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Regrets or no regrets? No regrets! The fate of rejected manuscripts

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1. Introduction

In general, Editors are facing larger numbers of submitted manuscripts than they can publish. Thus they search for instruments to make a reasonable selection. One criterion may be a preference for certain topics within a broader field. Even then an imbalance may remain between submissions and available pages. Weighing of the relative quality of the submitted work is a prerequisite in order to make fair decisions. The most important instrument in this process is the advice of one or more peer reviewers [1]. Specialized research on the limitations of the peer review system is just starting to emerge [2–4]. From investigations on the editorial process of *Radiology* [5] and the *Journal of Clinical Investigation* [6], it has appeared that reviewers set markedly different standards in their appreciation of manuscripts even if based on a large group of reviewers that each handled many manuscripts. Also the concordance between reviewers on the same manuscripts is limited [6]. When fictitious manuscripts are sent to many more reviewers than what is usual for a standard journal, marked differences in reviewer's opinions become overt [7]. In the social sciences, papers published already have an almost 90% chance of being rejected when they are resubmitted to other journals [8]. The latter two types of studies raise ethical issues with respect to reviewers unaware of the fact that they are guinea pigs in an experiment [9].

The fate of rejected manuscripts, however, is terra incognita. We have explored this area by combining the data in the database of *Cardiovascular Research* with data in Ovid (Ovid Search Software, version 3.0). This is the first study which not only traces such manuscripts, but also follows their future in terms of citation power.

2. Manuscripts rejected in 1995 and 1996

Between 1 June 1995 and 31 December 1996 *Cardiovascular Research* received more than 1100 submissions, of which the large majority concerned original manuscripts ($n=1025$). About 70% of these ($n=716$) was rejected for one or another reason (Table 1). Rejection could be based on action by the authors themselves, who did not resubmit a manuscript although they were asked to revise it and to perform additional experiments ($n=68$) or because they explicitly withdrew a manuscript ($n=4$) from the review process, possibly because they submitted a manuscript simultaneously to more than one journal (Table 1).

This analysis focuses on the remaining 644 manuscripts which were rejected by the editorial team on the basis of the reviewer's recommendations ($n=625$), or because they were deemed unsuitable ($n=19$) and returned to the authors without entering the review process (Table 1). We have tried to allocate the manuscripts in other journals during the first months of 1999 using Ovid. We have searched for first and senior authors and also for titles of manuscripts. Thereafter we compared the titles of published papers with the titles of the rejected papers in the database of *Cardiovascular Research*. Finally, we have scored the citations in 1998 to papers published in 1996, 1997 or 1998 by using data on the Web of Science of the Institute for Scientific Information (Philadelphia, USA).

3. Rejected manuscripts: publication by other journals

Table 1 shows that 301 of 644 (47%) rejected manuscripts which could be traced in other journals. They were all published in 1996, 1997 or 1998. The overall percentage of 47% underestimates the true eventual publication percentage of manuscripts previously rejected by another journal, because not all sources are covered by

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Table 1
Fate of manuscripts rejected by *Cardiovascular Research* between 1 June 1995 and 31 December 1996

Background rejection	Unpublished (not found)		Published (by other journal)		Total
Editor's action					
Unsuitable	10	(52.6%)	9	(47.4%)	19
Rejection by editorial team	333	(53.3%)	292	(46.7%)	625
Total	343	(53.3%)	301	(46.7%)	644
Author's action					
Not returned by authors	38	(55.9%)	30	(44.1%)	68
Withdrawn by authors	0	(0%)	4	(100%)	4
Total	381	(53.2%)	335	(46.8%)	716

Ovid. However, the statement of Vandenbroucke ''We know that if a paper is submitted once, it will ultimately be published, some day in some journal'' may be slightly overstated [10].

4. Rejected manuscripts: impact factors of publishing journals

The impact factor of the journals that published the 301 manuscripts previously rejected by *Cardiovascular Research* was on the average 1.64±0.06 (s.e.m). This value is significantly lower than the impact factor of *Cardiovascular Research* over the years 1996–1998 (2.88–3.26). Fig. 1 shows that the impact factor of the rejected papers is normally distributed. A small amount of papers (2.3%) were published in journals without an official impact factor. Most papers (18.3%) were published in a journal with an impact factor between 1 and 2. Only seven of 644 manuscripts (1.1%) rejected by *Cardiovascular Research* were ultimately published by a journal with an impact factor >4.0.

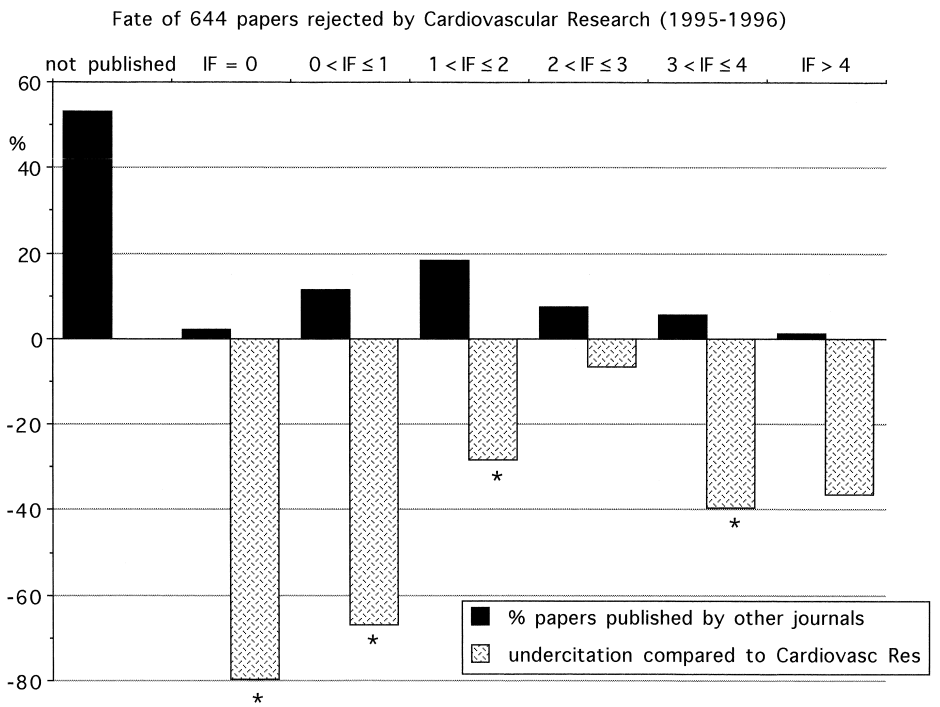

Fig. 1. Top bars: fate of 644 manuscripts previously rejected by *Cardiovascular Research*. The majority of manuscripts (53%) could not be traced ('not published'). The papers that were published by other journals were arranged according to the impact factor (IF) of the journals. Most manuscripts (18.3%) were published in a journal with an impact factor between 1.0 and 2.0. The averaged impact factor of all journals was 1.64±0.06 (s.e.m.). Lower bars: citation of published papers compared with relevant reference sets of papers published by *Cardiovascular Research* (see Section 5 for explanation). Overall undercitation was −39% ($P<0.0005$; Student's *t*-test).

5. Rejected manuscripts: citation of papers published by other journals

The 301 papers rejected by *Cardiovascular Research* and published by other journals were overall significantly undercited by −39% ($P<0.0005$; Student's *t*-test). This figure was calculated by comparing the citations in 1998 to all published papers in 1996, 1997 or 1998 with the citations in 1998 to original papers published by *Cardiovascular Research* during the same years. Fig. 1 shows that this undercitation was observed for all classes of impact factors, although significance was reached for publications in journals with impact factors <2.0 and in journals with impact factors between 3.0 and 4.0. Thus papers rejected by *Cardiovascular Research* and published by other journals with a higher impact factor are less frequently cited than papers published by *Cardiovascular Research* itself. Therefore the answer to the question raised in the title of this paper ''Regrets or no regrets?'' is definitely ''No regrets!'' The 5.7% of papers ($n=37$) published in journals with an impact factor between 3.0 and 4.0 were not only significantly less cited (by −39.4%) than papers in *Cardiovascular Research* but also less cited than other papers in the same journal. This follows logically from the fact that those journals had a higher impact factor than *Cardiovascular Research*. In bibliometric terms, publication of those papers was therefore a 'loss' for the journals.

Fig. 2 shows data of journals that published at least six papers previously rejected by *Cardiovascular Research*. The column 'All' shows the overall −39% undercitation of the 301 papers. Most papers were published by the *Journal of Cardiovascular Pharmacology* (20) with an overcitation of 6%. The *Journal of Molecular and Cellular Cardiology* published 16 papers with an undercitation of −20% and the *American Journal of Physiology* published 11 papers with an undercitation of −22%. For individual journals the undercitation was significant for the *Canadian Journal of Physiology and Pharmacology* (six papers with undercitation −91%) and the *Japanese Circulation Journal* (11 papers with undercitation −81%). Interestingly, when papers were rejected by *Cardiovascular Research* and after rebuttal reconsidered by another set of reviewers and eventually accepted, the undercitation in *Cardiovascular Research* itself was −15% for five papers.

Revisions not returned by the authors and published by other journals (see Table 1) were undercited compared to *Cardiovascular Research* by −14% (not significant).

6. Conclusions

- Half of papers rejected by *Cardiovascular Research* between 1 June 1995 and 31 December 1996 were subsequently published by other journals.
- The impact factor of those journals is significantly

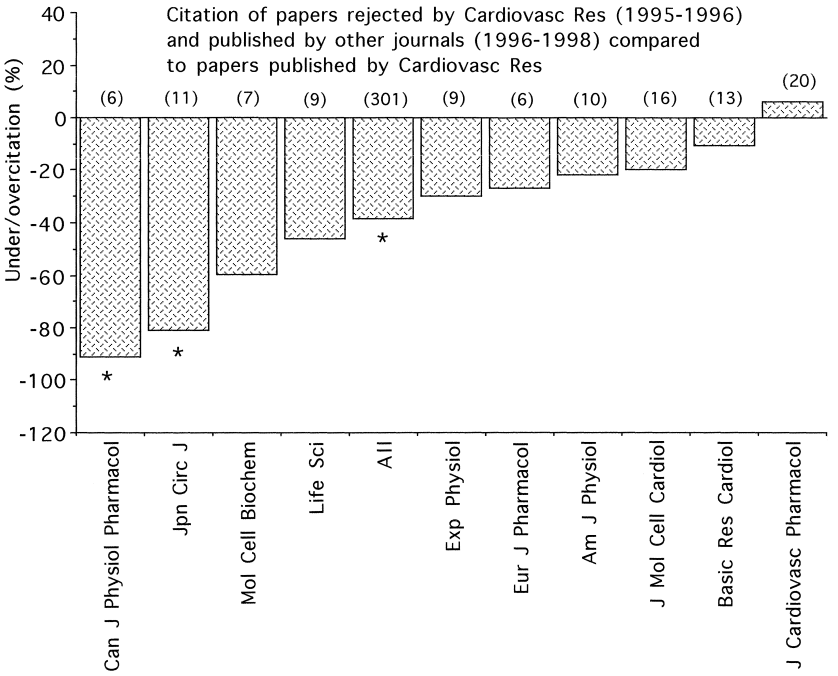

Fig. 2. Citation of papers in journals that published six or more papers previously rejected by *Cardiovascular Research*. The 301 papers (column 'All') were undercited by −39%. The undercitation for the individual journals was significant for *Canadian Journal of Physiology and Pharmacology* and *Japanese Circulation Journal*. Numbers between parentheses indicate the number of papers published by the journals.

lower than the impact factor of *Cardiovascular Research*.
- The papers published by the other journals are significantly less frequently cited than the papers published by *Cardiovascular Research*, even if the impact factor of those journals is higher.

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