Pernicious publication practices

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Although apparently approving of the peer-review system in general, university professors answering a mail questionnaire were often critical of specific features. In the peer review of their latest revised and published article, 76% encountered pressure to conform to the strictly subjective preferences of the reviewers, 73% encountered false criticisms (and 8% made changes in the article to conform to reviewers' comments they knew to be wrong), 67% encountered inferior expertise, 60% encountered concentration upon trivia, 43% encountered treatment by referees as inferior, and 40% encountered careless reading by referees. At some time in their general experience with the peer-review system, 65% believed that referees' comments were contrived to impress the editor, 53% felt that the editor regarded their knowledge and opinion about the reported research as less important than that of the referees, 44% felt they were being treated like a supplicant, and 47% accepted a referee's suggestion against their better judgment.

The rejection rate for articles submitted to refereed professional journals is now very high, as is the rate at which acceptance is made conditional upon revision in accordance with reviewers' comments. This, together with the pressure to publish or perish, places enormous coercive power in the hands of the reviewers, the "gatekeepers of science." Is this power used conscientiously, objectively, and judiciously by highly competent reviewers who are truly professional peers of the author? Or are the reviewers often biased, capricious, tyrannical, incompetent, and lazy, reveling in their power while abusing it? Do the authors maintain their professional integrity, or do they surrender their scientific primacy to the gatekeepers in their desperation to publish, accepting suggestions they know to be ill founded? In short, is the peer-review system operating efficiently and effectively? The study to be reported was designed to throw light on such issues. Other relevant questions, such as "Is an article that successfully challenges an almost universally accepted doctrine likely to be accepted?" and "Does dogmatism increase with fancied expertise even though the 'expert' is totally ignorant?" have already been explored (Bradley, 1978, 1981), with discouraging results.

METHOD

Early in 1980, two questionnaires were mailed to essentially systematic samples of professional society members who were listed in their society's directory as having an academic address at an American university (e.g., for psychologists, the address had to be "Psychology Department"). In both cases, the recipients were informed that the questionnaire was an anonymous one, and they were provided with a stamped and addressed envelope in which to return the completed questionnaire. The questions were motivated by, and based upon, a variety of experiences accumulated over a quarter of a century by the writer in his encounters with the peer-review system.

The first questionnaire (denoted "A") contained mostly multiple-choice questions that permitted a gradation of response. It was sent to 287 members of the American Psychological Association (APA) listed in the 1977 directory, 215 members

of the Psychonomic Society (PS) listed in the 1979 directory, and 198 members of the American Statistical Association (ASA) listed in the 1978 directory. It was returned by 158 APA members, 140 PS members, and 113 ASA members. The introductory material stated, "The questions refer only to the *last* article you published in a *refereed* professional journal which was *not accepted until revised* (the revision involving substance, not merely changes to conform to journal format), and they should be answered only in that context." Prior to the questions, recipients were asked to make a check mark in boxes provided and to return the questionnaire unanswered (1) if they had never published an article in a refereed professional journal or (2) if all their published articles had been accepted without revision. Nine did the former, 34 the latter, and 7 returned the questionnaire entirely blank. In all, of the 700 questionnaires sent out, 411 were returned (making a response rate of 59%), of which the 50 mentioned above were not filled out, so 361 were usable. The data to be reported are based upon the answers from these 361 respondents, of whom 133 were APA members, 135 PS members, and 93 ASA members.

The second questionnaire (denoted "B") contained only dichotomous choice questions (answered "yes" or "no") and was mailed to 430 members of the PS, listed in the 1979 directory, who had not been polled by the first questionnaire. The introductory material provided a box to be checked if the recipient had never published an article in a refereed professional journal, in which case he was asked to return the questionnaire without answering any of the questions that followed. Of the 430 questionnaires sent out, 312 were returned (making a response rate of 73%), of which 1 had a check mark in the box and was otherwise blank, so the data to be reported are the answers from the 311 respondents remaining after eliminating the one unusable sheet.

RESULTS

Results for the first questionnaire (combining data for all three groups) are given in Table 1, and those for the second are given in Table 2. Each table gives both the questionnaire and the responses to it. The sequential order of the questions has been rearranged for easier interpretation of results, and the questions have been renumbered accordingly. For each possible answer, the tables give the percentage of respondents selecting that answer among all respondents who selected a single one

Table 1
Questionnaire A Sent to University-Based Members of Psychological or Statistical Associations and the Percentages
(and, in Parentheses, the Frequencies) With Which Answers Were Selected

Questions concern only the last compulsorily revised article published in a referred journal.				Percent Not Favorable
1 [11]	The net effect of refereeing upon the quality of the article was to (a) improve it 72 (253) (b) leave it unaffected 23 (81) (c) degrade it 5 (18)			28
2 [7]	Of the changes advocated by the referees or editor, whim, bias, or personal preference was the basis for (a) none of them 23 (82) (b) only some trivial ones 46 (161) (c) some important ones 31 (107)			77
3 [8]	The amount of pressure brought to bear upon you to make your revision conform to the strictly subjective preferences of the editor and/or referees was (a) none 24 (81) (b) slight 45 (154) (c) considerable 31 (104)			76
4 [6]	Of the comments transmitted to you by the editor (his own and those of the referees) concerning matters of fact (a) all were correct 27 (92) (b) only some trivial ones were incorrect 32 (110) (c) some important ones were incorrect 42 (145)			73
5 [9]	In revising the article, changes were made in accordance with the reviewers' comments (a) only when they were correct or you agreed with the opinion expressed 37 (129) (b) only when they were correct or you were indifferent to the opinion expressed 36 (126) (c) only when they were correct or it was a matter of opinion 19 (66) (d) sometimes even when they were wrong, provided it was not a matter of major importance 7 (24) (e) sometimes even when they were wrong in a very important way 1 (3)			63
6 [3]	How many of the referees appeared to be at least as competent and sophisticated in the area in which the article was written as you are ? (a) none 9 (30) (b) some 58 (205) (c) all 33 (117)			67
7 [5]	How many of the referees tended to concentrate upon the important essential points rather than upon easily detected minor flaws and trivia ? (a) none 6 (23) (b) some 53 (189) (c) all 40 (143)			60
8 [4]	How many of the referees treated you as at least an equal ? (a) none 5 (19) (b) some 38 (132) (c) all 57 (201)			43
9 [2]	How many of the referees appeared to have read the article carefully ? (a) none 2 (7) (b) some 38 (136) (c) all 60 (213)			40
10 [1]	Did the editor appear to have read the manuscript carefully himself, rather than simply relying upon, transmitting, and supporting the referees' comments ? (a) yes 67 (235) (b) no 33 (118)			33
11 [12]	Of the changes made by the copy editor (the editor concerned with grammar, spelling, proper English usage, etc., and encountered first at the time galley proofs arrive) the proportion that were incorrect or misleading due apparently to an inadequate understanding of the point you were making was (a) none 52 (181) (b) slight 45 (155) (c) considerable 3 (11)			48
12 [13]	Were there any cases where you tried in vain to change a copy editor's "correction" to a more accurate form, but were overruled (or ignored) by him ? (a) Yes, and in some of these cases the "correction" was quite wrong 5 (18) (b) Yes, but in none of these cases was the "correction" entirely wrong 5 (17) (c) No 90 (314)			10
13 [14]	After you returned the galley proofs, were any new changes made, of which you were uninformed and unaware until you saw the published article ? (a) Yes, and some of them were wrong or misleading 3 (10) (b) Yes, but none of them were wrong or misleading 3 (9) (c) No 95 (331)			5
14 [10]	In writing your next article, if you knew that instead of being refereed it would be published exactly as submitted (except for changes to conform to the journal's format) how careful would you be in preparing it (relative to preparation for refereeing) ? (a) less careful 6 (20) (b) equally careful 73 (258) (c) more careful 21 (74)			94
15 [15]	If all manuscripts submitted by authors with the appropriate professional credentials (e.g. Ph.D. in the subject) were published as originally submitted, without refereeing or editing (and this policy were known in advance), the rate of scientific progress would be (a) decreased 75 (255) (b) unaffected 16 (55) (c) increased 9 (32)			25

Note—The sequential order of the questions in the original questionnaire (given in square brackets) has been rearranged for easier interpretation of results.

Table 2
Questionnaire B Sent to University-Based Members of the Psychonomic Society and the Percentage (and, in Parentheses, the Frequencies) With Which the Answers "Yes" and "No" Were Selected

	Yes	No	Percent Not Favorable
1 [1] Was a revision required on the last manuscript you published in a refereed professional journal ?	91 (283)	9 (28)	91
2 [3] Were any of the articles you published in refereed professional journals previously rejected by another such journal ?	77 (241)	23 (70)	77
3 [2] Have you <u>ever</u> had an article accepted as originally submitted (i.e. with no revision required) by a refereed professional journal ?	70 (218)	30 (92)	30
4 [14] Are most refereed journal articles in your areas of specialization important and of high technical quality ?	72 (215)	28 (82)	28
5 [15] Can you think of any elite group whose credentials are so impressive that their articles could safely be exempted from refereeing ?	20 (62)	80 (244)	20
6 [16] Do you feel that the editorially required revisions of your articles improved them enough to justify the additional labor and delay ? (Answer only if a revision has ever been required of you.)	87 (251)	13 (37)	13
7 [13] Should referees play a directive, rather than a strictly advisory, role, i.e. if there is a disagreement between author and referee about a matter of opinion, should the author be required to conform to the referee's position ?	8 (22)	92 (238)	92
8 [12] Is a referee's judgement probably better than an author's in matters where referee and author disagree ?	27 (62)	73 (169)	73
9 [19] Have you ever felt that referees try to find something to object to just to convince the editor that they have done a conscientious job ?	65 (198)	35 (108)	65
10 [21] Have you ever felt that your knowledge and opinion about the research reported in your article was regarded by the editor as less important than that of the referees ?	53 (164)	47 (144)	53
11 [17] Have you ever accepted a referee's suggestion against your better judgement ?	47 (146)	53 (162)	47
12 [22] Have you ever felt that you were being treated like a supplicant by the editor and/or referees ?	44 (132)	56 (166)	44
In general, are you satisfied with the:			
13 [10] promptness with which referee-feedback is given to the author ?	37 (111)	63 (190)	63
14 [7] consistency of referees with each other ?	44 (134)	56 (168)	56
15 [8] open-mindedness of referees ?	60 (179)	40 (120)	40
16 [11] overall efficiency of the refereeing system ?	64 (191)	36 (106)	36
17 [5] objectivity of referees ?	69 (211)	31 (95)	31
18 [9] courtesy of referees toward the author ?	70 (209)	30 (89)	30
19 [4] competence of referees ?	78 (238)	22 (66)	22
20 [6] consistency of each referee with himself ?	79 (229)	21 (60)	21
21 [18] Have you ever included (or excluded) a reference in your manuscript primarily because you hoped (or feared) that its author would be asked to referee your article ?	14 (44)	86 (264)	14
22 [20] Have you ever left errors uncorrected in your manuscript in the hope that their discovery would appease the referees and dissuade them from contriving to find other more time-consuming objections ?	2 (7)	98 (303)	2
Answer the following questions only if you have ever refereed an article.			
23 [23] Are the standard "blind refereeing" procedures (i.e. removal of the author's name from the title page, etc.) highly effective in preventing a referee from deducing the author's identity ?	24 (63)	76 (202)	76
24 [26] Have you ever been asked to referee an article that you were not competent to referee ?	53 (153)	47 (138)	53
25 [25] Have you ever been asked to referee an article by a journal to which you had recently submitted a not-yet-accepted article for publication ?	52 (149)	48 (137)	52
26 [24] In the last article you refereed, did your name appear in the list of references ?	39 (110)	61 (174)	39

Note—The sequential order of the questions in the original questionnaire (given in square brackets) has been rearranged for easier interpretation of results.

of the alternatives provided; so, except for rounding error, the percentages add up to 100%. Following each percentage (in italics enclosed within parentheses) is given the actual number of respondents who selected that single alternative. These numbers seldom add up to the total number of respondents upon which the table is based (361 for Table 1, 311 for the first 22 questions in Table 2 and 297 for the last 4) because some respondents did not select one and only one of the alternatives provided. The proportion of "other" answers for a single question is generally small, never exceeding .075 for Table 1, but exceeding it in Table 2 for Questions 8 (for which it is .26), 7 (.16), and 23 (.11). Finally, in bold-face at the extreme right margin of each table is given the percentage of (single-alternative-selecting) respondents to each question who did not choose the answer that places the peer-review system in the most favorable light. (These percentages are usually undebatable and quite meaningful. However, an occasional question, such as 7 or 8 in Table 2, does not lend itself well to this procedure.) In interpreting these results, it should be borne in mind that the percentages in Table 1 refer to experiences encountered with a single article, whereas those in Table 2 generally refer to events occurring at any time in the respondent's past experience or to his attitudes in general.

Table 1 is based upon the combined results for the three groups surveyed, since they responded quite similarly to most questions. Chi-square tests (at $\alpha = .05$) showed that for 13 of the 15 questions, there were no significant differences in responses from the three groups but that significant differences did occur on Question 10 ($p < .005$) and Question 11 ($p < .025$). On Question 10, the percentage answering "yes" was 72% for APA members, 72% for PS members, and 52% for ASA members (the latter deviating significantly from both of the former). On Question 11, the percentage selecting Alternatives a, b, and c, respectively, was 55%, 45%, and 1% for APA members, 44%, 49%, and 7% for PS members, and 60%, 38%, and 1% for ASA members (PS deviating significantly from both APA and ASA).

DISCUSSION

The results suggest that while the overwhelming majority of respondents favors the peer-review system and believes it, in an overall sense, to be effective as implemented (see answers to Questions A1, B6, B16, A15, B5, and B4), the system has many specific shortcomings of which respondents disapprove. Reviewers often are not sufficiently objective (A2, B15, B17, B9), competent (A6, B19), conscientious (A9, A10, A7), or consistent (B14, B20). They are often wrong (A4, A11), and they often attempt to coerce the author into compliance with

their strictly subjective preferences (A3) or (occasionally) incorrect changes (A12, A13). But, perhaps most vexatious, they are often arrogant or obnoxious (B10, B12, A8, B18, B9). One respondent, who identified herself as an associate editor, added the words "or [to show] how clever they are" to Question B9, "Have you ever felt that referees try to find something to object to just to convince the editor that they have done a conscientious job?"

Although many respondents reported having been treated as inferior to referees (A8, B10) and having experienced pressure to conform to their opinions (A3), a large majority believed that their own judgment was at least as good as that of a referee (B8) and that referees should not have the power to enforce conformity to their opinions (B7). Perhaps they were strengthened in that view by the fact that 53% of them had been asked to referee an article that they were incompetent to review (B24).

Several questions bear upon the efficiency of the peer-review system. Besides being objectionably slow (B13), it apparently does not encourage careful writing (A14), does not prevent publication of rejected articles (B2), and does not prevent a "blind" referee from deducing an author's identity (B23). Furthermore, there is a strong suggestion that editors often do not know (of their own independent knowledge) who would be an appropriate referee in a given area (B24, B26) and resort to gamesmanship to secure referees (B25, B26). (The editorial practice of picking referees from the list of references can be disastrous to an author who has criticized their work.)

Predictably, the evils of the system have produced counter-evils in coping with it. Authors sometimes resort to gamesmanship (B21) and often engage in unwarranted conformity (B11, A5). Forty-seven percent of the respondents reported having at some time accepted a referee's suggestion against their better judgment, and a tragic 8% admitted to having revised their most recent refereed, revised, and published article in accordance with reviewers' comments that they knew to be wrong.

Considering the many flaws in the peer-review system, it is intriguing that revision of ultimately acceptable manuscripts has become virtually mandatory. The Psychonomic Society is an elite group. "To be eligible for membership, a person . . . must have established a record of publication of significant post-doctoral research," so all members are successful veterans at publication. Yet in answer to the questionnaire sent only to Psychonomic Society members, 91% of the respondents answered "yes" to the question "Was a revision required on the last manuscript you published in a refereed professional journal?" and 30% answered "no" to the question "Have you ever had an article accepted as originally submitted (i.e., with no revision required) by a refereed professional journal?" It is difficult, therefore, to escape the conclusion that the peer-review system has been guilty of many bureaucratic excesses and that one of its consequences, virtually mandatory revision, is more of a conventionalized ritual than a scientific necessity.

REFERENCES

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