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# Plagiarism in South African management journals: A follow-up study

Internationally, a rise in plagiarism by academics has been reported. The objective of the present study was to examine the extent of plagiarism in articles appearing in 19 South African management journals published in 2016 and to compare the findings to a study undertaken in 2015 using 2011 data from the same 19 journals. This study progresses the debate around academic ethics and academic integrity in the country – a topic, thus far, that has received little research attention. A total of 454 published articles were submitted through the similarity detection software Turnitin™. High and excessive similarity was identified and over 80% of submissions evidenced similarity in excess of 9%. University administrators, journal editors and publishers, and the South African Department of Higher Education and Training are alerted to this plagiarism that undermines the academic pursuit. This awareness is particularly important as faculty serve as role models to students. Measures should thus be taken to ensure that faculty provide sound role models as ethical researchers.

**Significance:**

- Plagiarism is an ongoing and increasing problem and is particularly concerning when faculty themselves plagiarise, as it impacts institutional integrity and culture, and negatively influences role modelling for students.
- The present study highlights the increase in plagiarism in the field of management and alerts other fields of academia to this problem.
- University administrators and journal editors and publishers are reminded about the roles they can play to address plagiarism.

## Introduction

While student plagiarism and academic dishonesty at universities are internationally recognised to be growing problems<sup>1,2</sup> and have been extensively examined<sup>3-5</sup>, plagiarism by faculty themselves has received relatively less attention in the academic literature<sup>6</sup>. Honig and Bedi<sup>7(p.101)</sup>, in this regard, believe that research into plagiarism by faculty is largely based on ‘anecdotal and speculative evidence’. Plagiarism by faculty is on the rise<sup>8</sup>; Luke and Kearins<sup>9</sup> suggest that while universities often have detailed policies dealing with student plagiarism, they are less adept at dealing with plagiarism by their own faculty.

The objective of this study was to examine the extent of similarity in articles (indicating plagiarism) appearing in South African management journals published in 2016 and to assess whether a reduction or an increase in such plagiarism has occurred since the last published study on the topic in which 2011 data were analysed.

Plagiarism in academic journals is also associated with a financial cost. The South African Department of Higher Education and Training (DHET)<sup>10</sup> has adopted a system whereby universities are compensated, financially, for research generated by their faculty as a way to encourage the production of original and innovative research. Horn<sup>11</sup> notes that such income contributes substantially to institutional funding. In turn, many universities allocate part of this funding to the faculties, departments and individual academics who produced the publications – a practice not considered to be the norm elsewhere in the world<sup>12</sup> and one that could potentially promote unethical authorship<sup>13</sup>. Accordingly, this paper also serves to alert universities to the need to ensure that the research output submitted to the DHET for subsidy, is, in fact, the original work of the given author/s.

## Literature review

### Plagiarism and ethics

The major sins of academic publishing include duplication of material, co-submission of manuscripts and plagiarism.<sup>14</sup> Academic publications that incorporate the work of others without attribution constitute a serious academic transgression.<sup>6</sup> However, plagiarism is a complicated concept in an environment in which researchers are expected to advance knowledge by building on the works of others.<sup>15</sup> Boisvert and Irwin<sup>16</sup> suggest that cultural differences also play a role in plagiarism, e.g. in some cultures, copying the work of ‘a master’ is a form of respect.

In essence, plagiarism is considered to be verbatim or near-verbatim copying of text<sup>16</sup>, submitting the work of another for credit and utilising words, ideas or data without acknowledgement<sup>17</sup>, using someone else’s intellectual product implying that it is original<sup>18</sup>, intentionally or unintentionally mistaking intellectual property of another for common knowledge, or intentionally or unintentionally citing work in a misleading way<sup>19</sup>. Andreescu<sup>20(p.779)</sup> notes that the core of plagiarism involves ‘the act of making one’s own that which rightfully belongs to another’. All definitions of plagiarism, in essence, point to the appropriation of the work of someone else as one’s own work.<sup>16</sup>

Plagiarism is a form of cheating and, therefore, can be considered to be unethical.<sup>21</sup> Integrity is at the heart of research<sup>22</sup> and plagiarism attacks the core value of academic integrity which is ‘part of the bigger picture of personal integrity’<sup>23(p.283)</sup>. Plagiarism also ‘strikes at the heart of academe’, eroding the value of academic research<sup>15(p.489)</sup> by

calling into question the value of such research<sup>15</sup> and distorting science<sup>18</sup>. Plagiarism is especially devastating as the value of research lies in its rigour, objectivity and integrity.<sup>15</sup>

Hansen et al.<sup>21(p.224)</sup> suggest that plagiarism by faculty, specifically, 'continues to be repressed as an uncomfortable truth' and that such plagiarism constitutes a 'substantial ethical problem'. In this regard, not enough attention is paid to plagiarism, to the peer review process and to academic authorial ethics.<sup>24</sup>

### **Plagiarism by faculty**

Concern about academic misconduct in the field of management has been noted in editorial comment in the prestigious *Academy of Management Journal*<sup>25</sup> and the *Academy of Management Review*<sup>26</sup>. Schminke<sup>26</sup> reports on a survey in which 16 former editors of top-tier management journals noted the ethical violations committed by academic authors. Such violations included the submission of manuscripts that contained work already published in other journals or the submission of multiple manuscripts that examined almost identical variables.

Bedeian et al.<sup>27</sup> collected data from faculty in 104 US business schools. They found questionable research practices that included data fabrication and falsification, plagiarism, inappropriate assigning of authorship and publishing the same data or results in multiple publications. Over 70% of their respondents reported being aware of colleagues who had plagiarised.

Bedeian et al.<sup>27</sup> report that research misconduct starts early in an academic career and is deeply rooted, while Schminke<sup>26</sup> adds that experienced authors contribute to the rise in ethical misconduct with most ethical violations not appearing to be cases committed by junior scholars who are unaware of the rules of academic publishing. Buckeridge and Watts<sup>17</sup> note how the academic culture of 'publish or perish' promotes competition, not cooperation, especially amongst emerging researchers.

Honig and Bedi<sup>7</sup> note the prevalence of plagiarism in research emanating from developing countries and Buckeridge and Watts<sup>17</sup> go on to state that intellectual theft is a hallmark in all 20th-century developing economies undergoing rapid industrialisation because of the absence of regulatory infrastructure and government acceptance of short-termism and practices where 'the end justifies the means'. It is only when societies modernise that the need to conform to international rules begins to apply and that novel and innovative ideas, crucial to competition, are rewarded.

Research has grown steadily in geographical areas that, until recently, had produced little research.<sup>28</sup> In this regard, the rules of research and publication are not embedded in the academic culture, leading to a proliferation of unsound research practices. Similarly, while capacity has been developed in African and South African research programmes over the last decade, largely as a result of the involvement of international research bodies, the advancement of research integrity has not developed simultaneously as a cultural norm.<sup>11</sup> The social value of research is that it is reliable and trustworthy and, accordingly, those who fund, manage, develop and implement research studies must promote ethical research practices and scientific integrity.<sup>11</sup>

### **Institutional factors that promote plagiarism**

The factors that contribute to the increase in academic plagiarism are numerous. At the pinnacle, the quest to develop a university reputation, closely linked to research output, can be considered to be a factor that filters down to faculty and promotes cheating and plagiarism through pressure on faculty to publish. Woodiwiss<sup>29(p.421)</sup> notes how, in South Africa, the national and international reputation of a university is 'entrenched in its research profile which depends to a major extent on its publications and citation of these publications'.

During the 1960s, the phrase 'publish or perish' became widespread in the academic lexicon.<sup>17</sup> The culture that emerged from this mindset has had an impact on academic ethics, particularly the increase in plagiarism<sup>24,27,28,30-32</sup>, leading Boisvert and Irwin<sup>16</sup> to remark that we are now confronted with a generation of young faculty who have not been taught the ethical issues that pertain to honest citation of sources. In this regard, the management discipline places great pressure on faculty to be regarded as academically

sound by publishing as many articles as possible in the minimum time or be assigned high teaching loads which impact their career progression.<sup>30</sup>

The production of an excessive number of research articles invites institutional rewards such as attracting research grants<sup>29</sup>, promotion<sup>33</sup>, salary increases<sup>17</sup> and career and reputation advancement<sup>17,24</sup>. The persistence of plagiarism by faculty can be attributed to academic incentives and the publishing system.<sup>34</sup> In this regard, Woelert and Yates<sup>35(p.11)</sup> suggest that faculty have learned to distort output through 'gaming' the system which Kenny<sup>36</sup> then notes shifts the academic effort away from quality research. Coexisting with this internal system of practices is the ready access to tools that make plagiarism easier than in the past, such as the cutting and pasting of text<sup>37</sup> along with a proliferation of information on the web<sup>38</sup>.

In summary, the institutional focus on numbers at the expense of quality of output<sup>20</sup> coupled with the pressure on faculty to perform and the attendant compromise of fundamental values such as quality and integrity within the research process<sup>9</sup>, can all promote a culture in which plagiarism flourishes.

### **Role of journal editors and publishers in addressing plagiarism**

While concern has been expressed by journal editors about the incidence of published articles containing plagiarism<sup>18,34</sup>, dealing with plagiarism has largely not been addressed by these gatekeepers<sup>7,14</sup>. Publishers play an important role in detecting plagiarism as the last line of defence before the publication of plagiarised work.<sup>15</sup> However, although there is discussion about plagiarism, a level of confusion exists about acceptable publishing behaviour with a lack of consensus about the acceptable level of text and figure reuse.<sup>14</sup>

Hopp and Hoover<sup>34</sup> report on confusion in the understanding of the concept of plagiarism amongst a sample of 208 editors of management journals, leading to variations in reporting of plagiarism with only five editors requiring authors to submit their work through any plagiarism detection software programme.

Journal editors may not report cases of detected plagiarism because of the stress induced when conducting a thorough investigation of such alleged plagiarism, believing it may reflect poorly on the review processes and the brand of the journal or may incur conflict and costly legal measures.<sup>15,38</sup> This unwillingness of journal editors to publicly deal with plagiarism or to draw attention to the problem is on the increase.<sup>15</sup>

Enders and Hoover<sup>39</sup> conducted the first substantial survey of perceptions of plagiarism amongst journal editors in the economics profession. At that time, only 30% of journal editors agreed that publishing a notice of plagiarism in their journals would be appropriate. A later Internet survey by Enders and Hoover<sup>40</sup> indicated that approximately two-thirds of their sample believed that plagiarism could be addressed by a profession-wide code of ethics. Over 10 years later, Stitzel et al.<sup>41</sup> expanded the Enders and Hoover<sup>39</sup> study to other disciplines and found that 45% of journal editors in their sample reported having instituted a formal plagiarism policy, against the 19% reported in the Enders and Hoover<sup>39</sup> study. Stitzel et al.<sup>41</sup> believe that, increasingly, the problem of plagiarism is being taken more seriously, with approximately 80% of journal editors suggesting that when clear-cut plagiarism is detected, it would be appropriate to ban the plagiarist from submitting future work to the journal.

Journals and scholarly books provide the outlet for plagiarism.<sup>15</sup> Accordingly, journal editors and publishers are crucial to the academic project as they play a central role in preventing, detecting and disclosing academic plagiarism, and their actions, in this regard, support the integrity of the academic pursuit.

Journal editors and publishers can reduce the incidence of plagiarism in published works by apportioning journal space to discussing the topic of plagiarism to raise awareness and by publicly disclosing plagiarists.<sup>15</sup> Scholarly journals should have clear policies regarding plagiarism and should have authors sign agreement to such policies and guarantee original work<sup>42</sup> – a practice that decreases the incidence of plagiarism<sup>34</sup>. Journal editors and editorial boards should support peer reviewers who report plagiarism.<sup>42</sup> Others<sup>16,43-45</sup> advocate the use of software plagiarism

detection tools as routine practice by journal editors. Overall, journals that have adopted various measures to detect and deal with plagiarism, evidence a lower incidence of plagiarism than those that have less stringent measures in place.<sup>42</sup>

### **Role of universities in promoting academic integrity**

Since the inception of universities, their two major tasks have been to create and spread knowledge and to develop students into professionals and good citizens.<sup>46</sup> Students need to be given knowledge of global matters and be encouraged to develop a moral sensitivity to human issues.<sup>47</sup> Students should be prepared to become critical, risk-taking citizens who will impact the world for the greater good, and be influenced by transformative intellectuals<sup>48</sup>, and, accordingly, universities are powerful institutions of social, economic and cultural reproduction<sup>49</sup>. As such, universities should be institutions that provide influential role models to students in the development of ethical graduates who will go on to build ethical organisations.<sup>50</sup>

Faculty play a central role in role modelling ethical behaviour to students.<sup>51</sup> Universities, as the educators of future business leaders, cannot only teach ethical leadership as an academic subject, but must also role model ethical leadership in practice.<sup>9</sup> The educational power vested in universities through the moral climate of the institution, can influence the ideas, values and behaviours of students.<sup>46</sup> Any unethical practices at universities sends a loud message to the generation-in-training and substantial damage occurs when students are led to believe, through role modelling, that success is not linked to merit and hard work but is attained through fraud – plagiarism being one manifestation of such fraud.<sup>31</sup> Heckler and Forde<sup>37</sup> report that students are less likely to plagiarise if faculty take the issue of plagiarism seriously.

In the light of the above, addressing plagiarism by faculty themselves, should be critical in academic institutions. However, Luke and Kearins<sup>9(p.888)</sup> propose that academic leaders 'may have become too busy with the business of education and performance measures' which has distracted them from dealing with breaches of academic integrity such as plagiarism, which is now in danger of being transformed from an individual problem of wrong-doing into an institutional norm in a 'publish or perish' environment. Poignantly, Luke and Kearins<sup>9(p.882)</sup> suggest that academic leaders and institutions 'appear to have lacked a moral script for action'. Lewis et al.<sup>15</sup> note the link between a decrease in plagiarism and the willingness of the academic community to expose academic plagiarists. Errami and Garner<sup>14</sup> support the view that public exposure of plagiarism transgressions could be an effective deterrent. Elliott et al.<sup>52(p.93)</sup> note that 'the tone at the top' drives acceptable or unacceptable organisational behaviour and that when unethical behaviours are not addressed, a culture results in which such behaviour proliferates and is conveyed to staff and students.

While plagiarism may never be completely eliminated, good governance is at the core of addressing this problem.<sup>23</sup> To this end, a culture of academic honesty should prevail in institutions that, in turn, institutionalise an ethical culture amongst faculty.<sup>52</sup> Bedeian et al.<sup>27</sup> extend this view to advocating that the research values of those entering into the management discipline must be shaped and that graduate students must be socialised into ethical academic life, including research. Management faculty have a professional obligation to report research misconduct in spite of their reluctance, desire to avoid conflict and even potential career damage through their own integrity being cast into doubt.<sup>26</sup> Peer reporting of academic plagiarists, protection of whistle blowers and severe punishment for faculty who engage in plagiarism and fraud should be the practice.<sup>52</sup> In this regard, the entire academic community is the first line of defence in preventing plagiarism.<sup>15</sup> Similarly, Long et al.<sup>38(p.1294)</sup> note that 'the responsibility for research integrity ultimately lies in the hands of the scientific community', with educators ensuring scientific integrity in the work of students whom they mentor, with authors committing to originality and accuracy of published work, with volunteer peer reviewers conscientiously reviewing publications, and with journal editors verifying the manuscripts they wish to publish. Other factors that could contribute to addressing plagiarism include the avoidance of unrealistic performance standards and publication pressure, excessive peer competition and brutal careerism.<sup>27</sup>

In summary, when dealing with plagiarism prevention and detection, professional associations that sponsor journals should establish policies and codes for dealing with plagiarism that transcend social and cultural borders, the academic community should be vigilant and support whistle blowers, publishers should verify the originality of manuscripts and articulate, enforce and publicise penalties for authors who plagiarise and plagiarism detection software should be used by universities, professional organisations and publishers.<sup>15</sup>

## **Method**

### **Sample**

All 454 peer-reviewed articles published in 2016 in 19 South African management journals, covering the major management fields, comprised the sample. These 19 journals are the same journals used in the 2015 study by Thomas and de Bruin<sup>53</sup>. The DHET remits subsidy to universities and research institutions for articles published in journals on prescribed lists, amongst which are the local DHET list, the Clarivate Analytics Web of Science (WoS) list and the International Bibliography of the Social Sciences (IBSS) list. The majority of articles were contained in the local DHET list, with 115 appearing on the IBSS list and 100 appearing on the WoS list.

The 454 journal articles were authored or co-authored by 995 researchers, with 67 researchers being affiliated to foreign universities or institutions.

### **Data collection**

All articles were submitted through Turnitin™ to check for similarity between the articles and other published materials. After submission of a manuscript to this software program, the manuscript is compared to billions of Internet pages, online publications, digitised books, journals and student dissertations and theses. A report is generated which provides a similarity index, i.e. a statement of the percentage of text in the submitted document that is similar to other material in the Turnitin™ data base. This report indicates material that could be considered to be plagiarised. The data were inspected twice by the researcher. A conservative approach was adopted in the process of excluding material after each individual report was scrutinised. At the outset, the following items were excluded: strings of 10 or fewer words, quotations, and the bibliography/list of references. The following instances of similarity were also excluded during a second inspection of each report: abstracts that were cited in scientific databases, self-citations, previous conference papers, working papers (previous drafts) or student dissertations and theses on which the manuscript was based, statistical formulae, figures and tables, and country statistics or other country-related data. Thereafter, an independent person with knowledge of the process also checked the data. Whenever there was any doubt about similarity, the author of the manuscript in question was given the benefit of the doubt. The Turnitin™ program itself does not always detect similarity<sup>54-56</sup>, again underlining the conservative nature of the findings.

The study was granted ethics clearance by the University of Johannesburg (CBEREC18JBS01). As all data are in the public domain, no ethical issues of disclosure arose. In addition, the names of individual authors, institutions and journals are not disclosed.

### **Data analysis**

The findings relate to data obtained in 2016. These data were then compared with the data collected in 2011 and reported on by Thomas and de Bruin<sup>53</sup> in 2015, hereafter referred to as the 2015 study.

As with the 2015 study, means were trimmed and standard deviations Winsorised to reduce the influence of outliers<sup>57</sup> and analyses of variance (ANOVAs) were conducted to determine differences in similarity scores in journal groups and number of authors.

Independent samples *t*-tests and chi-square tests of independence were conducted to compare the data of the 2015 study to those of the current study. Appropriate effect size tests were employed to determine the impact of the size of the samples on the statistical results obtained.

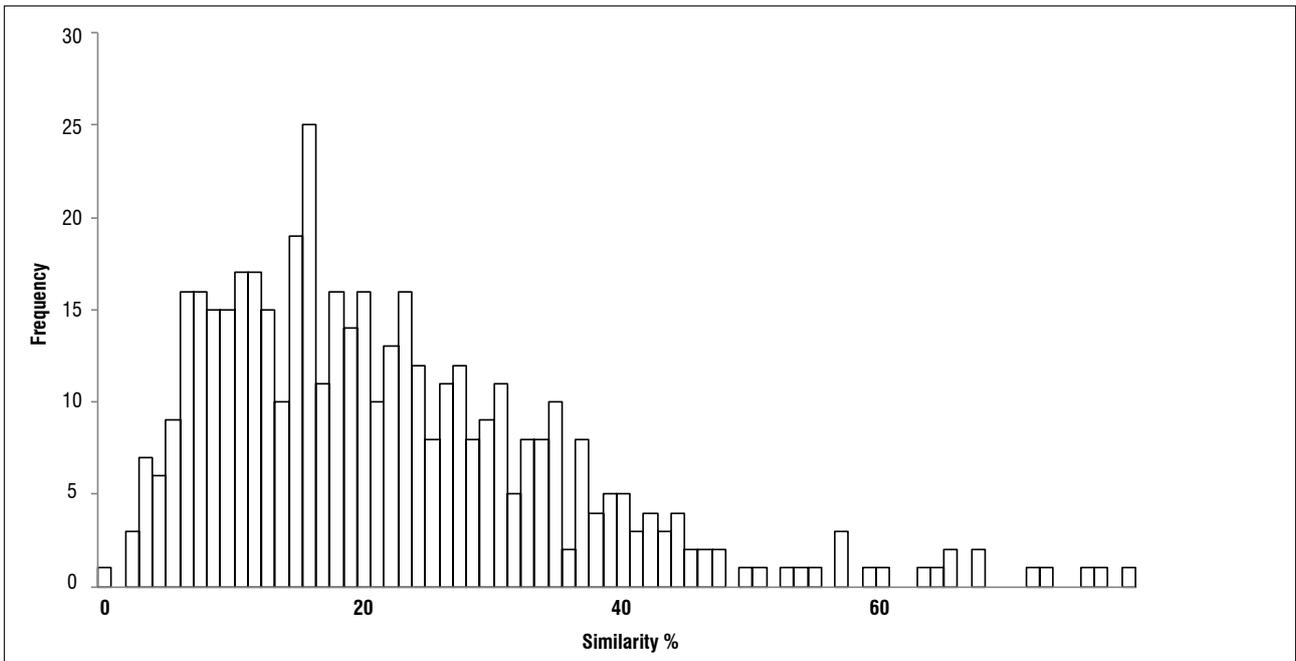


Figure 1: Distribution of the similarity index across 454 articles.

## Results

Across the 454 submissions (371 in the 2015 study) the similarity index (i.e. the percentage of similarity between an article and the documents in the Turnitin™ database) ranged from 0% (indicating no similarity) to 75% (indicating substantial similarity). Figure 1 indicates that the distribution of the similarity index across the 454 submissions was positively skewed.

The mean similarity index across the 454 submissions was 20.87 (cf. 17.10 in the 2015 study), s.d.=13.28 (12.15 in the 2015 study). The mode was 15 (9 in the 2015 study), the median was 18 (14 in the 2015 study), and the 20% trimmed mean was 18.75 (14.70 in the 2015 study). The 95% confidence intervals for the 20% trimmed mean were 18.06 and 19.43 (13.61 and 15.89 in the 2015 study). The Winsorised standard deviation was 8.04 (6.67 in the 2015 study).

An independent samples *t*-test on the trimmed mean similarity index of the data in the 2015 study and the present sample suggests that the mean similarity index in the present study is significantly higher ( $t=-8.4$ , d.f.=491,  $p=0.000$ ; eta-squared=0.125, indicating a large effect size).

The relative frequency of plagiarism was categorised, as in the 2015 study, as: 1% to 9% being low similarity; 10% to 14% being moderate similarity; 15% to 24% being high similarity, and >24% being excessive similarity. Table 1 provides a summary of the frequencies for the present study in these categories and a comparison with those of the 2015 study.

Table 1: Similarity according to extent in categories

Category (%)	2015 Study			Present study		
	<i>n</i>	%	Cumulative %	<i>n</i>	%	Cumulative %
None: 0				1	0.2	0.2
Low: 1 to 9	118	31.8	31.8	87	19.2	19.2
Moderate: 10 to 14	73	19.7	51.5	78	17.2	36.4
High: 15 to 24	101	27.2	78.7	141	31.1	67.5
Excessive: 25+	79	21.3	100	147	32.5	100.0
Total	371	100		454	100	

Whereas the 2015 study found that the number of submissions falling into the low and moderate similarity categories (51.5%) was almost equal to the proportion falling into the high and excessive categories (48.5%), the current study found that the situation has deteriorated. In the current study, only 36.4% of the submissions fell into the low and moderate categories with 63.6% falling into the high and excessive categories. As in the 2015 study, if a cut-off point is taken of a 9% similarity index, then it is evident that 80.8% (68.2% in the 2015 study) of the submissions evidenced similarity above this cut-off point. Of concern is that 32.5% (21.3% in the 2015 study) of the submissions evidenced an excessive amount of similarity. A chi-square test of independence of the degree of similarity and year suggests degree of similarity was higher in the current study (Pearson's chi-square=24.8, d.f.=4,  $p=0.000$ , Cramer's  $V=0.173$  (moderate effect size)).

As in the 2015 study, the means of the similarity indices were compared between journal groups. The results are noted in Table 2.

Table 2: Similarity index (20% trimmed mean) by journal group

Journal group	2015 Study			Present study		
	20% Trimmed mean	Winsorised s.d.	<i>n</i>	20% Trimmed mean	Winsorised s.d.	<i>n</i>
DHET	13.69	6.45	201	18.61	7.78	239
IBSS	16.67	7.90	108	18.45	7.91	115
WoS	14.89	5.96	62	18.75	8.81	100
			371			454

DHET, Department of Higher Education and Training; IBSS, International Bibliography of the Social Sciences; WoS, Web of Science

Note: Minor differences from the original publication are a result of minor differences in statistical formulae.

An ANOVA found that there was no significant difference in scores across the three journal categories ( $F=0.6$ , d.f.1=2, d.f.2=269,  $p=0.569$ , previously  $F=2.2$ , d.f.1=2, d.f.2=96,  $p=0.110$ ). This finding is the same as that of the 2015 study. In order to compare whether there was any change in the similarity scores for each journal group,

*t*-tests were conducted to compare the data from the 2015 study and that of the present study. Only for the IBSS journals was the similarity not statistically different to that reported in the 2015 study ( $t=-1.8$ ,  $d.f.=131$ ,  $p=0.075$ ). In the DHET journals ( $t=-7.8$ ,  $d.f.=259.947$ ,  $p=0.000$ ,  $\eta^2=0.190$  (large size effect)) and the WoS journals ( $t=-4.2$ ,  $d.f.=93.71$ ,  $p=0.000$ ,  $\eta^2=0.153$  (large size effect)), the similarity scores for data in the present study were found to be significantly higher than those reported in 2015.

In the 2015 study, the 10 journals containing at least 20 articles were isolated. The 20% trimmed mean similarity indices for journals in the 2015 study ranged from 10.07 to 22.94. A robust ANOVA on 2015 similarity scores for the 10 journals suggested that there was a significant difference in trimmed means ( $F=8.5$ ,  $d.f.1=9$ ,  $d.f.2=150$ ,  $p=0.000$ ,  $\eta^2=0.336$  (large effect size)). Post-hoc tests show that the main effect was a result of one journal (that with a similarity index of 22.94) evidencing significantly higher similarity than other journals.

In the current study of the same 10 journals isolated in the 2015 study ( $n=331$ ), the 20% trimmed mean similarity indices ranged from 12.59 to 28.68. An ANOVA conducted on the current similarity scores for the 10 journals suggested a significant difference in scores ( $F=12.3$ ,  $d.f.1=9$ ,  $d.f.2=189$ ,  $p=0.000$ ;  $\eta^2=0.369$  (large effect size)). Post-hoc tests showed a number of differences between journals. Three journals evidenced a significant difference in similarity indices (20% trimmed mean) between the 2015 study and the present study (all large effect size).

Of interest, is that the journal with the lowest similarity index in the 2015 study again had the lowest similarity index in the present study. The journal with the second lowest similarity index in the 2015 study, however, evidenced the highest similarity index in the present study.

The similarity indices of single-, dual- and multi-authored articles were again considered. The results compared with those of the 2015 study are shown in Table 3.

An ANOVA performed on the 2015 study similarity scores for the three author groups suggested that there was no significant difference in scores. In the present study, there was a significant difference in scores ( $F=7.6$ ,  $d.f.1=2$ ,  $d.f.2=269$ ,  $p=0.001$ ;  $\eta^2=0.053$ , small to medium effect size) (2015 study:  $F=2.2$ ,  $d.f.1=2$ ,  $d.f.2=220$ ,  $p=0.106$ ). Post-hoc tests showed that multi-authored articles evidenced significantly higher similarity than single- and dual-authored publications. Single- and dual-authored articles did not have significantly different similarity indices.

**Table 3:** Similarity index (20% trimmed mean) by number of authors

Number of authors	2015 Study			Present study		
	20% Trimmed mean	Winsorised s.d.	<i>n</i>	20% Trimmed mean	Winsorised s.d.	<i>n</i>
Single	15.17	8.06	90	17.74	8.67	104
Dual	15.16	6.94	179	17.82	7.70	207
Multi	13.58	6.17	102	20.69	8.06	143
			371			454

Note: Minor differences from the original publication are a result of minor differences in statistical formulae

The similarity scores of single-, dual- and multi-authored articles in the 2015 study were compared with those in the current study. It was found that single-authored indices in the present study were significantly higher than those in the 2015 study ( $t=-2.4$ ,  $d.f.=114$ ,  $p=0.019$ ;  $\eta^2=0.047$  (moderate effect size)). The similarity indices of dual- ( $t=-3.8$ ,  $d.f.=230$ ,  $p=0.000$ ;  $\eta^2=0.060$ ) and multi-authored articles ( $t=-8.5$ ,  $d.f.=144.89$ ,  $p=0.000$ ;  $\eta^2=0.333$  (large size effect)) in the current study were also significantly higher than the similarity indices of dual- and multi-authored articles reported in the 2015 study.

## Discussion

The objective of the study was to identify the extent of plagiarism in articles published in 2016 in 19 South African management journals and to compare the findings to those of a similar study<sup>33</sup> based on articles published in the same 19 journals in 2011. The general finding was that plagiarism has increased from the 2015 study to the current study. The increase seems to be across the board, irrespective of journal, journal group (except one) and number of authors/co-authors.

The findings of the present study in which 2016 data were analysed indicate that similarity, implying plagiarism, has increased substantially since the findings reported in the Thomas and de Bruin<sup>33</sup> 2015 study in which 2011 data were analysed, i.e. over a 5-year period. This finding gives credence to the concern expressed by others about the growing problem of plagiarism<sup>1,2</sup> and the rise in plagiarism by faculty specifically<sup>8,16</sup>.

Whereas in the 2015 study almost equal numbers were found for the low/moderate categories (i.e. 1–14% similarity) and the high/excessive categories (i.e. more than 14%), in the present study only 36.4% of articles were in the low/moderate categories with 63.6% residing in the high to excessive categories (i.e. similarity over 14%). In the 2015 study, 21.3% of articles were found to have excessive similarity, while now 32.5% fall into this category. If a 9% cut-off point is taken, 80.8% of the submissions in the present study evidenced similarity of 10% or more compared with 68.2% in the 2015 study. The robust tests indicate the magnitude of these differences and that they are strong and substantive.

When considering the 2015 study, no difference in level of similarity was found between the three categories of journal groups – DHET, IBSS and WoS. This finding indicates that the increase in plagiarism has occurred in publications across the board and is not limited to certain groups of journals. However, only for the IBSS category was there no significant increase in the level of similarity between the 2015 study and the present study; for both the DHET and WoS journal groups, the similarity index was higher in the present study than that reported in the 2015 study.

As in 2015, 10 journals each publishing more than 20 articles were isolated for analysis. In the 2015 study, only one journal published articles with higher similarity indices than those in the other journals. In the present study, three journals showed significant differences in terms of similarity indices. The journal with the lowest similarity index in the 2015 study, again had the lowest similarity index in the present study in spite of more than doubling the number of publications. However, the journal with the second lowest similarity index in the 2015 study was found now to have the highest similarity index in the present study with every article having a similarity index in excess of 9%. These findings would seem to indicate that there may be a slackening of editorial control in this journal. If this is the case, it could be expected that those researchers seeking out means to publish quickly, in the light of the ‘publish or perish’ syndrome, could target such a journal. This finding demands that journal editors and publishers remain vigilant and publicise their strategies to ensure research integrity as well as clearly state the consequences for those who plagiarise.

Whereas no significant differences in similarity scores were found in the 2015 study between single-, dual- or multi-authored articles, in the present study, multi-authored articles appeared to have a greater degree of similarity. While all authors in a multi-author cohort could, theoretically, hold the same attitudes towards plagiarism and evidence weak research ethics, it could also be true that not all members of a cohort are ethically compromised. This finding strongly suggests that individual authors must be attentive to work submitted for publication even if sections of the manuscript were written by other parties in the cohort.

That plagiarism exists at all in work that has been through a peer-review process and published should raise alarm bells; that such plagiarism has increased over a 5-year period gives greater reason for concern. Plagiarism goes to the heart of academic integrity<sup>15</sup> and calls into question the value of the research being produced in the management field in South Africa.

The DHET pays a qualifying university approximately ZAR100 000 per article published in a journal on prescribed lists. If a cut-off point of >24% similarity is taken (the excessive category), it is noted that 98 articles fall into this category (the balance of 49 articles were produced by foreign authors only or foreign authors/authors at private institutions in conjunction with South African authors). Conservatively, including only the 98 articles, it appears that the DHET paid around ZAR9.8 million in subsidy to universities and research institutions for questionable work (i.e. publications with a similarity index >24%).

## Recommendations

Based on the findings of the study, four main recommendations are furnished to faculty, university administrators and journal editors and publishers.

**First**, universities need to remain vigilant about the quality of research that is being produced by their faculty and a culture of zero tolerance should be created for work that involves cheating and misrepresentation of originality. The quest for research output to enhance reputation<sup>29</sup> must be balanced with the assurance of quality and the incentives linked to research output (overt and tacit) must be examined to ensure that they do not work against a culture of research integrity<sup>12</sup>. In this regard, the practices surrounding the 'publish or perish' syndrome<sup>17</sup> need to be exposed and examined. The role of universities in promoting sound research ethics is all the more important when one considers the influence that universities have on the students who are taught and mentored into researchers.<sup>51</sup> The growing multi-culturalism at South African universities demands that effort be expended on schooling those new to research in the practices of ethical research production. Studies have noted how ethics in research can lag in developing economies.<sup>7,28</sup> In this regard, Horn's<sup>11</sup> plea – for those who fund and manage research projects in the country to be vigilant about the development of integrity in research – should not be lost.

**Second**, higher education authorities need to be aware of the problem of plagiarism in journals and to re-examine the subsidy policy. The policy, which commenced as a way of encouraging original and cutting-edge research, has unfortunately been exploited by both universities and academics alike. It is highly recommended that the DHET should now require universities to prove that the research for which subsidy is claimed, is unique and original in terms of its policy.<sup>10</sup>

**Third**, journal editors and publishers are the final gatekeepers before publication. In spite of the time and stress related to vigilance around ensuring that only original work is published, and in spite of costly legal measures that may need to be taken if plagiarism is detected<sup>38</sup>, these gatekeepers play a critical role in ensuring that society is informed by original studies. Journals should publicise their policies on research ethics and on plagiarism, and software programs that alert editors to similarity of material should be used, and if substantial plagiarism is detected, measures should be taken to expose the plagiarist. As Shahabuddin<sup>42</sup> notes, those journals that adopt measures to address plagiarism appear to evidence less plagiarism in the articles they publish than journals which have no such measures in place.

**Fourth**, given that similarity was found to be highest in multi-authored publications, it is recommended that authors themselves remain vigilant when co-publishing papers and that such papers be checked, routinely, for evidence of similarity to other work. As many of the articles appear to be based on student dissertations and theses, it is further recommended that such student work be submitted through a similarity detection program prior to submission for examination – a practice that has now been adopted at some universities in South Africa. This approach would ensure that any potential plagiarism is detected at its source.

## Limitations of the study

The major limitation of the study is that in the process of interpreting the Turnitin™ similarity reports, human error in data coding is always a potential problem. This was addressed by the researcher interpreting each report twice and then having a second academic review the lists of raw data to check for anomalies. A second limitation was that not all management

journals could be accessed as, in the case of two journals, a protection mechanism prevented the articles from being submitted through Turnitin™. However, the range of 19 journals covered the major fields of management research and was deemed suitable for the present study.

## Recommendations for future research

Emanating from the present study, future areas of research could include the following:

- A study that compares similarity in management journals domiciled in developing countries and those domiciled in developed countries could indicate whether or not the problem of plagiarism is currently globally evident or has been addressed since the publication of earlier studies. Such information could alert universities and journal editors to the problem of plagiarism if this is shown still to be on the increase, and measures to address this practice could be adopted in both those domains. In addition, such a study would promote a comparison between the findings of the present local study and international data.
- A qualitative study of South African management journal editors involving their perceptions of plagiarism would provide insight into the steps being taken to detect and address this problem. It would be interesting to gain some insight into the level of concern of journal editors about this problem and the strategies contemplated to deter and deal with submissions that contain high levels of similarity to other published work.
- Chrysler-Fox and Thomas<sup>58</sup> discuss a typology to assist in categorising the types of plagiarism that can occur in academic material. Using this typology, it would be interesting to interrogate the current data to uncover the nature of the plagiarism that exists in the high to excessive categories. Understanding the nature of the plagiarism that has been perpetuated in these submissions could inform strategies to assist researchers in producing original work.

## Conclusion

The aim of this study was to progress the debate on ethics in research in South Africa and to alert universities, journal editors and publishers, and the government DHET about the state of plagiarism in management journals.

The findings indicate that plagiarism in South African management journals is on the increase, thus supporting other studies that indicate the rise of plagiarism internationally.<sup>1,2,15</sup> This finding is of immense concern as it threatens the integrity of the information that is shared in society and amongst academics by means of research publications. It also goes to the heart of the academic pursuit which should be that of generating new and innovative ideas to inform practices that create a better society. Faculty who publish in management journals should be concerned about their reputations by association with these practices, as should university administrators, the employers of those who choose to plagiarise. Addressing this problem requires a concerted effort and commitment by faculty themselves, by universities through which the publications are sanctioned and rewarded, by peer reviewers who need to be vigilant in detecting plagiarism and by the ultimate gatekeepers, the journal editors and publishers. It is suggested that only through this united effort will the increase in plagiarism be halted and hopefully eradicated in management publications.

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