses the problems or provides a solution to a problem.	Abstract: None
			Summary: The level of service system integration and the assurance of information security are becoming more and more important. The proposed healthcare service planning model addresses these issues by employing the Service Encounter Triad.
	Implications	Indicate the areas to which the findings can be applied	Abstract: These results may have profound implications for film theory and art education.
			Summary: These findings have practical implications for implementing specific teaching and learning methods, as well as understanding characteristics of students' responses.
Limitations	Limitations about the scope	The scope of the study is limited. The study focuses on specific topics and leave certain aspects/variables uninvestigated.	Abstract: None
			Summary: This study does not consider the potential differential effects of industrial life cycles as well as the macroeconomic environment
	Limitations about the findings	The findings may not be applicable or generalizable. The size and nature of data or the lack of data prevent authors to unfold specific aspects.	Abstract: However, due to the small sample size of this study, it is difficult to make generalizations.
			Summary: Our sample was drawn from car salespeople only, and therefore, this limits the generalizability of the results
	Limitations about the methodology	The data, research instruments, the data collection or analysis methods are inadequate.	Abstract: None
			Summary: The experimental scenarios might not fully conform to real-world situations
Suggestions	Practical applications	Provide advice to improve practices	Abstract: This study suggests that physical education instructors should encourage students with positive interactions.....
			Summary: The multiple facets of aesthetics can serve as interdisciplinary interfaces to integrate various subject areas.....
	Future research needs	Describe what could be done in future research	Abstract: These unique characteristics of Taiwanese companies give scholars an opportunity to develop research focused on M&A and alliances.
			Summary: Future studies can expand our research by providing two-side view of manufacturer-distributer relationship.
Indicate content		Describe the content and/or the structure of the article	Abstract: The review concludes by reflecting on the development of art criticism education and identifying areas that require further research
			Summary: further considerations and suggestions for practical application are provided

Source: Ku (2019, pp. 51-62).

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中文研究文章所附英文摘要與摘錄之比較研究：以「臺灣人文及社會科學引文索引」收錄之藝術教育、體育及管理期刊為例

古敏君

摘要

除了英文摘要，台灣有些期刊出版商亦提供英文摘錄（或長摘要、延伸摘要）。英文摘錄為獨特的研究文體，因應外國學者對台灣學術之需求而生，彌補了摘要之不足，也解決翻譯全文之困難。本研究比較三種收錄於臺灣人文及社會科學引文索引之期刊之中文研究文章之英文摘要與摘錄，分析其結構與組成元素，包含：《藝術教育研究》、《大專體育學刊》與《臺大管理論叢》。結果顯示最常出現於摘要與摘錄之元素相同，藝術作者一致地撰寫非結構性摘錄，大專體育學刊徹底地執行結構式策略，其結構與元素相當一致。藝術與體育摘錄注重報導其研究，並提供改進實務之建議，管理摘錄解構了IMRD架構，結合期刊所提供指南之架構且重新命名，強調其研究貢獻、限制與未來研究方向。

關鍵詞：文體分析，英文摘要，英文摘錄，延伸摘要，學術傳播

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