

CASE ANALYSIS

Case analyses of fraudulent citation in scientific and technical journals and suggestions on editing work

Lyuxiang Deng*

Editorial Office of Transportation Safety and Environment, Central South University Press, Changsha 410083, Hunan Province, China

ABSTRACT

This paper analyzes the fraudulent citation cases, helps the editorial department to judge this improper citation behavior, and gives some specific suggestions for editing work. Taking the fraudulent citation of two Science Citation Index (SCI) English journals in China as examples, this paper analyzes the cases in detail, comments on the measures taken by the editorial department, discusses the responsibility of stakeholders involved in the academic misconduct of fraudulent citation from the perspective of responsibility ethics, and finally gives suggestions for the editorial department and the individual editor. The implementation of fraudulent citation is hidden, and it is difficult for the editorial department to find it, so it is hard to collect relevant cases. After the occurrence of fraudulent citation cases, the editorial department will deal with them according to the degree of damage to scientific journals, and usually keep a cautious attitude and try to deal with them internally. Reference citation belongs to the author's "private land", and citation motivation is complicated. Incentive measures, awards, and other interest factors lead to frequent academic misconduct. Therefore, the prevention and governance of fraudulent citation problems need authors, journals, and editors to make joint efforts to fulfill their respective responsibilities.

Key words: scientific journal, fraudulent citation, case analysis, ethical responsibility, editing work

The mid-term evaluation of the "Double First-class" construction of the Ministry of Education is coming soon.^[1] The Essential Science Indicators (ESI) database has become an important means of evaluating the construction of disciplines in universities.^[2-4] The ESI index,^[5,6] which consists of citation ranking, highly cited papers, citation analyses, and commentary reports, can assess the citation status of papers published by a particular institution. The issue of improving the citation frequency of papers has been put on the agenda as a problem to be "conquered", and the management strategy of some universities has changed accordingly,

"paying equal attention to both papers and citation". The stimulation of incentive policies and the temptation of awards have made the paper citation issue, which had been neglected and ignored, into a hot topic. At present, the popular topic of scholars' communication has shifted its focus to issues closely related to literature citation, such as analyzing the reward policy of paper citations and discussing how to improve the citation frequency of scholars' own papers. *Science and Technology Daily* pointed out that many universities have adopted various strategies to improve ESI rankings in order to gain a bright academic report card. Many universities have set up professional teams to find ways to improve their ESI ranking. First, they are seeking "strategic support" from surrounding disciplines and encouraging researchers to submit their papers to appropriate ESI journals. Second, overseas visits with missions are given priority to overseas visits by potential discipline personnel, requiring visitors to have completed a certain number of ESI papers. Third is cooperation with more high-level research institutions. ESI statistics ignore author rankings, and collaborators have the same ESI contribution ranking as the first author. Cooperating


*Corresponding Author:

Lyuxiang Deng, Editorial Office of Transportation Safety and Environment, Central South University Press, No.932, South Lushan Road, Yuelu District, Changsha 410083, Hunan Province, China. Email: lxdeng@163.com; <https://orcid.org/0000-0001-8939-8729>

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with institutions with the top ESI ranking is equivalent to riding coattails.^[7] Therefore, it is important to carefully study the evaluation system algorithm and improve it according to the shortcomings of the indicators. However, it is a phenomenon of putting the cart before the horse if we give up on trying to improve the quality of academic papers, that is, give up on the improvement of real level and ability, and only target increasing the number of citations to "brush" a paper's quality. That is being kidnapped by the rank of 1% or 0.1% in ESI and doing it just for the indicators. This is not only a manifestation of scientists' academic ethical anomie, which damages the image of scientists and universities in the eyes of the people, but also a manifestation of various stakeholders' desire for quick success and instant benefits in real life, which is tantamount to uprooting of seedlings to promote growth. This kind of behavior is not desirable.

Fraudulent citation, as proposed in this paper, is a kind of improper citation behavior derived from this background. It is defined as the anomic citation behavior in which the author deliberately includes false citations in the paper with the aim of seeking improper benefits for himself or others, resulting in misleading recognition and evaluation by the users of the paper.^[8] Comparing fraudulent citation with other improper citation problems mentioned in the existing literature (such as Chang^[9] and Lyu^[10]), the common point is that these improper citation behaviors all violate the principle of academic integrity, and their manifestations overlap. The difference lies in the fact that fraudulent citation is a development of the times, and fraudulent citation brings real economic benefits to stakeholders, as opposed to other academic goals, such as improving academic popularity.

The occurrence of fraudulent citation is essentially the manifestation of a lack of ethical responsibility toward stakeholders. In modern science and technology, responsibility is an unavoidable topic and an important ethical principle. Responsibility ethics is becoming more and more important in modern science and technology and has become the core category of contemporary applied ethics. It can be said that an ethic of responsibility is the most important, extensive, and profound ethical principle in modern society. The subject of responsibility is the core of the concept of responsibility ethics, "because the subject of responsibility ethics is both the undertaker and the implementor of responsibility, the moral quality and responsibility ability of the subject of responsibility ethics are directly related to the degree of responsibility realization and the level of responsibility performance".^[11]

This paper tries to analyze two recent cases of fraudulent citation; discusses the measures taken by the editorial

department in detail; introduces the concept of responsibility ethics; analyzes the responsibility ethics of stakeholders such as authors, editors, and editorial departments of academic journals; and gives specific work suggestions for editorial departments and editors of journals.

CASE DESCRIPTIONS

To avoid causing unnecessary disputes, in this study, some information about the journals involved was hidden (*e.g.*, journal name, name of the paper, paper properties and research direction, information related to the author, *etc.*), with only some key information retained (*e.g.*, journal publication period, publication form, the nature of the problem, the number of references, the chronology of the problem, *etc.*), in order to facilitate discussion.

Case 1

Some papers from a research group are quoted in batches in English Science Citation Index (SCI) monthly *Journal A* (subscription journal). In two issues of papers published at the end of 2017, among the more than 70 references cited in the two papers (both research papers) of *Author A* published in *Journal A*, there are as many as 30 references which the author or corresponding author is *Author A* himself or a member of his research group. In a certain issue in the first half of 2019, 40% of the references of a paper (research paper) published by *Author B* are articles by his research group or himself or his close colleagues.

Case 2

Bimonthly English *Journal B* (open access journal) has two improper citation stackings. First, 8 papers (all research papers, with different authors) published in 2016–2019 have intensively cited the papers of *Author C* (not the author of the 8 papers), with the number of cited articles above 80. Second, 4 of the 8 papers cited papers published in *Journal C* in 2016–2017 (the years when the journal's 2018 impact factor was calculated validly), and one of them cited 25 papers published in *Journal C*. These citations greatly increased the impact factor for *Journal C* in 2018.

CASE INVESTIGATION, QUALITATIVE ANALYSES, AND HANDLING MEASURES OF THE EDITORIAL DEPARTMENT

Case investigation

The information relating to the above two cases has been verified. As to whether this behavior can be confirmed as fraudulent citation behavior, I have conducted communication and practical research with the editorial departments involved.

For *Journal A*, fraudulent citation behavior cannot be judged simply by whether papers are cited in bulk. In this regard, the three papers involved were compared with the references that may be suspected of fraudulent citation, and the authors were invited to the editorial department to discuss the issue. It was determined that a large part of the citations was unnecessary and irrelevant to the article. Therefore, such referencing was considered to be a case of fraudulent referencing.

In June 2019, Clarivate Analytics published its 2018 Journal Citation Reports (JCR). JCR routinely warns journals each year not to publish impact factors.^[12] The suppression by these journals is mostly due to improper citation, such as self-citation or cross-citation. The suppression list includes *Journals B* and *C*, but *Journal A* is not included. The editorial board of *Journal B* also details the forms of improper citation of paper references in *Journal B*. Therefore, *Journals B* and *C* are typical fraudulent citation cases.

Qualitative analyses of the case

Both cases undoubtedly fall under the category of academic misconduct. The newly published *Code of Academic Publishing—The Definition of Academic Misconduct in Journals* (CY/T 174—2019) lists academic misconduct such as plagiarism, fabrication, falsification, inappropriate authorship, multiple submissions, overlapping publications, and others. However, it does not give a detailed description of the academic misconduct for references, including only "adding unreferenced references to the references" as another kind of academic misconduct, but this obviously does not cover all kinds of improper referencing. Correct referencing not only reflects the rigor and scientificity of the paper and scientific research but also reflects the author's respect for the research achievements of their predecessors and helps readers to better understand the content of the article. According to my previous research results^[5] and the above case statement, the two cases are typical examples of fraudulent citation by the author in reference citation. In these two cases, no matter the reasons for the authors' citation of these documents, there is obvious academic moral anomie.

Correct referencing plays an important role in the process of academic communication and development. Improper citing of references is also part of academic misconduct. Although it seems trivial, whether a reference is correctly cited reflects the scholar's attitude toward research and morality.

Handling measures of the editorial departments

The two journals involved in the two cases obtained different results in the JCR, and the subsequent treatment measures were also different.

Journal A: Consider that several articles in Case 1 had already been published and the JCR had not paid attention to this matter. Therefore, the editorial department of *Journal A* took moderate measures, interviewing *Authors A* and *B* to get a deeper understanding of their motivations for implementing this kind of mass citation of their own articles or the research group's articles, and giving a verbal warning to the authors. As the authors still had some articles being considered for publication, the editorial department of *Journal A* required authors to re-read the articles and related citations and revise any possible improper citations. In addition, in the internal meeting of the editorial department, *Authors A* and *B* were listed as the focus of attention. If such a phenomenon occurred again, the paper would be rejected at the first stage.

Journal B: Eight papers published in Case 2 quoted a large number of papers from a certain author (*Author C*) and a certain journal (*Journal C*), and JCR suppressed them as a "Donor Journal" and did not publish their impact factors in 2018. In fact, in recent years, some journals have taken some artificial measures to interfere with the calculation results, believing that they know the formula of the impact factor. Most of their colleagues in editorial circles have turned up their noses at such methods, and JCR will also warn against such journals. But *Journal B* is a special case. I have learned from the editorial department that the editorial department does not know the origin of this problem, and this behavior of quoting a large number of authors is completely spontaneous behavior, namely, a so-called "quoting alliance". This led to the suppression of the journal and the editorial department considered it to be purely "implicated". Consequently, the editorial department took cautious measures to deal with this and reserved the right to deal with it seriously in the following two respects: First, they wrote editorial and published expressions of concern in the journal, informing readers of the editorial department's concerns and attitude toward the issue of academic integrity, indicating that the editorial department would continue to monitor the issue of academic misconduct in reference. Second, they would investigate this matter, contact the author, try to determine the relevant information in detail, and carry out a specific analysis for different papers. After the investigation, the editorial department would implement further treatment measures.

Although these two cases can be characterized as academic misconduct, the editorial department and related editors showed a relatively cautious attitude toward handling the cases, and the results were different. I think that such a cautious attitude is worth thinking about. In Case 1, although the case seems to have not caused "obvious" harm to *Journal A*, the harm to the journal has already been caused. For the fait accompli,

the editorial department needs to consider two aspects. One is how to minimize the loss, and the other is how to avoid similar problems next time. Considering the complexity of the process required to withdraw these articles (contacting the database, the administrative process, and then withdrawal of the manuscript) and other unpredictable future chain reactions (for example, the database may give a bad impression of the journal, *etc.*), the treatment by the editorial department of *Journal A* (that is, low-key treatment, closely monitoring the authors of the paper involved) is acceptable. With regard to Case 2, this incident will obviously have an impact on the academic reputation of the journal's long-term operation. At present, the editorial department of the journal seems to have no other better measures than those mentioned above. As is known to all, some journals are added and removed from the SCI database every year, and it is sometimes difficult for authors to know whether a journal is included in the SCI database in a certain year. It takes time to appraise the reputation of journals in the industry, and only journals with long-term stability and influence in the database can attract the attention of corresponding researchers. The negative impact of Case 2 on the journal can be reduced as long as the editorial department maintains the professionalism and standardization of the work and acts to prevent the recurrence of such academic misconduct resolutely and actively.

RESPONSIBILITY ETHICS OF ALL STAKEHOLDERS

From the perspective of responsibility ethics, this fraudulent citation case involves all stakeholders. The author, editor, and academic journal are the ethically responsible subjects in paper writing, paper screening, editing, processing, publishing, and paper dissemination, respectively. The publication of a paper is closely related to the author, editor, academic journal, *etc.*, and all stakeholders have their own responsibilities for fraudulent citation.

Ethical responsibilities of authors

As the author of the paper, the author should be the subject of the ethical responsibility of the paper, being mainly responsible for the content of the paper, for the readers, and for fairness and justice toward the academic community. For a long time, the references cited in academic papers have been the author's "private domain". The author is responsible for the content of the paper, and the author has the right and obligation to cite existing literature that is conducive to the writing of the paper. The author should know how to cite the references correctly,^[13] given by the standard of ethics and long-term academic training of scientific research workers. If the author is not self-disciplined, it is difficult for others to distinguish between appropriate references

for two reasons.

The author's motivation for quoting is complicated,^[14] and it is difficult to distinguish between the issue of arbitrariness of quoting and the intentional use of irrelevant (or wrong) quotations. However, it indicates a lack of the ethical responsibility on the author's part to try to use this as an excuse or opportunity for making an inauthentic quotation. As for the issue of reference citations, Ju *et al.*^[14] summarized the manipulation of journal citations and analyzed the influential factors of sci-tech literature. In the process of paper writing, reference citation is affected by many factors, such as the author's quoting habit and the influence of journal editors. Prabha^[15] studies the problem of arbitrariness of citation and thinks that less than 1/3 of references are cited out of necessity. For important research results in the early stage, the author is more inclined to cite the familiar and handy results. The problem of arbitrariness of citation has always existed, that is, the author has absolute autonomy over which paper can be cited or not. In fact, neither editors nor readers care about references that are not related to the main ideas or methods (such as formulas and algorithms) of the paper. It can also be understood as part of scientific research, but this cannot be a reason for an author deliberately citing literature for some other purposes. Once the citation of literature involves economic interests, it is fraudulent citation and academic misconduct.

It is indeed difficult to distinguish between citation of relevant papers by a research group and intentional citation of citation cliques (so-called cross-citation alliance), but intentional citation taking advantage of its indistinguishability is also a fraud and a manifestation of the author's lack of ethical responsibility. After long-term research, a research group has accumulated a large number of research results in a certain research direction. Subsequent researchers' reading, learning, and quoting of these results are the inheritance of previous research results and scientific research habits, which is worth encouraging and developing. When a research group produces a large number of talents and has multiple sub-topics or new research directions, the number and level of the members of the research group increases, and the study, work, and life of the members will be intertwined. These members form stakeholder groups that cite each other's work in published papers, which is a fact concealed from outsiders such as editors or readers. Often, the references in a paper are the papers by peers or papers that are closely related. Once the aforementioned stakeholders are anomic in terms of academic ethics, it can infiltrate funding applications, awards, excellence evaluations, *etc.* If it were not for the fact that the "number of paper citations" is one of the measures in teachers' year-end performance evaluations and the construction of disciplines in colleges and

universities, it would be difficult to attract any attention to such a small problem as referencing malpractice. For authors who should have high academic moral quality and strict self-requirements, an interest-driven citation alliance is obviously a manifestation of the moral anomie of the academic community.

Ethical responsibilities of editors

Editors are responsible for screening, editing, and publishing papers, they are thus the principle subjects of ethical responsibility when it comes to editing and publishing activities. Their responsibilities are mainly found in regard to such matters as responsibility to readers, responsibility for maintaining the normal development of journal editing, and responsibility for maintaining the healthy image of journal editors. In the process of editing the paper, editors pay more attention to whether the text expression of the paper conforms to the grammar and language habits, whether the use of variables and punctuation marks meet requirements, and whether the citation and formatting of references are consistent with the requirements of the editorial department or the tradition of the journal. They pay less attention to the text content, the logic of the context, the correlation between the reference and the cited content, *etc.* Of course, part of the reason is that the relevant professional knowledge of editors is insufficient to help them understand the content, for which they rely on reviewers. Another part of the reason is that traditional editing training and working habits do not require editors to care about content, but to pay more attention to form. The so-called "authors are responsible for their own work" is not only the embodiment of the author's responsibility, but also an excuse for editors. In fact, editors who have had long-term experience and training in editing and processing of papers in a certain field can distinguish whether there are problems such as improper formatting, a lack of content, and improper citation in the references of papers in that field. However, in these two cases, the editors did not notice the obviously centralized citations, which indicates a lack of responsibility on the editors' part.

Ethical responsibilities of sci-tech journals

Sci-tech periodicals are ethically responsible for the dissemination and sharing of scientific and technological achievements. According to statistics, 70% of the information of scientific research-related work completed by scientific researchers comes from sci-tech journals, while 90% of scientific research achievements are published through various sci-tech journals.^[16] Sci-tech periodicals play an important role in scientific research. For one thing, they play a supporting role in scientific research activities. Academic exchange activities, which mainly involve reading, spreading, and sharing sci-tech periodical papers, play a very important role in the study and life of researchers. For another

thing, sci-tech periodicals play a particular role in judging scientific research achievements. Scientific research papers need to be published in sci-tech journals. Publishing papers in academic journals is one of the main forms of scientific research achievements of scientific researchers, and the scientific research achievements of units or individuals can also be judged by this to a certain extent. Moreover, they play a certain role in the excavation and cultivation of scientific researchers. Scientific researchers and sci-tech journals are interdependent and mutually promoting. Scientific research achievements need to be published in sci-tech journals, and scientific research work depends on sci-tech journals to a certain extent for evaluation. It can be said that the younger the researchers are, the more dependent they are on sci-tech journals. Sci-tech journals need a large number of submissions for selection, and the treatment of articles and the selection of authors in top sci-tech journals affect the academic career of authors to some extent. It can be seen that sci-tech journals have natural responsibilities in the dissemination and evaluation of scientific and technological achievements, as well as guiding research directions, standardizing the research process, ensuring research quality, and serving social needs. Faced with the occurrence of the above cases, readers will first think that it is the responsibility of sci-tech journals. How do sci-tech journals screen papers? Why is their regulatory role not reflected? Obviously, sci-tech journals are lacking in the quality assurance and responsibility in serving the needs of society in response to such academic misconduct.

EDITING SUGGESTIONS

Suggestions about the working of editorial departments of academic journals

We should always prioritize the social benefits of sci-tech journal and strengthen the social responsibility of sci-tech periodical-related employees. As a form of publication, the sci-tech periodical is not only a material product but also a spiritual product, which has dual attributes and has to consider social and economic benefits. The social benefit of the sci-tech periodical is the social influence that the sci-tech periodical brings to society. Journal practitioners should have a correct understanding of the nature and function of sci-tech periodical. They should also resist and abandon any forms of bad publishing atmospheres and strengthen the social responsibility of sci-tech periodicals and periodical workers.

We should strengthen the pivotal position of sci-tech journals in the scientific research innovation system, strengthen the intervention of sci-tech journals in the prevention and treatment of academic misconduct, and further emphasize the professionalism and decision-

making support of journal editing. The sci-tech periodical is one of the important carriers of human thought and knowledge, playing an important role in recording, spreading, and accumulating the scientific and cultural knowledge produced in human production and social activities. It also plays an immeasurable role in promoting the development of national scientific and technological innovation. Sci-tech periodicals are an important part of the national scientific and technological innovation system. Their characteristics of continuity, timeliness, and innovation enable sci-tech periodicals to integrate all aspects of scientific research innovation. Therefore, sci-tech journals should not be satisfied with their current marginal status but should actively integrate themselves into the national scientific research innovation system and should strengthen their role in guiding, supervising, and serving, especially in assisting relevant departments to do a good job in the detection and definition of academic misconduct, peer punishment cases, and other features.

Attention should be paid to improving the standardization of the work process of the editorial department and establishing perfect regulations for the prevention and management of academic misconduct in order to ensure that there is evidence to rely on. First, existing misconduct detection software, such as Academic Misconduct Literature Detection System (AMLC) and CrossCheck, should be fully utilized to help identify academic misconduct. Second, we should establish and follow a strict three-reviewing and three-proofreading system, uphold a strict paper review system, control all aspects of manuscript processing, and establish layers of defense against academic misconduct. Finally, we should follow the international and domestic industry practices, formulate standard working document templates, and give corresponding explanations according to the characteristics of each journal, such as submission instructions, manuscript contracts, cover letter/submission statements, and copyright transfer agreements (*e.g.*, relevant academic misconduct cases, the ethical code to be followed by the author, moral responsibilities and obligations, and the journal's procedures for dealing with various types of academic misconduct).

Suggestions for journal editing

Efforts should be made to strengthen editors' training and ability to cope with the new challenges that are constantly emerging. The position of editor is that of a technical professional who is required to complete a job that ranges from soliciting manuscripts and peer reviews, to editing, proofreading, printing, and publishing. With the development of modern science and technology, editors also engage in more publicity and promotion of papers, attending and organizing professional academic conferences, mastering new media technology, and so

on. As the economy and the social environment have changed, academic misconduct has infiltrated all parts of the editor's job, requiring them to pay close attention to the new trends and changes in the editing industry, to take the initiative to acquire new knowledge and learn new technology, and to understand the latest academic misconduct-related content. When completing very detailed work, editors should always be strict about publishing security and discovering and dealing with possible academic misconduct problems as soon as possible.

Editors should pay attention to improving their own scientific research level, should become scholar-type editors, and should try their best to integrate themselves into academic circles. At present, with the advent of the information age and the explosion of information, editors need to conduct more professional filtering and selection in the face of masses of information, and society has an increasingly strong demand for scholar-type editors. Whether editors are engaged in editor-type scholar or scholar-type editor, they are required to have both solid editing professional skills and a certain level of scientific research knowledge. For sci-tech journals, they are required to select the right development direction and continuously improve their ability to determine the innovativeness of papers on the basis of their own knowledge and in combination with the aim and scope of the journal. In this way, the journal can effectively distinguish the content of original manuscripts and invited manuscripts, grasp each link in manuscript processing, construct layers of defense against academic misconduct, and easily assume the role of gatekeeper of journal quality. In addition, through long-term training in the editing process, editors can promote the quality of academic papers to develop toward a more scientific and higher-level direction from the perspective of exploring the citation paradigm of academic paper references.^[17]

Coordination between academic journal organizers, editorial departments and editors

In view of academic misconduct, such as fraudulent citation, the journal organizer and editorial department should formulate relevant rules and regulations so that editors "have laws to abide by" in their work. Editors should strictly follow relevant rules and regulations in their work to ensure that "they abide by the laws." In practice, zero tolerance of academic misconduct has long been the consensus in editorial circles, and most editorial departments of journals have formulated their own prevention and treatment measures for academic misconduct, but academic misconduct problems still continue to appear. I think that the reasons may be as follows. First, the system itself is difficult to implement or lacks operability. For example, fraudulent citation and other new improper citation behaviors are relatively

hidden, and there is a lack of simple discrimination methods. Second, the implementation cost of the system is higher than the cost of not implementing it. Because of the concealment of such academic misconduct, what an editor does or does not do has little to do with the possible future occurrence of this problem. In other words, the case described in this paper is less likely to be known to the outside world, so editors tend to ignore it in their daily work. Third, we ignore the process and focus only on results. As a result, when problems arise, we try to reverse them, instead of doing detailed and solid work to nip them in the bud. Consequently, only when journal organizers and editorial departments have noticed the problems existing in the implementation process of the relevant system and corrected them, and editors who are aware of the impact of such problems on academic journals and themselves, urge and supervise each other to improve together, can academic journals avoid academic misconduct like fraudulent citation.

CONCLUSION

This paper introduces two typical fraudulent citation cases, analyzes them in detail, and probes into the ethical responsibility of authors, editors, and academic journals. It can be expected that with the publication of a large number of papers and the continued advancement of the ESI evaluation system, academic misconduct will gradually attract attention from all parties, and academic misconduct related to paper citation may continue to appear. Only when authors and editors follow their own responsibility ethics, give full play to the key role of academic journals in the scientific research community, and abide by their responsibilities when facing possible academic misconduct can such academic misconduct be avoided as far as possible. In future research, we will study the external characteristics of fraudulent citation behavior and the arbitrariness of reference citation in order to help editors identify and analyze such improper citation behavior.

DECLARATIONS

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