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Self-plagiarism in academic journal articles: from the perspectives of international editors-in-chief in editorial and COPE case

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Abstract
Scholarly misconduct causes significant impact on the academic community. To the extremes, results of scholarly misconduct could endanger public welfare as well as national security. Although self-plagiarism has drawn considerable amount of attention, it is still a controversial issue among different aspect of academic ethic related discussions. The main purpose of this study is to identify two concerns including what is self-plagiarism in academic journals, conceivable point of contention, based on journal editors' viewpoint. Between 1990 and 2015, content of 57 editorials indexed in Scopus and WoS and 75 cases of self-plagiarism raised by international editors in COPE were analyzed to explore how journal editors identify these problems. The results show that self-plagiarism can be categorized to four facets, including its identification, types, norm, and remedy. And the editors are concerned about the issues about the detection software, salami-slicing and overlapping publication, the harm of copyright, and the retractions of published articles. Results from this study not only could obtain in-depth understandings on self-plagiarism among academic journal articles but also being applied on establishing academic guidelines in the future.

Keywords Self-plagiarism · Academic journal · Editor · Redundant publication · Overlapping publication · Research ethics

Introduction

Recently, governments worldwide have been concerned with academic misconduct, which can be detrimental to national security and public safety. Academic research-based government institutions in several countries have formulated various codes of conduct to regulate data collection, analysis, and management, conflicts of interest between researchers, publication and dissemination of research findings, authorship, peer reviews, and acts of fabrication, falsification, and plagiarism (*Australian Code for the Responsible Conduct of*

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Research 2018; *Code of Conduct for Scientists - Revised Version* 2013; *Code of Practice for Research: Promoting good practice and preventing misconduct* 2009; *The European Code of Conduct for Research Integrity* 2017; *Guidelines for the Conduct of Research in the Intramural Research Program at NIH* 2016). Among these types of academic misconduct, self-plagiarism is particularly concerning as a new means of manipulating productivity and gaming the reward system of academia.

The definition, determination, types, rules, handling, and regulations of self-plagiarism have remained controversial topics. Scholars question the use of the term "self-plagiarism" because people cannot steal their own property, even in the case of intellectual property. Moreover, plagiarism refers to the improper appropriation of other people's works, and thus self-plagiarism seems to be a contradiction. From a linguistic perspective, some scholars have considered this seemingly illogical term as an oxymoron and therefore have emphasized the contradictory nature of this misconduct by connecting the concept of "self" with the behavior of stealing "other's" intellectual properties (Chrousos et al. 2012).

Even so, the International Committee of Medical Journal Editors (ICMJE), an institution comprising internationally renowned medical journal editors, proposed guidelines for defining overlapping publication from four perspectives: duplicate submission, duplicate publication, acceptable secondary publication, and manuscripts based on the same database (International Committee of Medical Journal Editors 2016). In the Academic Ethics Guidelines for Researchers regulated by the Taiwan Ministry of Science and Technology, conference papers or the results of grant-funded projects that are later published in journals are not regarded as cases of self-plagiarism. However, the appropriateness of publishing the same research results in different languages should be judged according to the characteristics of the discipline, and a subsequently published paper should reference the original paper (Ministry of Science and Technology 2017). The *European Code of Conduct for Research Integrity* also specifies that "Re-publishing substantive parts of one's own earlier publications, including translations, without duly acknowledging or citing the original ('self-plagiarism')." (European Science Foundation 2017). These guidelines indicate that in the case of appropriate acknowledgement or self-citation, republication is acceptable. The reuse of specific data, tables, formulae, or text in the original work may be necessary (Cronin 2013; Roig 2015); therefore, these types of reuse are not entirely blameworthy in some disciplines or cultural contexts.

Self-plagiarism is a complex concept. This complexity leads to legal, ethical, and theoretical questions (Scanlon 2007). For instance, is self-plagiarism a failure to self-cite correctly? Is rehashing work in various linguistic contexts or publishing similar works on different academic platforms considered self-plagiarism? Are the practices of redundant publication and overlapping publication, which is, writing with high similarity between two or more articles and salami-slicing, respectively, a form of self-plagiarism? These questions merit further clarification and investigation.

Self-plagiarism is an issue that has received increased attention and new concerns among scientists (Horbach and Halffman 2019). Recently, academic journal editors-in-chief have been discussing the problem of self-plagiarism in editorial sections because they have encountered various levels of self-plagiarism during different editing procedures. Through these discussions, they have encouraged authors, reviewers, and readers to continue paying attention to and avoiding this problem (Berquist 2013; Cronin 2013; Lancet 2009; Rosing and Cury 2013). On March 12, 2013, the Committee on Publication Ethics (COPE), an organization dedicated to promoting academic ethics, included text-recycling and self-plagiarism as primary topics in its forum. In 2005, googling the terms self-plagiarism and plagiarism generated approximately 8000, and 3,150,000 hits, respectively (Green

2005). In Aug. 2019, googling self-plagiarism and plagiarism led to more than 239,000 and 58,600,000 hits, respectively. Accordingly, the search results of plagiarism and self-plagiarism have increased by more than 30 times and 18.6 times, respectively, over the last 15 years.

The present researcher chose to investigate self-plagiarism because of the aforementioned phenomena. Several scholars have claimed that solving self-plagiarism problems requires ensuring that authors perform self-citations correctly (Cronin 2013). COPE suggests that when self-plagiarism problems are detected during the process of submission and review, editors or reviewers should request that authors rewrite overlapping passages and add citations to their previous articles (Committee on Publication Ethics 2013). However, the simplicity of these solutions seems to contradict the fact that many scholars in academic circles remain concerned with this problem.

Although self-plagiarism involves authors, readers, editors, and reviewers, a comprehensive search revealed that scant empirical studies have been conducted on self-plagiarism. As an exploratory research study, this study focused on the perspectives of journal editors to examine topics related to self-plagiarism performed by authors and these editors' primary concerns regarding self-plagiarism. This study analyzed editorials addressing self-plagiarism problems and examined cases reported from editors-in-chief to COPE. This study discussed the perceptions of journal editors-in-chief regarding self-plagiarism-related concepts and identified their major concerns for self-plagiarism through said editorials and COPE cases.

Literature review

Self-plagiarism: definition, type, and improper self-citation

Plagiarism is one of the most frequently discussed forms of misconduct in academic research. From either an ethical or legal viewpoint, plagiarism is a behavior infringing upon others' rights. For an act to be considered plagiarism, the plagiarized material must have already been openly published. The term self-plagiarism may seem to be a self-contradictory term. Neville (2005) claimed that a person stealing from themself does not commit a theft. Therefore, self-plagiarism is not an appropriate phrase. Instead, it should be referred to as a reuse of previously published works without providing adequate references. Collberg and Kobourov (2005) divided inappropriate reuse into textual, semantic, blatant, selective, incidental, opaque, and advocacy reuses, as well as reuse through cryptomnesia. When studied across different fields, self-plagiarism may conform to the proposed categories of textual, semantic, blatant, selective, and advocacy reuses.

Broome (2004) considered self-plagiarism to be a reuse of sections of previously published and copyrighted works without adequate attribution. Serious acts of self-plagiarism occur when authors disseminate previously published articles through various academic platforms by merely changing the titles or even without changing them. Self-plagiarism was included as a main topic in the 2013 COPE forum, which defined the term as text recycling (Committee on Publication Ethics 2013). The Publication Manual of the American Psychological Association distinguishes plagiarism and self-plagiarism according to authorship and publishing time. Plagiarism refers to using others' works without providing credit, whereas self-plagiarism is presenting a person's previously published work as new scholarship. However, if the core value of the new material provides an original

contribution to knowledge, then a work is not considered to be self-plagiarized (American Psychological Association 2010, p. 16). In this context, the problem of self-plagiarism lies in reusing previously published materials and failing to provide new contributions. Moreover, "previously published" is a crucial concept because when the copied materials have not been published before, the copying does not constitute self-plagiarism. Plagiarism.org, a leading website that studies and discusses plagiarism, defines self-plagiarism as the following: "Copying material you have previously produced and passing it off as a new production. This can potentially violate copyright protection if the work has been published and is banned by most academic policies." (www.plagiarism.org).

Among all types of academic misconduct, some are related but not equal to the concept of self-plagiarism. The most common related type of academic misconduct is salami-publishing, a form of authoring overlapping publications (Martin 2013). This term means deliberately dividing a particular research study, database, survey, experiment, or project, into slices (like salami slices), or least publishable units, to inflate the total number of research publications. After slicing completed research, an author must repeatedly insert the same aspects of prior studies, particularly literature reviews and methodologies (Rosenzweig and Schnitzer 2013), into new research papers, thus creating a large number of sections that overlap, and resulting in overlapping publications.

When conducting a series of studies, authors may have to employ methodologies similar to those from their own previously published studies. Thus, avoiding overlapping content may be difficult. To solve this problem, the Publication Manual of the American Psychological Association suggests that authors refer their readers to the relevant earlier studies through self-citations (American Psychological Association 2010, p. 29) to avoid self-plagiarism when the present study is later published. COPE advises that, after detecting self-plagiarism from minor overlapping sections during the process of submission and review, editors or reviewers should request that authors rewrite and add proper attributions to these sections. However, severe overlapping in the main body must result in rejecting the submission. Regarding overlapping data, editors must perform judgments according to a provided COPE flowchart to determine whether the submitted document leads to redundant publication (Committee on Publication Ethics 2013).

Articles resulting in overlapping publication can be identified and fixed by adding self-citations before publication. In other words, overlapping publication can be considered as a result of improper self-citing: failure to adequately self-cite when it is required. From the perspective of citation behavior, authors meet the standards of properly citing by indicating sources to readers through self-citations. However, from the perspective of research ethics, even if authors cite their previous works in the reference section of a present paper, if the present paper is highly similar to the previous ones, the authors have violated research ethics because this citation behavior harms the originality of the research study.

Self-plagiarism can take the form of dual publication or redundant publication: authors may submit to various publications simultaneously or sequentially so that reviewers and editors publish the same article simultaneously or sequentially without detecting the other instances (Martin 2013). Dual and redundant publication are typically regarded as the most severe type of self-plagiarism because the offences committed under this type of misconduct cannot be remedied by adding citations of the authors' previous materials. However, if the definition of self-plagiarism is to openly copy officially published works, then the issue of dual or redundant publication being forms of self-plagiarism is debatable. Roig (2015) stated that if authors clearly inform other authors, editors, and readers that their articles have been already translated and published in a different language or presented in conference proceedings, they may avoid performing redundant publication and acting

against research ethics because redundant publication in a context of translation can assist in academic dissemination.

Infringements caused by self-plagiarism

From a legal perspective, restructuring the forms of previously written or published works or changing the titles for new publication typically does not result in any copyright concerns even if the newly published works are similar to the previous ones, because copyright owners are unlikely to report themselves to judicial institutions. However, even if authors possess the copyright of their previously published works, this form of self-plagiarism may still violate academic ethics. The owner or publisher of a major journal generally requests authors to transfer possession of copyright before publishing their works. An author performing dual or redundant publication without the consent of a publishing company infringes upon the copyright of the journal owner (Dellavalle et al. 2007). Presently, most academic journal owners ask authors to sign agreements to avoid copyright infringement and request them to ensure that the author's works have not published in any other forms on other platforms. Author's deliberately or nondeliberate attempt to overlook such journal guidelines (Andreescu 2013) may jeopardize the right of the journal publisher. Although people cannot steal their own property and stealing intellectual property does not constitute theft, concerns have been raised regarding whether cases of coauthored materials result in copyright infringement of coauthored writings (Cronin 2013).

Self-plagiarism may cause a loss of profit for a publisher or journal. For instance, the Retraction Guidelines document of the COPE stipulates that if only a small portion of an article overlaps, editors should consider, according to the degree of overlap, whether readers would be best served by retracting the entire article, noting that the text was appropriated from previous articles, or providing cross-references to the earlier works (Wager et al. 2009). However, retracting the article jeopardizes not only the author's reputation, but also the credibility and academic prestige of the publisher or journal (Berlin 2009). Each submission generates processing costs for a publisher or journal. Therefore, when self-plagiarism is detected, editors and reviewers must carefully verify it. Publishing the article without detecting such academic misconduct wastes resources in an academic journal even if the article is later retracted (Andreescu 2013; Babalola et al. 2012).

Self-plagiarism is detrimental to readers. When reading journal articles, readers expect that they are reading original study results. If the articles contain self-plagiarized results, the trust relationship between readers and journals is negatively affected (Anderson and Steneck 2011; Babalola et al. 2012). In an era of plentiful academic information, readers generally spend substantial time searching for valuable information. Thus, reading repeated content increases informational "noise" for readers (Andreescu 2013) and therefore poses another level of infringement of readers' rights.

Empirical studies on self-plagiarism

Although early scholars have systematically proposed legal and ethical views on self-plagiarism (Samuelson 1994; Loui 2002; Bird 2002), the public infrequently pays attention to self-plagiarism concerns (Collberg and Kobourov 2005), not to mention empirical studies on this topic. This can be attributed to a lack of adequate research tools for comparing and detecting self-plagiarized writings. The development of a self-plagiarism detection system,

SPlaT, by Collberg et al. (2003), and the launching of commercial programs such as Turnitin and iThenticate have increased the number of self-plagiarism studies.

Collberg and Kobourov (2005) conducted a study involving multiple detection programs by incorporating a web spider and text similarity analysis technologies into their self-developed SplaT system to experimentally analyze the publications of computer science professors from the websites of 50 schools. Their study results revealed that between pairs of conference publications featuring similar introductions that did not reference each other, pairs of conference publications with over 50% of similar content that did not reference each other, and pairs of highly similar conference and journal versions of the same research paper, the journal versions did not typically reference the previously published conference versions. Bretag and Carapiet (2007) selected 10 Australian scholars of social science and humanities studies, identified a total of 269 electronically available peer-reviewed journal articles by these scholars from the WoS database, and employed the text-matching program, Turnitin, to detect self-plagiarism in these articles. Their study results indicated that 4 out of the 10 scholars did not exhibit signs of self-plagiarism, 3–53% of the other 6 scholars' articles contained self-plagiarism, and one of these articles contained up to 55% of self-plagiarized content, suggesting that more than half of this article was appropriated from previous materials.

Sun and Yang (2015) used Turnitin and human scrutiny to uncover instances of text borrowing in 71 selected journal articles in the language and education disciplines. For research results, 67.28% of the identified borrowing of text involved the reuse or recycling of one's own prior works in a new article. Horbach and Halffman (2019) also employed Turnitin and manual checks to examine 922 journal articles for self-plagiarism by authors in the biochemistry, and molecular biology, economics, history, and psychology fields. The study results indicated that the extent of text recycling varies substantially between disciplines, but articles in the domains of economics and psychology had considerably high levels of self-plagiarism. In addition, Bretag and Carapiet (2007) observed that a chain of textual reuse was used as a self-plagiarism approach and that the examined scholars developed a collaborative writing effort by publishing authors' names in different orders or adding an additional name occasionally. Analytical results from Turnitin demonstrated that a 10%–55% rate of content overlapping was observed in papers written by these scholars. By comparing a total of 80,000 articles from the Déjà vu Database, García-Romero and Estrada-Lorenzo (2014) selected 247 pairs of articles and employed the bibliometric indicators of the number of authors, full text similarity, journal impact factor, the Eigenfactor, and article influence, to examine the selected articles. Their study results revealed that these cases of plagiarism displayed a low visibility and received few citations and that close to full-text plagiarism was more common than cases of self-plagiarism. Among pairs of articles with shared authors, articles that did not cite the original sources exhibited a higher full-text similarity than those that did, and also showed a greater extent of overlap in the reference sections.

For the perspective of teachers on self-plagiarizing, Halupa and Bolliger (2013) examined students' self-plagiarism or the recycling of student papers by surveying 340 private university teachers to understand how they perceived students reusing all or a portion of previous assignments. The survey posted a return rate of 26.2%, which can be attributed to a lack of self-plagiarism policies in the examined institutions and the fact that the teachers did not have a clear understanding of self-plagiarism. In addition, only 13% of the surveyed teachers formulated self-plagiarism rules in class. Halupa and Bolliger (2015) assessed the perspectives of undergraduate and graduate students regarding self-plagiarism and the recycling of all or part of their assignments from a previous course to another course. In

total, 284 individuals completed the 35-question questionnaire survey. This study found that 63.5% of students did not view using their own previous unpublished work as an instance of academic dishonesty, and 87.8% indicated that they owned their assignments and that they could then use them as they deemed appropriate. The results also revealed that a lack of education regarding self-plagiarism was major reason students committed this type of academic misconduct. Halupa et al. (2016) later conducted semistructured interviews regarding self-plagiarism and focused on the perceptions of doctoral students in the health sciences. Because the sample was too limited, the results of this study were non-significant. However, these three studies can be treated as a serial study that used various methodologies to probe the viewpoints of different positions in academia.

Zhang and Jia (2012) applied a survey research method and distributed 3305 and 607 questionnaires to scholarly journal editors from Anglophone and non-Anglophone countries, respectively, to investigate their use of CrossCheck, a plagiarism detection tool, and their opinions on plagiarism and self-plagiarism. Kokol et al. (2016) collected 313 English journal and conference papers from 144 source titles published between 1946 and 2015 by using a classic bibliometric method and the visual mapping software VOSviewer to derive the typology of self-plagiarism research. The results uncovered that the major research topics concerning self-plagiarism are divided into self-plagiarism, institutional self-plagiarism, self-plagiarism and information communication technology, in academic writing, and in science. State-of-the-art topics appeared to include social medium, knowledge sharing, open access, and retraction, etc.

Research method and data collection

In academic journals, editorials are generally a critical section in which editors-in-chief or editorial committee members outline journal editors' views or developments in the discipline. Content analysis is a method used to confirm, encode, and categorize the internal structure or content of data (Patton 1990). Conducting content analysis on editorials can lead to an accurate understanding of journal editors' perceptions of and degrees of attention paid to specific topics. The present study selected cases associated with self-plagiarism from over 400 cases offered by the COPE members and conducted content analysis on them by focusing on case content and suggestions from COPE consultants.

Editorials are a specific content type within academic journals. Therefore, searching for editorial samples involves searching databases with a wide range of document types that include editorials. Scopus and WoS (Web of Science) are two comprehensive literature databases that feature a wide range of subjects and a high number of journal types that enable users to search for editorials as a specific document type. Because of limited language proficiency, the researcher of this study only focused on editorials written in English. A search for editorials related to self-plagiarism on Scopus and WoS resulted in a total of 57 hits after excluding repetitions. Among these editorials, which were published in 1990–2015, a total of 13 were published in 2013, indicating that the academic journal publishing industry has recently become more concerned with this topic. These 57 editorials were used as samples for the first phase of content analysis. These editorials were published in 50 journals. Four journals had plural editorials on the topic of self-plagiarism. *American Journal of Roentgenology* and *Research in Nursing and Health* even used editorials to discuss self-plagiarism on four and three separate occasions, respectively. Most journals were in the medical field or a medical-related discipline. Only 12 journals were

in non-medical disciplines, such as nanotechnology, physics, and wildlife management. This distribution indicated that the medical field had the most concern for self-plagiarism. "Appendix 1" lists the detailed information, including journal title, publishing year, and issue number, of each editorial.

The second phase of content analysis was performed on the aforementioned COPE cases. The use of self-plagiarism, overlapping publication, and redundant publication as keywords resulted in a total of 75 retrieved COPE cases. (see "Appendix 1") Because each case could potentially cover multiple topics of academic ethics, this study analyzed the background, ethical concerns, and COPE suggestions of these cases only as far as they related to self-plagiarism, overlapping publication, and redundant publication. A full list of these cases and related detailed information is provided in the "Appendix 2".

The editorials and COPE cases were explicitly encoded because they are quasi-academic documents that involve clear arguments and thus have a limited requirement for implicit encoding, which is mainly used for semantic analysis. After a process of manual encoding, this study employed the Computer-Assisted Qualitative Data Analysis Software (CAQDAS) NVivo 9 to analyze the sample editorials and COPE cases. Before the numbers of each keyword were calculated, keywords related to self-plagiarism in the codebook that was used were set as nodes. Furthermore, synonyms featuring various parts of speech or that were similar to the aforementioned nodes were categorized under the same nodes. A compilation of the main nodes led to further statistical analysis.

In this study, the data analysis was divided into three stages. Stage 1 involved the collection of editorials and COPE cases that could be used for samples, division of self-plagiarism into four aspects (i.e., identification, type, norm, and remedy), and initiation of the encoding. Stage 2 involved the employment of NVivo 9 and manual assistance to conduct a quantitative statistical analysis on each coded item. Stage 3 involved the generation of descriptions and inferences from the results of the quantitative statistical analysis.

To ensure adequate reliability of the applied content analysis, two coders were employed to encode the samples independently by using code units generated from the same data language. These units were used to describe the individual item, variable, or complex category of the samples. Because no prior studies could be used as analytical references for the present study, the researcher roughly viewed the samples and generated the first-stage codebook before officially initiating the encoding procedure. Related items were set as nodes and analyzed using NVivo. The results of the constructed tree structure were used as a basis for the official codebook.

Prior to encoding, the author had a discussion with the two coders as well as four research assistants who were responsible for operating and analyzing the NVivo; this enabled the coders to understand self-plagiarism-related concepts and familiarize themselves with the codebook used in this study. After training, the coders began the official coding process for the editorials and COPE cases assigned to them (the editorials and COPE cases were divided equally in half). Questions that arose during the coding process were raised during team meetings and consensuses were reached before subsequent coding began, which enhanced the reliability of the coding.

After the encoding was completed, a stratified random sampling approach was applied to select six editorials and eight cases, the combined number of which was 10.6% of the total sample number. The coders separately encoded three editorials and four cases. The encoding results from both parties were used to calculate the intercoder agreement. The present study referred to the intercoder agreement and reliability formulas employed by Holsti (1969) and generated an intercoder agreement of 0.973 and intercoder reliability of 0.982.

Results

Concepts related to self-plagiarism

By using a content analysis approach applied to frame concepts associated with self-plagiarism, this study analyzed 57 editorials published in 1990–2015 and 75 COPE cases published in 1997–2015, and generated a total of four facets of self-plagiarism that journal editors are concerned with: identification of self-plagiarism, type of self-plagiarism, norm of self-plagiarism, and remedy for self-plagiarism.

The analysis results of self-plagiarism identification indicated that a number of editors-in-chief considered self-plagiarism to be a behavior of deceiving various publishers and reviewers simultaneously. Because of the time differences among submitting, reviewing, and publishing, and the confidentiality of reviewing, detecting signs of the simultaneous submission of the same documents to various publishers is difficult. In addition, editors-in-chiefs were concerned with publishing the same article in different languages in multiple journals, particularly because most of the editors could not understand multiple languages and therefore were unable to identify when an article was published in the author's mother language and then republished in English in an international journal. However, a variety of editors-in-chief claimed that the nature of this misconduct is dubious and it should not be referred to as self-plagiarism, particularly when an author specifies that the later work is a translation of the previous version. Moreover, if the later version is published by the same publisher or the author has been authorized to republish the article, no self-plagiarism has occurred. Translating the same article in multiple languages increases dissemination effects, causes minor harm to the originality of the article, and does not damage the rights of readers or publishers. Publishers concerned with the problem of overlapping publication caused by translation should formulate clear submission guidelines restricting this practice; such guidelines are currently implemented by a large number of journals.

The studied editors-in-chief paid attention to whether modern tools were available for detecting self-plagiarism. Therefore, certain journals openly specified that they employed self-plagiarism detection programs such as iThenticate, eTBLAST, SPlaT, CrossCheck, and Turnitin. Editors or reviewers may use search engines as detection tools or even suggest that submission systems or journal management programs be equipped with detection functions. A small number of editors-in-chief considered self-plagiarism as pertaining to self-citation, which they believed should be referred to as inappropriate self-citation instead.

Self-plagiarism types are generally divided into duplication, redundant submission, salami-slicing/overlapping publication, and reuse of text, tables, figures, data, or ideas. The study results indicated that the editors-in-chiefs were most concerned with scholars duplicating previous studies and salami-slicing (overlapping publication) to increase academic productivity. Most importantly, the editors-in-chief, particularly in medical journals, have recently begun paying more attention to the problem of reusing the same figures, tables, and data in different studies.

Self-plagiarism norms were divided into author guide, copyright, and COPE. A variety of editors-in-chiefs considered self-plagiarism to be a severe problem and therefore modified and clarified the content of the author guides of their journals to assist editors and reviewers with dealing with problematic submissions. Some of the editors-in-chief regarded the COPE guidelines as the most effective and used these guidelines to develop their own journal guidelines. A variety of the editors-in-chief claimed that because the

ICMJE guidelines are often applied by medical journals and feature clear and consistent submission rules regarding self-plagiarism, they are effective in educating authors on the concept of self-plagiarism and thus preventing such misconduct.

According to publication time and authors' degree of activeness, the remedies for self-plagiarism were categorized into revising or rewriting, authors withdrawing unpublished documents, authors retracting published documents, and rejecting. After detecting self-plagiarism before publication, journal editors can ask authors to revise their papers. In this stage, severe self-plagiarism might lead to a withdrawal or rejection of submissions. After publication, self-plagiarism might result in the retraction of articles. From the perspective of activeness degree, authors can passively accept editors' requests for revising and editors' decisions for retracting and rejecting, as well as actively request withdrawing submissions, which may result from authors' refusal to rewrite after journal editors detect self-plagiarism. This type of withdrawal before publication is different from the withdrawal of evidence-based medical publications because of outdated reviews or protocols. However, a variety of the editors-in-chief regarded the definition of withdrawal as unclear because authors may not think they have committed self-plagiarism and thus resort to withdrawal as a method of protest. Table 1 outlines the four facets generated from the analysis and the various aspects, items and synonyms, of self-plagiarism in each facet. This framework demonstrates the results of content analysis and is useful for understanding the nature and details of self-plagiarism. In the next phase of the study, quantitative analyses relied on this framework.

Quantitative analysis of self-plagiarism concepts and concerns

Analysis of the identification of self-plagiarism

Among the analyzed 57 editorials and 75 COPE cases, the most frequently discussed topic was of a plagiarism detection program, which was mentioned in 24 editorials and 2 cases. In other words, 54.55% of the editors-in-chief were concerned with how to assist editors and reviewers identify self-plagiarism through existing or expected detection programs. This trend has recently become more apparent. Of the 31 editorials between 2012 and 2015, 24 mentioned the use of detection software. In 2015, the rate reached 100%. The Editorial of *Journal of the American Association of Nurse Practitioners* reported when a manuscript is submitted, it is automatically submitted to a plagiarism detection program simultaneously (Pierson 2015). Or editor operated detection program to confirm that every submitted manuscript is free of plagiarism or self-plagiarism before acceptance.

In addition, self-plagiarism across languages was mentioned in 12 editorials and eight cases, indicating that this problem has become a nuisance for editors. The qualitative analysis results indicated that self-plagiarism identification concerns were mentioned 238 times in total (Table 2). Obviously, the most frequently discussed in the editorials is how to use the detection software to detect the problematic of self-plagiarism. The editor of *American Journal of Radiology* directly provided the settings of the duplication rate (10%) in the Editorial. This information can be useful for other editors to practically apply in their processes. In COPE cases, editors were more focused on self-plagiarism committed through the use of foreign languages. Duplicate publishing of the same content in different languages is a difficult problem for them.

Table 1 Facets of self-plagiarism

Facet	Item	Synonym and similar	Note
Identification	inappropriate self-citation		
	simultaneously fraud	simultaneously submitted, simultaneous publication	
	consecutively reproduce	recycling fraud	
	foreign language	misuse of language, in other languages, different language, second language	
	detection software	plagiarism-checking program, software programs, text-matching software, detection tool, computer programs	iThenticate, eTBLAST, SPlaT, CrossCheck, Turnitin
Type	duplicate	copy, reproduction, replication	
	redundant publication	multiple submission, redundant submission, salami submission	
	salami-slicing/overlapping publication	overlapping publication, salami publishing, salami publication, fragmented publication, fraudulent publication, multiple publication, triplicate publication, double publication, dual publication, dual submission, duplicate publication, published second	
	reuse	text recycling, reuse of material, duplication of data, repetitive text, republication of text/figures, fraudulent data, recycle ideas	text, table, figure, data, or idea
Norm	author guide, guideline	ethical guideline(s), guide for authors, author's guide to publication ethics	AJR Author Guidelines, COPE Guidelines, ICMJE Guidelines, IEEE Guidelines, JWM Guidelines
	copyright		
	COPE (Committee on Publications Ethics)		
Remedy	revise	rewrite, revision, modified	
	withdraw		submitted manuscript
	retract		published manuscript
	reject		

Table 2 Statistical analysis of self-plagiarism identification issues

Identification	Editorial (%)	Case (%)	Total (%)
inappropriate self-citation	9 (4.35)	0 (0.00)	9 (3.78)
simultaneously fraud	25 (12.08)	3 (9.68)	28 (11.76)
consecutively reproduce	4 (1.93)	4 (12.90)	8 (3.36)
foreign language	13 (6.28)	17 (54.84)	30 (12.61)
detection software	156 (75.36)	7 (22.58)	163 (68.49)
	207	31	238

Analysis of the types of self-plagiarism

The analysis results of the types self-plagiarism indicated that the most frequently discussed type for the editors-in-chief was salami-slicing/overlapping publication, which was mentioned in a total of 45 editorials and 49 cases. In other words, approximately 71% of the editors-in-chief regarded salami-slicing/overlapping publication as a crucial type of self-plagiarism. Duplication was mentioned in 43 editorials and 29 cases and thus was also a critical type of self-plagiarism. Moreover, the reuse of text, tables, figures, data, or ideas was mentioned in five editorials in 2015, accounting for 100% of the total mentions and suggesting an increase in attention paid to this aspect of self-plagiarism. The qualitative analysis results indicated that self-plagiarism types were mentioned a total of 1042 times (Table 3). In the Editorial of *BMC Medicine*, terms related to text reuse appeared 27 times, which is the highest of all editorials analyzed. This editorial emphasized reminding authors that whether text reuse is necessary and whether the authors are transparent about doing so are the key points for determining whether a text is self-plagiarized. *BMC Medicine* also considered the COPE forum, collected editors' opinions, and developed editor guidelines titled "*How to deal with text recycling*". The guidelines addressed the matter of text reuse from six perspectives, namely the extent of the self-plagiarism, where it took place, whether the original source was acknowledged, the article type, copyright status, and the cultural norms at the time and place of publication in each case (BioMed Central 2014a). Moreover, a "Text recycling" section has been added to editorial policies to remind authors that inappropriate text recycling may be considered self-plagiarism. If overlap of text with previous publications by the same authors is necessary or unavoidable, then the authors must be transparent, properly cite the original work, and comply with copyright law when submitting the manuscript (BioMed Central 2014b). These two documents clearly define self-plagiarism from the

Table 3 Statistical analysis of mentions of self-plagiarism types

Type	Editorial (%)	Case (%)	Total (%)
duplicate	228 (29.30)	64 (24.15)	292 (28.00)
redundant publication	55 (7.07)	43 (16.23)	98 (9.40)
salami-slicing/overlapping publication	292 (37.53)	140 (52.83)	432 (41.42)
reuse of text, table, figure, data, idea	202 (25.96)	18 (6.79)	220 (21.09)
	777	265	1042

perspective of journal editors, and the supporting policies are comprehensive and have become the standard reference for all journals of publisher *BioMed Central*.

In either the editorials or cases, the editors-in-chiefs were most concerned with salami-slicing/overlapping publication, followed by duplication. When combined, these two aspects of self-plagiarism accounted for about 70% of the total mentions. Of the four facets, only problematic manuscripts with salami-slicing/overlapping were a cause of consensus concern for editors of both editorials and COPE cases. Notably, only one of the 13 editorials between 2014 and 2015 made no mention of the term "salami-slicing/overlapping publication", and for COPE cases, only two of 14 cases between 2011 and 2015 failed to mention "salami-slicing/overlapping publication". It is clearly the type of self-plagiarism that has received the most attention recently.

Analysis of the norms of self-plagiarism

With regard to self-plagiarism norms, the editors-in-chief focused mostly on copyright infringements and guidelines, which were mentioned in 34 editorials and 20 cases. Furthermore, 16 of the 57 editorials and 33 of the 75 COPE cases covered the topic of the COPE guidelines; the high number of COPE cases that covered the topic is a logical finding because these cases were from the COPE. The quantitative analysis results demonstrated that self-plagiarism norms were mentioned for a total of 397 times (Table 4). In the editorial samples, the editors-in-chief were most concerned about copyright concerns, followed by author guides. Journal publishing involves a variety of copyright license agreement issues. If the author transfers their copyright to the journal, then self-plagiarism can occur and is likely to directly infringe on the rights of the journal publisher. Authors should not think that reuse of their own published prior article is as innocuous as using their unpublished work or ignore the reality that copyright may belong to the journal publisher. In the COPE cases, the COPE accounted for the highest percentage of mentions, followed by copyright concerns. Because COPE members can submit cases anonymously to COPE and obtain advice, it is not surprising that COPE is most often mentioned term in the norm facet.

Unsurprisingly, only sporadic editorials in the early years mentioned COPE or adopted COPE guidelines. However, by 2015, four of the five editorials mentioned COPE in the text or reference. It is apparent that because the problem of self-plagiarism is highly complicated, various advice, guides, and shared information from the COPE forum or cases have become increasingly crucial. Notably, of the four journals, only the *Journal of The American Association of Nurse Practitioners* is a member of COPE. This indicates that even if a certain journal does not join COPE, it is still influenced by COPE.

Table 4 Statistical analysis of mentions of self-plagiarism norm

Norm	Editorial (%)	Case (%)	Total (%)
author guide, guideline	98 (34.51)	14 (12.39)	112 (28.21)
copyright	158 (55.63)	31 (27.43)	189 (47.61)
COPE	28 (9.86)	68 (60.18)	96 (24.18)
	284	113	397

Analysis of the remedies for self-plagiarism

Regarding self-plagiarism remedies, the editors-in-chief were most concerned with rejecting self-plagiarized articles, which was mentioned in 27 editorials and 22 cases. In addition, requesting authors to rewrite self-plagiarized sections by returning the articles during the review process was mentioned in 25 editorials. Retracting published articles as a solution to severe self-plagiarism was mentioned in 26 cases. Four of the five editorials covered the remedy of retracting were published in 2015, suggesting an increase in the occurrences of retractions. Among the 19 editorials mentioned about retraction, some directly alluded to Retraction Watch, a blog set up in August 2010 by Adam Marcus and Ivan Oransky to study retracted articles, indicating that this web blog had already become influential. Since 2010, a total of 10 articles on the blog have been dedicated to examining the problems of self-plagiarism. Retraction Watch was funded by the MacArthur Foundation in December 2014 with US$400,000 being awarded to manage the website and create a database for retracted documents. Funding was later continued by the Laura and John Arnold Foundation in August 2015 with US$300,000 being provided to the parent company of the website, The Center For Scientific Integrity, and then by the Helmsley Trust in November 2015 with US$130,000. Currently, in addition to the two blog founders, a full-time researcher were recruited to operate the website, which presently has more than 11,500 subscribers and over 20 million page views and thus has contributed to the increase in attention to topics related to retracted articles.

The statistical analysis results illustrated that self-plagiarism was mentioned for a total of 364 times (Table 5). In the editorials, editors-in-chief paid the most attention to the remedy of rejection, followed by revising and rewriting. In the cases, retraction was the most frequently discussed remedy, followed by rejection.

It can be seen from this result that the main differences lie in editing time and procedure. The main solution that editors adopt to deal with self-plagiarism during the review process is rejection, but extracting problematic articles after they have been published may be more troublesome. Therefore, this matter must be addressed for COPE cases to make a public example for other journal editors. One prominent COPE case was reported in 2011; a reader reported to the editor of *Journal A* that two articles had been retracted in another journal by the author because the author was involved in academic misconduct. Moreover, some of the problematic parts were duplicated in other papers and published in *Journal A*. In the end, of course, all relevant articles were retracted. In recent years, an increasing number of problematic articles have been retracted. Even when other relevant articles have appropriately and transparently reused information such as text, data, and tables, editors must still pay attention to whether problematic articles must be addressed through bundle retraction.

Table 5 Statistical analysis of mentions for self-plagiarism remedy

Remedy	Editorial (%)	Case (%)	Total (%)
revise	50 (26.74)	25 (14.12)	75 (20.60)
withdraw	23 (12.30)	28 (15.82)	51 (14.01)
retract	44 (23.53)	84 (47.46)	128 (35.16)
reject	70 (37.43)	40 (22.60)	110 (30.22)
	187	177	364

Conclusions

To explore the topic of self-plagiarism, 57 editorials published in international journals in 1990–2015 and 75 cases reported to COPE by journal editors-in-chief in 1997–2015 were analyzed using a content analysis approach. This was performed to understand the perceptions of editors-in-chiefs regarding self-plagiarism and related topics that concerned them the most. The analysis results indicated that the concept of self-plagiarism can be divided into four facets: self-plagiarism identification, self-plagiarism types, self-plagiarism norms, self-plagiarism remedies. Regarding self-plagiarism identification, editors-in-chief paid particular attention to how to assist editors and reviewers identify self-plagiarism through existing or expected detection programs. An exploration of the COPE cases indicated that editors-in-chief were mostly concerned with self-plagiarism committed through the use of foreign languages. For self-plagiarism types, editors-in-chief discussed the problem of salami-slicing/overlapping publication most frequently in both the editorials and the case samples. In addition, the type of reusing text, tables, figures, data, or ideas has received increased attention over the recent years. The analysis results of self-plagiarism norms demonstrated that editors-in-chief were strongly focused on the topic of copyright infringement, whereas the analysis results of self-plagiarism remedies suggested that retracting published articles was the major concern and has recently received increased attention.

The results of this study can be used as a framework for further empirical studies on self-plagiarism and serve as a reference for academic journal editors or publishers for handling self-plagiarism cases. This study suggested that future studies be conducted on a larger scale and be focused on examining submission guidelines in different domains concerning self-plagiarism behaviors because each domain has a distinctive academic culture and thus may lead to differences in self-plagiarism perceptions. Geographical region and national differences are also worth exploring because academia is rooted in society and different regions have cultural contexts that may affect author self-plagiarism behavior. Furthermore, journal editors-in-chief in different domains are also worth exploring to understand their perceptions of self-plagiarism identification, types, norms, and remedies.

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Appendix 1: List of editorials containing self-plagiarism-related articles

Journal title	Publish year	Vol. no.
Archives of Disease in Childhood	1990	65:12
Journal of Obstetric, Gynecologic and Neonatal Nursing	2003	32
Nursing Outlook	2004	52
Pakistan Journal of Medical Sciences	2005	21:3
AU Journal of Technology[a]	2006	10:2
Australasian Physics & Engineering Sciences in Medicine	2007	30:4
Canadian Journal of Cardiology	2007	23:2
Canadian Journal of Nursing Research	2008	40:2

Journal title	Publish year	Vol. no.
International Journal of Nursing Studies	2008	45:9
Journal of Medical Toxicology	2008	4:2
Journal of Tehran University Heart Center	2008	3:1
Pramana—Journal of Physics[a]	2008	70:5
Research in Nursing & Health	2008	31:4
Sadhana[a]	2008	33:2
American Journal of Roentgenology	2009	192:4
Journal of Molecular Medicine	2009	87:1
Solar Physics[a]	2009	260:1
The Lancet	2009	374:9691
European Journal of Cancer Care	2010	19:3
Journal of Nepal Paediatric Society	2010	30:2
Library & Archival Security[a]	2010	23:2
Canadian Association of Radiologists Journal	2011	62:3
International Urogynecology Journal	2011	22:8
Journal of General Internal Medicine	2011	16:1
Journal of the Association of Nurses in AIDS Care	2011	22:3
Oncologist	2011	16:10
ACS Nano[a]	2012	6:1
American Journal of Roentgenology	2012	199:4
European Journal of Clinical Investigation	2012	42:3
IEEE Robotics and Automation Magazine[a]	2012	19:4
Vaccine	2012	30:50
American Journal of Roentgenology	2013	200:2
American Journal of Roentgenology	2013	201:5
Annals of Biomedical Engineering	2013	41:1
Bosnian Journal of Basic Medical Sciences	2013	13:3
Brazilian Oral Research	2013	27:6
Pramana – Journal of Physics[a]	2013	81:1
Journal of the American Society for Information Science and Technology[a]	2013	64:5
Journal of The American Society for Mass Spectrometry[a]	2013	24:7
Journal of Wildlife Management[a]	2013	77:8
Knee Surgery, Sports Traumatology, Arthroscopy	2013	21:4
Research in Nursing & Health	2013	36:2
Research in Nursing & Health	2013	36:3
Research Policy[a]	2013	42:5
Advances in Health Sciences Education	*2014*	*19:1*
Applications in Plant Sciences[a]	*2014*	*2:7*
BMC Medicine	*2014*	*12*
Human Resource Development Review[a]	*2014*	*13:1*
Journal of Clinical Nursing	*2014*	*23:1–2*
New Zealand Journal of Medical Laboratory Science	*2014*	*68:1*
Nursing Research	*2014*	*63:1*
Online Brazilian Journal of Nursing	*2014*	*13:2*
American Journal of Neuroradiology	*2015*	*36:6*
Journal of Hydrometeorology[a]	*2015*	–

Journal title	Publish year	Vol. no.
International Journal of Occupational and Environmental Medicine	*2015*	*6:1*
Journal of The American Association of Nurse Practitioners	*2015*	*27:2*
Journal of Wildlife Management[a]	*2015*	*79:3*

[a]Non-medical discipline journals

Appendix 2: List of self-plagiarism issues covered by the COPE cases

COPE case #	Case title	Self-plagiarism	Overlapping publication	Redundant publication
15-16	Profusion of copied text passages	✓		
15-14	Duplicate publication and removal of article			✓
14-10	Possible self-plagiarism and/or prior publication	✓		✓
13-11	A case of salami slicing		✓	
12-30	Retraction of the first article in the case of duplicate publication			✓
12-27	Submitted paper already published elsewhere		✓	✓
12-21	A case of duplicate publication			✓
12-17	Duplication of data			✓
11-23	Possible overlapping publications/data			✓
11-21	Duplicate publication in possibly four papers			✓
11-20	Duplicate publication allegation			✓
11-18	Retraction or correction?			✓
11-17	Self-plagiarism of review article	✓		
11-14	Is this previous publication?			✓
10-21	Dual publication			✓
10-18	Self-plagiarism?	✓		
10-16	Concerns over research by an author in numerous, separate publications			✓
10-14	Supervisor publishes PhD students work			✓
10-01	Case of duplicate publication detected after 9 years			✓
09-21	Self plagiarism	✓		
09-20	Alleged unauthorized use of data and possible dual publication			✓
09-07	Duplicate publication or salami publication?		✓	✓
09-06	Duplicate publication			✓
09-03	Multiple publication of research			✓
08-29	A case of duplicate publication?		✓	
08-19	Simultaneous publication			✓
08-11	Clear case of duplicate publication?			✓
08-05	Retrospective trial registration		✓	

COPE case #	Case title	Self-plagiarism	Overlapping publication	Redundant publication
07-42	Duplicate publication in a non-English language journal			✓
07-28	Inadvertent discovery of salami submission		✓	
07-27	Author dispute over internal report		✓	
07-11	Plagiarism case			✓
07-09	Duplicate publication?			✓
06-28	Possible duplicate publication			✓
06-20	Duplicate publication			✓
06-02	Duplicate publication			✓
05-23	Duplicate publication			✓
05-15	Allegation of fraudulent publication			✓
05-07	Salami publication		✓	
05-01	Dual publication			✓
04-29	Redundant publication			✓
04-06	Attempts to draw attention to potential duplicate publication			✓
04-05	Dual publication and attempted retraction by the author			✓
03-09	Potential duplicate publication			✓
03-08	Is it duplicate publication when the first study is referenced in the second paper?			✓
02-14	Dual publication			✓
02-03	Duplicate submission to two journals and previous duplicate publication uncovered			✓
02-02	Duplicate publication		✓	
01-33	Redundant publication and a question of authorship			✓
01-27	Query triplicate publication?			✓
01-25	Duplicate publication		✓	
01-20	The single authored, unbelievable, randomised controlled trial			✓
01-18	Duplicate publication		✓	
01-15	Duplicate submission, overlap of papers, and a referenced paper that was not in press		✓	
01-13	Duplicate publication			✓
01-12	Attempted redundant publication		✓	
01-11	Duplicate publication			✓
01-10	Redundant publication			✓
00-09	The study that may or may not already have been published		✓	
00-03	Editorial compliance with duplicate publication			✓
99-20	Dual publication may be necessary in some situations		✓	
99-06	Yet another case of duplicate publication			✓
98-32	Redundant publication by an editorial board member		✓	
98-28	Redundant publication			✓

COPE case #	Case title	Self-plagiarism	Overlapping publication	Redundant publication
98-21	Duplicate publication and now fraud?			✓
98-19	The double review		✓	✓
98-18	Triplicate publication with possibly different data in each		✓	✓
98-15	Questions of authorship, duplicate publication and copyright			✓
98-12	Possible duplicate publication?		✓	✓
98-08	Redundant publication?		✓	✓
98-04	Redundant publication			✓
98-01	Blatant example of duplicate publication?			✓
97-19	The tortuous tale of a paper, a letter and an editorial			✓
97-06	Attempted redundant publication?		✓	
97-03	Disagreement between a reviewer and an author		✓	

References

American Psychological Association. (2010). *Publication manual of the american psychological association* (6th ed.). Washington, DC: American Psychological Association.

Anderson, M. S., & Steneck, N. H. (2011). The problem of plagiarism. *Urologic Oncology: Seminars and Original Investigations, 29*(1), 90–94. https://doi.org/10.1016/j.urolonc.2010.09.013.

Andreescu, L. (2013). Self-plagiarism in academic publishing: The anatomy of a misnomer. *Science and Engineering Ethics, 19*(3), 775–797. https://doi.org/10.1007/s11948-012-9416-1.

Australian Code for the Responsible Conduct of Research. (2018). Retrieved from https://www.nhmrc.gov.au/about-us/publications/australian-code-responsible-conduct-research-2018.

Babalola, O., Grant-Kels, J. M., & Parish, L. C. (2012). Ethical dilemmas in journal publication. *Clinics in Dermatology, 30*(2), 231–236. https://doi.org/10.1016/j.clindermatol.2011.06.013.

Berlin, L. (2009). Plagiarism, salami slicing, and Lobachevsky. *Skeletal Radiology, 38*(1), 1–4. https://doi.org/10.1007/s00256-008-0599-0.

Berquist, T. H. (2013). Self-plagiarism: A growing problem in biomedical publication! *American Journal of Roentgenology, 200*(2), 237. https://doi.org/10.2214/ajr.12.10327.

BioMed Central. (2014a). *Editorial policies: Text recycling*. Retrieved from https://www.biomedcentral.com/getpublished/editorial-policies#text+recycling.

BioMed Central. (2014b). *How to deal with text recycling*. Retrieved from http://media.biomedcentral.com/content/editorial/BMC-text-recycling-editorial_guidelines.pdf.

Bird, S. (2002). Self-plagiarism and dual and redundant publications: What is the problem? *Science and Engineering Ethics, 8*(4), 543–544. https://doi.org/10.1007/s11948-002-0007-4.

Bretag, T., & Carapiet, S. (2007). A preliminary study to identify the extent of self-plagiarism in Australian academic research. *Plagiary: Cross-Disciplinary Studies in Plagiarism, Fabrication, and Falsification, 2,* 92–103.

Broome, M. E. (2004). Self-plagiarism: Oxymoron, fair use, or scientific misconduct? *Nursing Outlook, 52,* 273–274.

Chrousos, G. P., Kalantaridou, S. N., Margioris, A. N., & Gravanis, A. (2012). The 'self-plagiarism' oxymoron: Can one steal from oneself? [editorial]. *European Journal of Clinical Investigation, 42*(3), 231–232. https://doi.org/10.1111/j.1365-2362.2012.02645.x.

Code of Conduct for Scientists - Revised Version. (2013). Science Council of Japan. Retrieved from http://www.scj.go.jp/en/report/Code_of_Conduct_for_Scientists-Revised_version.pdf.

Code of Practice for Research: Promoting good practice and preventing misconduct. (2009). UK Research Integrity Office. Retrieved from http://www.ukrio.org/wp-content/uploads/UKRIO-Code-of-Practice-for-Research.pdf.

Collberg, C., & Kobourov, S. (2005). Self-plagiarism in computer science. *Communications of the ACM, 48*(4), 88–94.

Collberg, C., Kobourov, S., Louie, J., & Slattery, T. (2003). SPlaT: A system for self-plagiarism detection. *Paper presented at the IADIS international conference WWW/INTERNET Algarve, Portugal*.

Committee on Publication Ethics. (2013). Text recycling guidelines. Retrieved December 30, 2013, from http://publicationethics.org/text-recycling-guidelines.

Cronin, B. (2013). Self-plagiarism: An odious oxymoron. *Journal of the American Society for Information Science and Technology, 64*(5), 873. https://doi.org/10.1002/asi.22966.

Dellavalle, R. P., Banks, M. A., & Ellis, J. I. (2007). Frequently asked questions regarding self-plagiarism: How to avoid recycling fraud. *Journal of the American Academy of Dermatology, 57*(3), 527. https://doi.org/10.1016/j.jaad.2007.05.018.

European Science Foundation. (2017). *The European code of conduct for research integrity*. Retrieved from https://www.allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf.

García-Romero, A., & Estrada-Lorenzo, J. (2014). A bibliometric analysis of plagiarism and self-plagiarism through Déjà vu. *Scientometrics, 101*(1), 381–396. https://doi.org/10.1007/s11192-014-1387-3.

Green, L. (2005). Reviewing the scourge of self-plagiarism. *M/C Journal, 8*(5). Retrieved from http://journal.media-culture.org.au/0510/07-green.php.

Guidelines for the Conduct of Research in the Intramural Research Program at NIH. (2016). National Institutes of Health. Retrieved from https://oir.nih.gov/sites/default/files/uploads/sourcebook/documents/ethical_conduct/guidelines-conduct_research.pdf.

Halupa, C., & Bolliger, D. (2013). Faculty perceptions of student self plagiarism: An exploratory multi-university study. *Journal of Academic Ethics, 11*(4), 297–310. https://doi.org/10.1007/s10805-013-9195-6.

Halupa, C., & Bolliger, D. (2015). Student perceptions of self-plagiarism: A multi-university exploratory study. *Journal of Academic Ethics, 13*(1), 91–105. https://doi.org/10.1007/s10805-015-9228-4.

Halupa, C., Breitenbach, E., & Anast, A. (2016). A Self-plagiarism intervention for doctoral students: A qualitative pilot study. *Journal of Academic Ethics, 14*(3), 175–189. https://doi.org/10.1007/s10805-016-9262-x.

Holsti, O. R. (1969). *Content analysis for the social sciences and humanities*. Reading, MA: Addison-Wesley.

Horbach, S. P. J. M. S., & Halffman, W. W. (2019). The extent and causes of academic text recycling or 'self-plagiarism'. *Research Policy, 48*(2), 492–502. https://doi.org/10.1016/j.respol.2017.09.004.

International Committee of Medical Journal Editors. (2016). *Overlapping publications.* Retrieved from http://www.icmje.org/recommendations/browse/publishing-and-editorial-issues/overlapping-publications.html.

Kokol, P., Završnik, J., Železnik, D., & Vošner, H. B. (2016). Creating a self-plagiarism research topic typology through bibliometric visualisation. *Journal of Academic Ethics, 14*(3), 221–230. https://doi.org/10.1007/s10805-016-9258-6.

Lancet. (2009). Self-plagiarism: Unintentional, harmless, or fraud? [editorial]. *Lancet, 374*(9691), 664. https://doi.org/10.1016/s0140-6736(09)61536-1.

Loui, M. C. (2002). Seven ways to plagiarize: Handling real allegations of research misconduct. *Science and Engineering Ethics, 8,* 2002.

Martin, B. R. (2013). Whither research integrity? Plagiarism, self-plagiarism and coercive citation in an age of research assessment. *Research Policy, 42*(5), 1005–1014. https://doi.org/10.1016/j.respol.2013.03.011.

Ministry of Science and Technology. (2017). *Academic ethics guidelines for researchers by the ministry of science and technology*. Retrieved from https://www.most.gov.tw/most/attachments/3d81520a-b403-4603-b8ef-b191c38ce80c?.

Neville, C. W. (2005). Beware the consequences of citing self-plagiarism. *Communications of the ACM, 48*(6), 13.

Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.

Pierson, C. A. (2015). Salami slicing: How thin is the slice? *Journal of the American Association of Nurse Practitioners, 27*(2), 65.

Plagiarism.org., glossary. Retrieved December 30, 2013, from http://www.plagiarism.org/plagiarism-101/glossary.

Roig, M. (2015). *Avoiding plagiarism, self-plagiarism, and other questionable writing practices: A guide to ethical writing.* Retrieved from https://bsc.ua.edu/wp-content/uploads/2017/07/plagiarism-1.pdf.

Rosenzweig, M., & Schnitzer, A. E. (2013). Self-plagiarism: Perspectives for librarians. *College and Research Libraries News, 74*(9), 492–494.

Rosing, C. K., & Cury, A. A. D. (2013). Self-plagiarism in scientific journals: An emerging discussion [editorial material]. *Brazilian Oral Research, 27*(6), 451–452.

Samuelson, P. (1994). Self-plagiarism or fair use? *Communications of the ACM, 37*(8), 2125.

Scanlon, P. M. (2007). Song from myself: An anatomy of self-plagiarism. *Plagiary, 2,* 1–10.

Sun, Y. C., & Yang, F. Y. (2015). Uncovering published authors' text-borrowing practices: Paraphrasing strategies, sources, and self-plagiarism. *Journal of English for Academic Purposes, 20,* 224–236. https://doi.org/10.1016/j.jeap.2015.05.003.

Text Recycling. Committee on publication ethics. Retrieved from http://publicationethics.org/files/u661/Text%20recycling_notes%20from%20Forum%20meeting_final.pdf.

Wager, E., Barbour, V., Yentis, S., & Kleinert, S. (2009). Retraction guidelines. Retrieved December 29, 2013, from http://publicationethics.org/files/retraction%20guidelines.pdf.

Zhang, Y., & Jia, X. (2012). A survey on the use of CrossCheck for detecting plagiarism in journal articles. *Learned Publishing, 25*(4), 292–307. https://doi.org/10.1087/20120408.