

Coercive Citation in Academic Publishing

Allen W. Wilhite*† and Eric A. Fong*

Despite their shortcomings (1–4), impact factors continue to be a primary means by which academics “quantify the quality of science” (5). One side effect of impact factors is the incentive they create for editors to coerce authors to add citations to their journal. Coercive self-citation does not refer to the normal citation directions, given during a peer-review process, meant to improve a paper. Coercive self-citation refers to requests that (i) give no indication that the manuscript was lacking in attribution; (ii) make no suggestion as to specific articles, authors, or a body of work requiring review; and (iii) only guide authors to add citations from the editor’s journal. This quote from an editor as a condition for publication highlights the problem: “you cite *Leukemia* [once in 42 references]. Consequently, we kindly ask you to add references of articles published in *Leukemia* to your present article” (6). Gentler language may be used, but the message is clear: Add citations or risk rejection.

To explore the extent and nature of such coercive self-citation, we analyzed 6672 responses from a survey sent to researchers in economics, sociology, psychology, and multiple business disciplines (marketing, management, finance, information systems, and accounting) (7), as well as data from 832 journals in those same disciplines. We find that coercion is uncomfortably common and appears to be practiced opportunistically. As editors game the system and authors acquiesce, the integrity of academic publications suffers. We conclude by recommending some steps that can be taken to reduce or eliminate the incentive to engage in coercive self-citation.

Inappropriate But Persistent

Our survey asked respondents about their experiences with, and opinions of, such coercion (see the chart) [see supporting online material (SOM) for details]. They also identified 175 journals as coercers, many identi-

fied multiple times, with the worst offender being named by 49 different respondents. To put this in context, our respondents reported a total of 45,955 accepted articles, an average of 55.2 articles per journal. By that calculation, the most flagrant offenders may be coercing most of their contributors. However, this rough calculation does not account for variation in the number of articles in journals, references per article, or disciplines. In our regression analyses, we control for those attributes to get a more accurate picture.

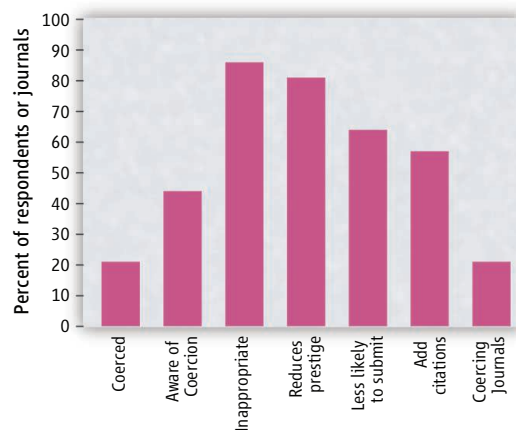
Although 86% of our respondents view coercion as inappropriate, 81% agree that coercion reduces a journal’s prestige, and 64% even say they are less likely to submit to a coercive journal, the majority (57%) still say they would add superfluous citations before submitting to a journal known to coerce. More fine-grained analyses suggest that there are differences across academic ranks and disciplines (tables S7 and S8). Lower-ranking scholars are more likely to continue submitting to coercive journals and are more willing to add extraneous citations before submission.

Authors in most of the business disciplines appear more likely to continue submitting to coercive journals than those in economics and sociology. Senior faculty members are more likely to resist coercive demands, whereas junior faculty members are more likely to acquiesce. Finally, we find that familiarity coexists with acceptance. Scholars in disciplines that more frequently practice coercion see it as less inappropriate. And while the direction of causality is unknown, academics who have added citations in response to their editors’ urging view the journal’s reputation less negatively than those without such experiences.

Strategic Incentives to Coerce

Editors’ incentive to inflate impact factors through self-citation is damped by the negative reaction of scholars who disapprove

Many journal editors appear to strategically target authors and papers to pressure them into citing the editors’ journals.



Survey results reflecting the extent, and opinions, of coercion. Percentages of respondents who (i) have been coerced, (ii) are aware of coercion, (iii) think coercion is inappropriate, and agree or strongly agree that (iv) coercion reduces the prestige of a journal, (v) they are less likely to submit to a coercive journal, and (vi) they are likely to add journal-specific citations before submission. The percentage of journals in the study identified as coercers is also shown. See SOM for details.

of coercion and think its practice tarnishes a journal’s prestige (see the chart). Consequently, editors face a dilemma and must choose. Their decision is complicated by a strategic component; if one journal coerces and improves its ranking, then other journals are relatively worse off.

To further understand the factors seeming to influence the practice of coercive self-citation, we analyzed the survey data using linear probability models. Of the 6672 responses reflected in the chart, only 4920 contained complete responses needed for our regression analysis. We also modeled the journal data to corroborate some findings from the survey data and also to explore potential influences of publisher type. The journal-based data come from Sciverse, a collection of more than 18,000 journals in all fields of academic study. We selected journals for inclusion on the basis of their content coverage as reflected by the All Science Journal Classification (ASJC) code number.

Modeling the editor’s strategic decision-making as a game, we can hypothesize the following: First, coercers may try to soften the negative backlash of their actions by

College of Business Administration, University of Alabama in Huntsville, Huntsville, AL 35899, USA.

*Authors contributed equally to this work.

†Author for correspondence. E-mail: wilhitea@uah.edu

focusing on scholars of lower academic rank who are less likely to question or resist an editor's wishes. Second, editors might target manuscripts with fewer authors, so they confront fewer individuals.

Third, the strategic nature of coercion suggests that editors are more likely to coerce if other journals in their discipline coerce; thus, we expect the practice to be concentrated in disciplines as opposed to randomly dispersed across fields. In our analyses, economics is selected as the reference discipline because it stands at the boundary of these disparate fields with one foot in business and the other in the classic social sciences.

Fourth, because a journal's editorial policies can be influenced by its parent publisher, we expect commercial, for-profit publishers to place greater value on the advertising opportunities afforded by a rising impact factor and to be more open to coercion. University-based publishers are expected to put greater emphasis on their long-term reputation.

Our model results support these hypotheses. The table summarizes the central results

of the survey-based data, in which the unit of observation is the individual, and of the journal-based data. Editors are more likely to coerce assistant and associate professors than professors and to target manuscripts with fewer authors. Coercion differs significantly across disciplines, with results fairly consistent from both survey and journal data. Relative to economics, coercion is more prevalent in most of the business disciplines and no more prevalent, or even less prevalent, in psychology and sociology.

The type of publisher appears to be influential, as hypothesized; journals published by commercial, for-profit companies show significantly greater use of coercive tactics than journals from university presses. Academic societies also coerce more than university presses.

The journal-based data also allow us to test whether there is a relation between journal rank and coercion. Somewhat surprisingly, the results (tables S2 and S4) suggest that more highly ranked journals are more likely to coerce. Our data cannot discern a direction of causality because some top journals may use coercion to maintain their position, whereas other journals may have attained their lofty position through coercion. But either situation is unsettling. Narrowing our focus to include only the top 30 journals in each discipline yields consistent results (table S6).

So authors are coerced, but how often does it happen? Studying the frequency of coercion yields similar results (table S5 and S6): Author academic rank, author and journal discipline, the number of authors on a paper, and the type of publisher are significantly related to the frequency of coercion.

In addition, our results (table S7) suggest that familiarity coexists with acceptance. Disciplines that more frequently practice coercion see it as less inappropriate, and those academics who have added citations in response to an editor's urging view the journal's reputation less negatively than those without such experiences.

Conclusions

Overall, the empirical results from the author survey and the journal-based data tell a consis-

tent story. Coercive self-citation exists and is more common in the business disciplines than in economics, sociology, and psychology. Additionally, some editors seem to target specific articles and authors.

The American Psychological Association Publication Manual states, "Cite the work of those individuals whose ideas, theories, or research *have directly influenced your work*" (emphasis added) (8). The requests studied here do not heed that advice. Although most of our respondents condemn coercion, less than 7% thought an author would refuse to add superfluous citations if coerced to do so. Thus, an author can become both a victim and a conspirator in the self-citation game; they are rewarded for acquiescing because their manuscript is published, and their gratuitous citations help to boost the impact factor of the journal in which they published.

Although this behavior is less common in economics, psychology, and sociology, these disciplines are not immune—every discipline reported multiple instances of coercion. And there are published references to coercion in fields beyond the social sciences (3, 4, 6). Future research could help elucidate whether and how these patterns extend to fields across the physical and biological sciences.

Without action, the situation is likely to deteriorate, because the strategic nature of coercion continues to put pressure on editors to coerce. Academic associations could help by officially condemning the practice. Their action would raise the cost of coercion to editors and might help persuade organizations that promote impact factors to remove self-citations from those calculations, which would eliminate the coercive motive.

References and Notes

1. R. Monastersky, The number that's devouring science. *Chron. Higher Ed.*, 14 October 2005. <http://chronicle.com/article/The-Number-That-s-Devouring/26481>
2. P. A. Lawrence, *Nature* **422**, 259 (2003).
3. N. Romano, *Comm. Assoc. Inform. Syst.* **25**, 41 (2009).
4. P. O. Seglen, *BMJ* **314**, 497 (1997).
5. Editorial, *Nature* **435**, 1003 (2005).
6. R. Smith, *BMJ* **314**, 461 (1997).
7. Survey details are available in the SOM. The survey remains open for participation: www.surveymonkey.com/s/cites
8. APA, Publication Manual of the APA (American Psychological Association, Washington, DC, 2010).
9. The authors thank A. Baldwin, H. Eguchi, S. Wilhite, and University of Alabama in Huntsville Research Seminar participants.

Supporting Online Material

www.sciencemag.org/cgi/content/full/335/6068/542/DC1

10.1126/science.1212540

PERCENT CHANGE IN PROBABILITY OF COERCION (SE)		
Hypothesized effect	Survey data	Journal data
Academic rank		
Associate professor	4.3** (1.4)	
Assistant professor	5.5** (1.5)	
Lecturer	-5.6 (3.1)	
Graduate student	-0.4 (2.55)	
Confrontation avoidance		
Number of coauthors	-2.0** (0.5)	
Academic discipline		
Sociology	-5.7** (2.1)	-6.5 (9.6)
Psychology	-9.0** (1.9)	1.6 (8.2)
Marketing	20.1** (2.1)	43.1** (11.2)
Management	15.9** (2.0)	31.9** (7.8)
Finance	18.6** (2.7)	37.7** (11.4)
Information systems	18.9** (2.2)	71.8** (13.8)
Accounting	4.4 (2.8)	29.3* (13.5)
Publisher type		
Commercial		9.2* (4.5)
Academic society		12.4* (5.5)

* $P < 0.05$, ** $P < 0.01$

Model results exploring strategic-coercion hypotheses. Independent variables to explore each hypothesis are academic rank (professor as the reference category); number of coauthors on the most recently coerced paper in the last 5 years or, if not coerced, on the most recently accepted paper; academic discipline (economics as the reference category); and publisher type (university presses as the reference category). For example, being an assistant professor instead of a professor adds 5.5% to the chances of being coerced, and each additional author subtracts 2.0% from the chance of being coerced. See SOM for details.