Editorial peer review: a comparison of authors publishing in two groups of U.S. medical journals

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This study compared the editorial peer review experiences of authors who published in two groups of indexed U.S. medical journals. The study tested the hypothesis that after one journal rejects a manuscript an author selects a less well-known journal for submission. Group One journals were defined as those indexed in 1992 MEDLINE that satisfied several additional qualitative measures; Group Two journals were indexed in the 1992 MEDLINE only. Surveys were sent to the first authors of 616 randomly selected articles, and 479 surveys were returned, for a response rate of 78.1%. A total of 20.8% of Group One and 15.7% of Group Two articles previously had been rejected. Group One authors were more likely to select a journal for its prestige and article quality, while Group Two authors were more likely to have been invited to submit the manuscript. More than 60% of both groups felt the peer review had offered constructive suggestions, but that it had changed article conclusions less than 3% of the time. Both groups thought the review process only marginally improved content, organization, or statistical analysis, or clarified conclusions. Between 3% and 15% of all authors received considerable conflicting advice from different reviewers. Authors from both groups differed as to their reasons for journal selection, their connections with the publishing journal, and patterns of resubmission after rejection.

INTRODUCTION

There is a generally held impression that authors, when selecting a journal for manuscript submission, choose from a set of well-known journals, and then, if the manuscript is rejected, select a less well-known journal. As succinctly stated by Fye, “A rejected manuscript is usually submitted to another journal, lower in prestige perhaps, but more in need of material” [1]. Several studies have investigated the fate of rejected manuscripts. Wilson found that 85% of manuscripts rejected by the Journal of Clinical Investigation in 1970 subsequently were published [2]. Relman obtained virtually the same results in a study of manuscripts rejected in 1975 by the New England Journal of Medicine [3]. Lock, in an examination of manuscripts submitted to the BMJ in 1979, concluded that 68% of the rejected manuscripts were published elsewhere[4]. In 1985 Whitman and Eyre queried authors of nine family practice journals about their publication experiences and found that between 2% and 32% of published articles had previously been rejected [5]. In a similar study, Yankauer found that 35% of manuscripts accepted by the American Journal of Public Health during 1983 and 1984 had previously been rejected [6]. In an examination of the publication experiences of 103 authors at the Mayo Clinic, Roland and Kirkpatrick determined that 15% of published articles had been rejected prior to their publication [7].

All but one of these studies examined one well-known journal or institution; the remaining study examined a small set of general medical journals. The results seem to support the theory that most manuscripts rejected by prominent journals are published in less well-known journals. However, data indicate that up to one-third of articles published by well-known journals have previously been rejected. Although data show that most manuscripts are eventually published, only Whitman and Eyre asked which journals had previously rejected the manuscripts.

THE STUDY

The present study investigated the patterns of resubmissions after rejection by examining a random sample of authors of indexed articles. The study had a
broader goal of comparing the experiences of authors who had published in two distinct groups of indexed U.S. medical journals, one well known and the other less well known. The study tested the hypothesis that authors selected less well-known journals after a rejection.

METHODOLOGY

The survey method was selected for data collection. A survey instrument was developed that asked authors about their publication decisions and their experiences with editorial peer review. (See Appendix.) Articles were selected at random from each of two groups of journals using the criteria developed by Weller [8]. Group One consisted of seventeen large, prestigious medical journals, while Group Two encompassed 742 small specialty journals. All of the journals were indexed in MEDLINE and published in the United States.

Each of the Group One journals met several qualitative criteria, in addition to being included in MEDLINE. Each was cited more than 5,000 times per year [9], had a circulation of more than 10,000 in the United States, and was included on each of three separate lists of recommended journals. The lists were the Brandon-Hill list of recommended journals for the small medical library [10], Abridged Index Medicus, and the American College of Physicians' A Library for Internists [11]. Group Two journals were published in the United States and indexed in MEDLINE, but did not meet any of the additional criteria.

Articles from both groups of journals were selected randomly from those indexed in MEDLINE during 1992. To include only material likely to be peer reviewed in the sample, all letters, editorials, and news items were eliminated. Articles were not differentiated according to the type of publication within the journal. In 1992, 9,219 articles from the seventeen Group One journals were indexed in MEDLINE. A random number table was used to select Group One authors from this set. Because of the size of the database, it was not possible to create a set of all 1992 articles indexed from the 742 journals that met the criteria for inclusion in Group Two. Therefore, Group Two authors were identified with paired sets of random numbers. The first random number of the pair identified a Group Two journal title; the second number identified a 1992 indexed article from that journal. To eliminate problems related to language and correspondence time, only authors with a U.S. reprint address were included in the study. According to Yamane, 397 surveys were needed for a valid sample size[12]. Because an earlier, similar survey that focused on editorial peer review had a return rate of approximately 70% [13], 616 surveys were mailed to 300 authors of Group One articles and 316 authors of Group Two articles.

The survey was approved by the investigator's institutional review board and all respondents were guaranteed anonymity. The target article was identified on the survey instrument, which was mailed to the first author of the article. The questions were designed to be answered by any author, regardless of whether the respondent was the senior author. The survey asked questions about only the target article.

The survey was pretested with twenty-four authors, who were selected through the use of the random number methodology described earlier. Several changes were made to the survey as a result of the pretest. Nonrespondents received a reminder postcard approximately two weeks after the initial mailing. The remaining nonrespondents were mailed a second copy of the survey two weeks after the return deadline.

Reprint addresses given on the MEDLINE printout were sometimes incomplete. A total of fifty-two surveys were returned by the post office as undeliverable; forty-nine of these were mailed to a second author or an alternate address. Three surveys that could not be remailed were not counted, which made the final sample size 613.

RESULTS

A total of 479 (78.1%) surveys were returned, and 473 (77.1%) provided usable data that could be used. The response rate was virtually the same for both groups of journals: Group One had 233 returns (77.9%); and Group Two 245 (78.0%). One completed return could not be included because its group number had been removed by the respondent.

Group One articles were slightly more likely (P < .07*) to be peer reviewed than were those in Group Two: Group One, 228 (93.9%); Group Two, 240 (89.2%). Authors in both groups received a similar number of reviewers' reports, with Group One receiving an average of 2.0 and Group Two an average of 1.9. Authors in both groups revised their manuscripts approximately the same number of times: Group One, 1.2 times on average; Group Two, 1.1. Most authors did not learn the names of the reviewers: Group One, 202 (87.4%); Group Two, 191 (78.9%). Group One authors were more likely (P < .01, two-tailed t-test) than were Group Two authors to suggest the name of a potential reviewer: Group One, 38 (17.8%); Group Two, 14 (6.5%). A few authors sent names of potential reviewers to an editor requesting that the person(s) not review their manuscripts: Ten (4.3%) of the Group One

* For all statistics, Pearson's Correlation is used, unless stated otherwise.
and eight (3.3%) of the Group Two authors made this request.

Group One authors were less likely (P<.05) to be invited to submit a manuscript than Group Two authors (Table 1). Once invited, both groups were peer reviewed significantly less frequently (P<.01) than those not invited. Conference proceedings were peer reviewed significantly less frequently (Group One, P<.01; Group Two, P<.05) than other types of manuscripts.

Authors were asked about their affiliation with the publishing journal. Group One authors were more likely to have published previously in (P<.05), subscribed to (P<.01), and reviewed for (P<.01) the publishing journal than Group Two authors. Group One authors who had published previously in the same journal were also more likely than Group Two authors to have been invited to submit their manuscripts (P<.01) or to have given their paper at a conference (P<.05). One-third to one-half of all manuscripts were published in the journal of a society of which the author was a member.

About one-third of all authors served on the editorial board of a scientific journal. Membership in the society or service on the editorial board did not increase the likelihood that an author was invited to submit a manuscript or have a conference presentation published. The one exception was that, within Group Two, authors were more likely (P<.01) to be invited to submit a manuscript if they served on the editorial board of a scientific journal, which was not necessarily the same journal that published their manuscript.

Sixty-eight (29.4%) Group One authors served on the editorial boards of a total of 100 journals; seventy-nine (32.4%) Group Two authors served on the editorial board of a total of 106 journals. Table 2 shows the type of journals for which these authors served on editorial boards. Group One authors were more likely (P<.01) than Group Two authors to be on the editorial boards of Group One journals. No other differences were statistically significant.

Group One authors published significantly more (P<.01) articles than did Group Two: Group One authors averaged 20.9 articles over a five-year period and Group Two averaged 16.2 articles over the same period. Group One articles were also more likely (P<.01) to have more authors than articles in Group Two: One hundred twenty-four (53.9%) Group One articles had four or more authors compared to eighty (33.1%) articles for Group Two.

Authors base their selection of a journal for manuscript submission on a number of considerations. Authors were asked to rank on a scale of 1 to 5 ("very important" to "not important") the importance of the

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**Table 1**

Differences between invited manuscripts and conference proceedings

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group One</th>
<th>Group Two</th>
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<tbody>
<tr>
<td></td>
<td>All manuscripts</td>
<td>Invited manuscripts</td>
</tr>
<tr>
<td></td>
<td>N = 233, n = 36</td>
<td>N = 27, n = 45</td>
</tr>
<tr>
<td>Peer reviewed</td>
<td>93.9% (n = 228)</td>
<td>72.2%**</td>
</tr>
<tr>
<td>Previously published in journal</td>
<td>65.7% (n = 230)</td>
<td>57.8%†</td>
</tr>
<tr>
<td>Review for publishing journal</td>
<td>52.2% (n = 230)</td>
<td>68.6%††</td>
</tr>
<tr>
<td>Membership in publishing society</td>
<td>44.6% (n = 202)</td>
<td>38.7%</td>
</tr>
<tr>
<td>Author on an editorial board</td>
<td>29.4% (n = 231)</td>
<td>38.9%</td>
</tr>
<tr>
<td>Author on board of publishing journal</td>
<td>4.8% (n = 231)</td>
<td>11.1%‡‡</td>
</tr>
</tbody>
</table>

* P < .01, † P < .05, †† P < .07 (Statistically significant differences between Group One and Group Two)

** P < .01, †† P < .05, ††† P < .07 (Statistically significant differences within Group One and Group Two)

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**Table 2**

Type of journals in which authors served on the editorial board

<table>
<thead>
<tr>
<th>Served on an editorial board</th>
<th>Group One</th>
<th>Group Two</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 233</td>
<td>N = 245</td>
</tr>
<tr>
<td>Same journal as publishing journal</td>
<td>4.8% (n = 231)</td>
<td>6.2% (n = 242)</td>
</tr>
<tr>
<td>Group One journal</td>
<td>6.9% (n = 231)</td>
<td>0.8% (n = 242)</td>
</tr>
<tr>
<td>MEDLINE, but neither Group One nor Group Two</td>
<td>14.3% (n = 231)</td>
<td>15.6% (n = 242)</td>
</tr>
<tr>
<td>Group Two journal</td>
<td>10.8% (n = 231)</td>
<td>15.7% (n = 242)</td>
</tr>
<tr>
<td>Not named or non-MEDLINE</td>
<td>11.3% (n = 231)</td>
<td>15.7% (n = 242)</td>
</tr>
</tbody>
</table>

* P < .01
criteria they used in journal selection. The percentages of authors who gave a strong positive rating (either 1 or 2) to the various selection criteria are shown in Table 3. The two groups of authors gave similar responses concerning the importance of subject matter, journal readership, quality of staff, speed of publication, and recommendation of a colleague for journal selection. However, Group One authors were more likely ($P < .01$) than Group Two authors to select a journal for its prestige and the quality of articles it published.

Forty-five (20.8%) articles from Group One and thirty-four (15.7%) from Group Two had been rejected previously. Table 4 shows the types of journals that had first rejected the manuscripts. Approximately one-half (44.4%) of the manuscripts that had been rejected by a Group One journal were published in another Group One journal; while 20.6% of manuscripts rejected by a Group One journal were subsequently published in a Group Two journal. Few authors of rejected manuscripts contacted the editor after rejection: Group One, eight (22.2%); Group Two, nine (20.5%).

Authors were also asked about the value of the review process. Strong positive ratings (either 1 or 2, where 1 was "a great deal" and 5 was "not at all") of various aspects of the peer review process are compiled in Table 5. There were no statistically significant differences between the two groups of authors for any variables. The data show that a previous rejection did not alter the authors’ view of the value of the editorial review process. Both groups of authors had strikingly similar opinions about the value of the review process to their manuscripts.

Authors said the most valuable comments came from the reviewers: Group One, eighty-nine (45.2%); Group Two, ninety-three (49.8%). Fewer authors, seventy-eight (42.7%) from Group One and seventy-three from (42.2%) Group Two, said the most helpful comments came from the editors. Because some editors summarize reviewers’ comments, it is difficult to know where the editors’ comments actually originated.

Table 3
Reasons for journal selection

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Group One $N = 223$</th>
<th>Group Two $N = 245$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject coverage of journal</td>
<td>94.2% ($n=226$)</td>
<td>91.9% ($n=235$)</td>
</tr>
<tr>
<td>Readership of journal</td>
<td>89.8% ($n=225$)</td>
<td>86.6% ($n=232$)</td>
</tr>
<tr>
<td>Journal prestige</td>
<td>90.7% ($n=225$)</td>
<td>72.7% ($n=234$)*</td>
</tr>
<tr>
<td>Quality of articles</td>
<td>89.8% ($n=225$)</td>
<td>75.7% ($n=235$)*</td>
</tr>
<tr>
<td>Quality of journal staff</td>
<td>53.8% ($n=223$)</td>
<td>54.4% ($n=230$)</td>
</tr>
<tr>
<td>Speed of publication</td>
<td>33.5% ($n=227$)</td>
<td>43.8% ($n=233$)</td>
</tr>
<tr>
<td>Recommendation of colleague</td>
<td>16.9% ($n=226$)</td>
<td>24.9% ($n=229$)</td>
</tr>
</tbody>
</table>

* $P < .01$

Table 4
Type of journals that first rejected manuscript

<table>
<thead>
<tr>
<th>Type of journal that first rejected manuscript</th>
<th>Group One $N = 223$</th>
<th>Group Two $N = 245$</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDLINE, but neither Group One nor Group Two</td>
<td>44.4% ($n=45$)</td>
<td>20.6% ($n=34$)</td>
</tr>
<tr>
<td>Group Two journal</td>
<td>42.2% ($n=45$)</td>
<td>55.9% ($n=34$)</td>
</tr>
<tr>
<td>Non-U.S. journal</td>
<td>4.4% ($n=45$)</td>
<td>8.8% ($n=34$)</td>
</tr>
<tr>
<td>Not named or non-MEDLINE journal</td>
<td>6.7% ($n=45$)</td>
<td>5.9% ($n=34$)</td>
</tr>
<tr>
<td>* $P &lt; .05$ (Cross tabulation, Mantel-Haenszel test)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Authors publishing in Group One journals were more likely ($P < .08$) to view the help from statisticians positively: Group One, eleven (17.8%); Group Two, three (6.4%).

**DISCUSSION**

Weller’s study of editors of two similar groups of indexed journals concluded that, while a fundamental process of editorial peer review was followed by both groups of journal editors, differences did exist [14]. Similar results were obtained in the present study of the experiences of authors who have published in Group One and Group Two journals.

Conclusions are limited by several factors. The study examined only indexed articles published in and originating from the United States. No data were gathered on rejected manuscripts that were never published, were published in a non-indexed journal, or were published in a journal indexed by a service other than MEDLINE.

Several conclusions can be drawn from the data. First, within the process of editorial peer review, few differences between the two groups of journals were identified. From the authors’ perspective, peer review is fairly uniform among indexed journals. Authors were consistent in their opinion of the value of peer review. Even after rejection, opinions remained remarkably similar to those of authors whose manuscripts had not been rejected. By contrast, a study of manuscripts submitted to the *Journal of Pediatrics* found that authors’ opinions of the peer review system varied according to publishing success [15]. Authors’ reactions may depend on timing; the present study asked authors’ opinions only after they had published successfully. Their opinions might have been different had the authors been queried immediately after rejection.
Contrary to what might have been predicted, only a small percentage (less than 5%) of authors were concerned with bias in the review of their manuscripts. Only two (0.5%) of the authors said the review of their manuscripts revealed a great deal of bias. Dickersin pointed out that writers refer to publication bias in medical journals “as if it is known to exist and its etiology is well understood.” After examining published reports, however, she concluded that “it is difficult to estimate, even crudely, the size of the problem of publication bias” [16]. The present study obtained data on the extent of publication bias from the successful authors’ perspective only.

Peer review had the greatest impact on the final presentation of the manuscript. Fifteen percent of all authors felt that the statistics were improved. It is through the statistical analysis of data that conclusions are drawn and clinical decisions are made. Peer review served to fine-tune a manuscript and, for a small but important percentage of the articles, it significantly improved them. The Group One review process did a slightly better job of making substantive changes to manuscripts than that of Group Two.

The resubmission of rejected manuscripts by authors did not fit the expected pattern, which was resubmittal of a rejected manuscript to a less well-known journal. The surveyed authors’ pattern of journal selection after a rejection indicated less of a concern with categories of journals than had been expected. A rejection by a Group Two journal did not stop an author from resubmitting a manuscript to a Group One journal.

Rather than supporting the hypothesis, the data indicate that the authors were more astute at selecting the most appropriate journal for their manuscript than previously thought. It is interesting to note, however, that forty-five (20.8%) of the Group One articles that had been rejected previously were eventually published by Group One journals, while a smaller number, thirty-four (15.7%), of Group Two articles had been rejected previously. Manuscripts that were rejected due to inadequate design, faulty conclusions, or other irreparable shortcomings were presumably never published.

CONCLUSIONS

The present study supplied the first evidence that 15% to 20% of articles published in both prominent and less well-known journals indexed in MEDLINE had been rejected previously. Resubmission and re-review of these manuscripts adds significantly to the work of editors and reviewers each year.

Invited manuscripts and conference proceedings did not receive the same degree of review as other types of manuscripts. Such articles should be identified clearly by the editor so that readers will be in a better position than they are now to judge the value of these articles.

Group One authors had more connections with the publishing journal than Group Two authors had with their journals. This result is to be expected given that Group One journals have more subscribers, more articles published, and more reviewers than Group Two journals.

Many authors made very positive comments about the review process, stating, in effect, that editorial peer review, while imperfect, is the best process available.

Fye suggested that a journal in need of material was less prestigious than one not in need [17]. However, the present study indicates that any correlation between a journal’s prestige and the author’s reasons for journal selection may be more complex than previously thought. An author selects a journal for a wide variety of reasons. This is an area in which further investigation is needed.

REFERENCES

14. Ibid.
17. Fez, op cit.

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APPENDIX A

Experience with the editorial peer review process

The following article was randomly selected from articles indexed in Index Medicus:

[citation inserted]

Please answer the questions in the survey from your experience with the publication of this article only.

This study is being conducted to help understand the editorial peer review process. Your responses are confidential and completely voluntary. The questionnaire will take only a few minutes to complete.

Thank you for your help.

Experience with the editorial peer review process

1. Indicate the importance to each of the following in your decision to submit your manuscript to the journal which published it. 

(Please circle most appropriate for each criterion)

<table>
<thead>
<tr>
<th></th>
<th>Very important</th>
<th>Not important</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. The prestige or reputation of the journal</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>b. The quality of articles in the journal</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>c. The quality of the editorial staff of the journal</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>d. The appropriateness of the journal for the subject of your manuscript</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>e. The readership of journal</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>f. A recommendation from a colleague or coauthor</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>g. The speed with which the journal publishes a manuscript</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>h. Another reason (specify)</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Yes No Not applicable
2. Were you invited by the editor or editorial staff to submit the manuscript? 1 2 3
3. Do you subscribe to the journal which published your manuscript? 1 2
4. Do you hold membership in the society which publishes the journal? 1 2
5. Was your article part of a published conference proceedings? 1 2
6. Have you ever published before in this journal? 1 2
7. What was the length of time from . . .
   First submission to acceptance, including revisions? Months _____
   Acceptance to publication? Months _____

8. Was your manuscript peer reviewed? (Consider your manuscript peer reviewed if the editor or editorial staff returned comments for you to address.)
   Yes ...................................... 1 No .................................... 2→skip to #15

9. In addition to any comments in the editor’s letter(s) to you, how many reviewers’ reports did you receive . . .

   Number of reviewers
   Not applicable
   With the first round of reviews? ___
   With a second round of reviews? ___ 9
   With a third round of reviews? ___ 9

10. How many revisions did your manuscript undergo with this journal? Revisions _____

11. Overall, to what extent did you say that the review . . .

   A great deal
   Not at all
   Not applicable
   a. Improved the manuscript’s content? ..................... 1 2 3 4 5
   b. Improved the manuscript’s organization? ..................... 1 2 3 4 5
   c. Improved the statistical analysis? ..................... 1 2 3 4 5 9
   d. Clarified the conclusions? ..................... 1 2 3 4 5
   e. Changed the conclusions? ..................... 1 2 3 4 5
   f. Included constructive suggestions? ..................... 1 2 3 4 5
   g. Resulted in conflicting advice? ..................... 1 2 3 4 5
   h. Showed the reviewer(s) understood the manuscript? ..................... 1 2 3 4 5
   i. Resulted in a biased review? ..................... 1 2 3 4 5
   j. Other (specify) ..................................... 1 2 3 4 5

12a. Did you learn the name(s) of any reviewer(s) either through the editor or through a signature on a reviewer’s report?
   Yes ...................................... 1 No ...................................... 2

   b. Did you suggest to the editor that a particular person . . .
      Review your manuscript? Yes ...................................... 1 No ...................................... 2
      Not review your manuscript? Yes ...................................... 1 No ...................................... 2

13. How valuable were each in the review process . . .

   Most valuable
   Least valuable
   Not applicable
   a. Reviewers’ comments ..................... 1 2 3 4 5 9
   b. Editor’s comments ..................... 1 2 3 4 5 9
   c. Statistician’s comments ..................... 1 2 3 4 5 9
   d. Other (specify) ..................................... 1 2 3 4 5

14a. Was this manuscript rejected by another journal before its acceptance?
   Yes ...................................... 1 No ...................................... 2→skip to #15

   b. Name(s) of the journal(s) which rejected it.
      Journal name
      Not applicable
      First rejection ..................... 9
      Second rejection ..................... 9
      Third rejection ..................... 9

   c. Did you contact the journal editor after rejection(s)?
      Yes ...................................... 1 No ...................................... 2→skip to #15

14d. The editor followed up your questions about the rejection with . . .

   Yes No
   i. Explanation of reasons for rejection ..................... 1 2
   ii. Suggestion of another journal ..................... 1 2
   iii. Re-review of the manuscript ..................... 1 2
   iv. No follow-up ..................................... 1 2
   v. Other (specify) .....................................
15. In the last five years, have you reviewed a manuscript for the journal which published your article?
   Yes ....................... 1   No ....................... 2

16 What is the approximate number of single-authored or multiple-authored articles you have published in the last five years?  Total number of articles _______

17. List any journals for which you are currently serving on the editor board:

18. Please comment on any additional aspect of editorial peer review of interest to you:

Thank you for taking the time to answer this questionnaire. If you would like a copy of the results of this study, fill in the attached form and return it with the completed survey. Please mail by June 4, 1993 to: Ann C. Weller, Deputy Director, Library of the Health Sciences, University of Illinois at Chicago, 1750 W. Polk Street, Chicago, IL 60612 (312/996-8974)