HYPOTHESIS

THE NEWSLETTER OF THE RESEARCH SECTION OF MLA

Contents

VOLUME 12, Number 3 Fall 1998

DON'T FORGET TO RETURN THE ENCLOSED BALLOT FOR RESEARCH SECTION OFFICERS

Message From the Chair

by Ruth Fenske, Ph.D.

Please exercise your right to vote for Research Section officers by completing and returning the enclosed ballot. Thanks to Jocelyn Rankin and her committee for preparing this slate for us.

As you know, the Section gives awards for the best research paper presented at a Research Section session and for the best research poster. It is not too early to be planning for submissions for the 2000 Annual Meeting in Vancouver. Now is the time for your consortium or library to lay the foundation for a winning paper or poster in the Year 2000.

Our home page has moved to *http://hubnet2.buffalo.edu/mla/*. You can also continue to reach it through MLANet, *http://www.mlanet.org*. Thank you to Gary Byrd and the Library Consortium of Health Institutions in Buffalo for providing a new institutional home for our Web page, and to Kristin Stoklosa for her conscientious editing. She is also doing the Research Spotlight column for the MLA News as a member of our Research Resources Committee.

Jan LaBeause is continuing her fine work on our newsletter. HYPOTHESIS is now available on the Internet at *http://gain.mercer.edu/mla/research/hypothesis.html*. This will save us money on printing and postage, support MLA's electronic goals for the association, and, we hope, attract new members.

All committees have been charged and will be making preliminary reports in late November. To paraphrase Jesse Jackson, "Keep Research Alive in MLA!"

HYPOTHESIS. The Newsletter of the Research Section of MLA
http://gain.mercer.edu/mla/research/hypothesis.html

HYPOTHESIS (ISSN 1093-5665) is the official newsletter of the Research Section of MLA. It is published three times a year by the Section: Spring (March), Summer (July/August), and Fall (November). It is also available at: *http://gain.mercer.edu/mla/research/hypothesis.html*. Items to be included should be sent to the Editor by the 15th of the preceding month (i.e., February 15th for Spring, June 15th for Summer, October 15th for Fall). Copy is preferred by e-mail, but will be accepted in other formats.

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MLA 1999 Program Committee Report ...

Research Sessions at MLA '99

submitted by
Gary D. Byrd, Ph.D.

The Program Committee is happy to report the following sessions to be sponsored or co-sponsored by the Research Section at MLA '99 in Chicago, May 14-20, 1999:

1) *Research Process Panel: Expert Advice to Help Make the Research Process Less Tense* sponsored by Research Section alone will feature Invited Speakers. Four panelists will provide an overview of the research process from asking a question, through choosing a methodology, to data analysis, and finally presenting the results.

2) *Reports of Informatics Research Results: Understanding our Present to Help Create a More Perfect Future* will be co-sponsored by the Research, Medical Informatics and Hospital Libraries Sections. Contributed Papers will report preliminary or final results of informatics research or questions concerning the structure of health knowledge, use of health information, technologies underlying health information dissemination or access, or the effectiveness of health information resources in support of teaching or learning.

3) *A Medical Informatics Research Agenda for the Next Century* will feature Invited Speakers addressing the opportunities and needs for medical informatics research to help find answers to critical questions affecting our ability to develop and manage information resources, tools and systems to improve access to and use of health information for research, education and clinical care. It will be sponsored by the Medical Informatics Section, with co-sponsorship by the Research Section and the Medical School Libraries Section.

4) *Collaborating Today for a Better Tomorrow: Reports of Collaborative Research Crossing Disciplines, Institutions and Associations* will be sponsored by the Medical Informatics Sections, with co-sponsorships by our section and the Medical School Libraries Section. Contributed Papers will report on preliminary or final results of research projects involving health sciences librarians working in collaboration with researchers in other disciplines such as informatics, medicine (or nursing, dentistry, pharmacy, etc.), economics, law or others.

5) *Evidence Based Medicine: Implications for the Health Sciences Librarian and Other Health Professionals* will feature Contributed Papers focusing on the role of the health sciences librarian and other healthcare professionals as they incorporate EBM into their future practices. It is being sponsored by the Pharmacy & Drug Information Section, with co-sponsorships by the Research, Hospital Libraries, Medical School Libraries, and Medical Society Libraries Sections.

Officers & Executive Committee, 1998-1999

Chair.....Ruth Fenske, Ph.D.

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For contact information, see MLA Directory or Research Section Home Page *(http://www-hsl.mcmaster.ca:80/lrs/index.html)*

Food for thought...

"The way to do research is to attack the facts at the point of greatest astonishment."

... Celia Green, The Decline and Fall of Science, 'Aphorisms.'

"Questions are keys to door of truth."

... Earl Derr Biggers' Charlie Chan

MLA Research, Development and Demonstration Grants 1999

MLA Research, Development and Demonstration Grants, which range from $100 to $1000, are available for projects which promote excellence in health sciences librarianship. Applications must show established methodology and viable research design. Applicants must hold a graduate degree in library science, be a practicing health sciences librarian with at least two years professional experience, and be a citizen or permanent resident of the United States or Canada. Completed applications, including three references, are due December 1, 1998.

For more information, contact: Beth Ruddy, MLA Headquarters (312-419-9094, mlapd@mlahq.org) or Nancy Ralston, Chair of the Research, Development, and Demonstration Project Grants Jury, Nebraska Medical Center, NN/LM-MR, Omaha, NE (402-559-4326, nralston@netserv.unmc.edu).

... submitted by Nancy Ralston

Editor's note: The 1998 recipient for this award was Mary Howrey the subject of the Research Spotlight column in this issue of HYPOTHESIS (pg. 4).

The Teen CARE Network as Participatory Action Research (PAR) A Case Study and Progress Report

. . . . . Mary M. Howrey, MALS, AHIP

Background and Mission

The **Teen CARE Network** is an Aurora, Illinois partnership of libraries and community agencies supported by the Illinois State Library with Library Services and Technology Act (LSTA) grant funds in 1998. The library-community agency partnership evolved from an earlier Teen Health Information Network (THINK) grant project spearheaded by Aurora Public Library during 1994-95. The THINK project focused on teen health collection development and public programming for a target population of 12,000 Aurora teens and their parents [1, 2].

In October and November 1997, a series of focus group meetings were held with librarians, teachers, high school student services staff, school officials and youth service professionals. These meetings were designed to build on the THINK partnership experience, to identify new teen health concerns from the viewpoint of the professionals serving Aurora youth, and to develop a strategy for improved community-wide access to quality health information for teens and their parents. Provena Mercy Center, a community hospital with 365 licensed beds and a strong behavioral services division and education department, West Aurora School District #129, a K-12 school district serving 9,619 students, and the DuPage Library System, Geneva, IL, a multi-type system of 148 libraries, were key partners in the formation of the new partnership.

In December 1997, a Steering Committee of fifteen libraries, schools, youth service agencies and healthcare providers was formed to address issues of youth personal safety and interpersonal violence. The Steering Committee endorsed a new name for its partnership—**Teen CARE Network**. The **CARE** acronym stands for **C**ommitted to **A**ction, **R**espect and **E**xcellence and represents two important aspects of the project mission: (1) practical learning for students, teachers, librarians, parents and youth service professionals about peacemaking and nonviolence, and (2) social action consistent with the important values of caring, respect and excellence. Provena Mercy Center Library staff agreed to serve the **Teen CARE Network** as leaders of the library-community agency partnership [3].

By mid-January 1998, a grant proposal was prepared and submitted to the Illinois State Library for improved community-wide access to health information for teens and their parents, expansion of the partnership membership, assessment of Aurora youth health risk behaviors, outreach to the public via a "media blitz" and "peacemaking and non-violent" health promotion activities aimed at teens, parents and teachers. In late April 1998, the partners received confirmation that the **Teen CARE Network** project was funded as one of 71 grant projects supported by the Illinois State Library during 1998 [4]. The **Teen CARE Network** received LSTA funding due to its strong emphasis on knowledge construction among partners, youth health risk behavior assessment and social action. This emphasis evolved from the project director's knowledge of the participatory action research model.

Participatory Action Research as Qualitative Methodology

Participatory action research (PAR) is a form of co-operative inquiry in which "…the emphasis is on working with groups as co-researchers." [5, p. 325] The primary task of PAR is the enlightenment and awakening of common people. According to Whyte [6, p. 20], when PAR is conducted, "…some of the people in the organization or community under study

participate actively with the professional researchers through the research process from the initial design to the final presentation of results and discussion of their action implications." PAR is applied research, in which the researcher is actively engaged on an equal, authentic basis with the members of the organization or community.

In forming the **Teen CARE Network**, the project director entered into a "dialogue" with members of the library and youth service community. This dialogue altered the traditional quantitative research "subject-object relationship" into a qualitative research "subject-subject relationship" which promoted the practical understanding of the health information needs of teens, parents and the youth service professionals in Aurora and led to group social action and programming.

The preferred way of communicating the practice of PAR is through the description of actual cases. Such events as community meetings, support groups, steering committee meetings and town hall meetings are important information sources which identify key issues, reclaim a sense of community, emphasize the potential for liberation of youth, allow one to make sense of data collected and to reflect on project progress, and develop the ability of a community as a whole to continue employing PAR and develop in a direction defined by project participants [5].

According to Reason [5], PAR has three objectives. First, knowledge and action are produced which has direct use to a group of people. Second, the participants in PAR are empowered at a deep level to construct and use the knowledge acquired. Third, PAR implies authentic commitment—PAR researchers value the process of genuine collaboration between themselves and the community members they serve.

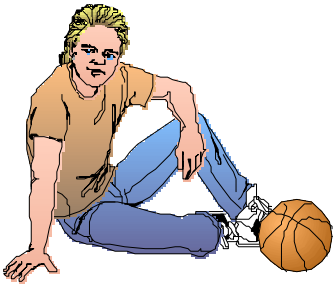
Case Description and Progress to Date

The **Teen CARE Network** Steering Committee has a core of 10-12 members that meet monthly to discuss project peacemaking initiatives and community health information needs. The Steering Committee members support the continuing expansion of the partnership to reach at-risk families and youth in need of quality health information. An Internet Web site has been developed for the partnership. Community members have twenty-four hour access to free, full-text health information available through Information Access Corporation's Health Reference Center—Academic Version and the Healthy Teen Handbook [7] for local youth services. The **Teen CARE Network** site is accessed at either *<http://www.provenamercy.com/library.htm>* or *<http://www.aurora.il.us/teencare>*. Evaluation of the quality of the Internet site and customer feedback is continuous and ongoing. Visitors to the Internet site are encouraged to send feedback via e-mail to the Web master by directing comments to *a-mercy1@dupagels.lib.il.us*.

In May and June 1998, the **Teen CARE Network** sponsored two free public programs at Provena Mercy Center that focused on personal

Mary M. Howrey

***Editor's Note**: Mary Howrey is the 1998 recipient of the MLA Research, Development and Demonstration Project Grant. Mary, Medical Librarian at Provena Mercy Center in Aurora, Illinois, since 1989, has served as Project Director of the Teen CARE Network partnership since April 1998. Her MLA research is focusing on self-directed learning and consumer health information services for Aurora teens and their parents via the Teen CARE Network partnership and the Internet site found at <http://www.aurora.il.us/teencare>. She will be assessing self-directed learning readiness and promoting the Teen CARE Network Web site with school librarians, public librarians, six teachers and 90 students enrolled in the Health Careers Academy at West Aurora High School during the 1998-99 school year. The Instructional Technology faculty at Northern Illinois University, DeKalb, Illinois, are supporting the action research projects underway in Aurora, Illinois. For more information, contact Mary at Provena Mercy Center, 1325 North Highland Ave., Aurora, IL 60506 (630-801-2686, fax: 630-801-2687, e-mail:a-mercy1@dupagels.lib.il.us).*



safety and building a peaceable community, school and family. Over 500 community members attended these two programs. Three videos were produced which will be broadcast on local community cable television stations (Channels 6 and 17) as part of the "media blitz" in late 1998 and early 1999 to inform community members about the root causes of violence, effective conflict resolution strategies and family "togetherness" activities. A parenting of teens class is being held at Provena Mercy Center during September and October 1998 for parents interested in moving their teens from "rebellion to responsibility."

An Aurora Schools Youth Risk Behavior Survey (YRBS) was conducted in May-June 1998 which employed the Centers for Disease Control, Division of Adolescent and School Health (DASH), YRBS questionnaire [8]. The YRBS has been administered every two years since 1989 to assess teen health risk behaviors in grades 9-12 across the United States [9]. Using the YRBS data for 1993 and 1995, Hill [8, p. 136] found that there is a "…need for age and developmentally appropriate, culturally sensitive violence prevention programs in health education." Hill also concluded that outreach and violence prevention efforts need to be targeted more effectively toward at-risk students, including African-Americans, Hispanics and females. Over 500 students responded to the Aurora Schools YRBS questionnaire, and the preliminary results are currently under review by the Steering Committee.

The **Teen CARE Network** Steering Committee has directed the partnership to share the final results of the Aurora Schools YRBS with the local School Boards of the participating high schools and health educators so that youth knowledge, attitudes and skills can be developed in school to prevent interpersonal conflicts from escalating into future violence within family, school and work contexts. A "call to action" is among partnership priorities in the coming months as presentations are conducted with School Boards, partner administrations and local news media.

Letters are being mailed to health educators in the middle schools and high schools and to youth service professionals to encourage examination of current health education offerings and encourage the inclusion of personal development, self-esteem, stress management, conflict management and anger management topics for all K-12 students in public and private schools. Youth service professionals also are being asked to confirm that "avenues of support" for victims of school and family violence are available community-wide. These "avenues of support" include 24-hour hotlines, on-line list servs and websites, newsletters, books, videos and group and/or individual counseling.

Partnership Prospects for the Future

Librarians in the **Teen CARE Network** are assuming new professional roles consistent with the connected "ethic of caring" discussed by Noblit, Rogers and McCadden [10], Gilligan [11] and Maack [12]. Resource-based learning strategies for at-risk students [13,14] extend the roles of school, public and health science librarians beyond traditional information retrieval into community-wide collaboration [14,15] , advocacy, mentoring [16] and Internet site development. **Teen CARE Network** collaboration continues to highlight how effective management of health information resources can ensure the healthy futures of youth and their families. Primary prevention efforts like those developed by the **Teen CARE Network** promote community understanding of the conditions that give rise to violence and the factors that protect and promote the growth of youth into successful adults [17,18]. With community-wide social action, we empower each other to give up the "spirit of meanness" and isolation and invest in a "celebration of caring" and connectedness [19,20].

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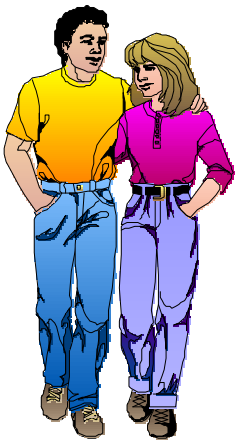

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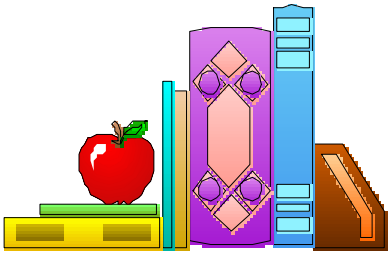


Literature Review

Prepared by Ruth E. Jenske, Ph.D.

MORRIS TA, MCCAIN KW. The structure of medical informatics journal literature. J Am Med Inform Assoc 1998 Sep/Oct;5(5):448-466.

The authors identify and analyze the core journal literature of medical informatics. Twenty-nine core journals were identified by searching several databases on a combination of medical and health related terms and a second combination of information science and computing terms. Titles with large numbers of articles retrieved were placed on the list. These twenty-nine titles underwent a co-citation analysis. Co-citation has to do with articles from two different journals being in the same reference list. The online versions of the Science Citation Index (SCI) and the Social Sciences Citation Index (SSCI) were searched to find all co-citations to journals on the list. Further analysis was based on similarity between co-citation profiles (the patterns of high and low co-citation counts) of journals on the lists. Nine titles were eliminated, leaving a core list of twenty titles.

Separate analyses of co-citation data collected from SCISEARCH and SOCIAL SCISEARCH were performed. Writers in titles indexed by SCI placed more emphasis on computers and engineering as opposed to information management and education and SSCI writers made a greater distinction between theory and practice.

The Journal of the American Medical Informatics Association started publication in 1994, and its citation patterns are now becoming established. It appears to balance engineering with information management and education.

Surprisingly, there were only weak co-citation links between information science and medical informatics. The authors tell us that medical informatics was started by those who adopted computer technologies for biomedical applications. Early results were published in the medical literature and they still are being published there, rather than in the information science literature. Despite the lack of ties to information science, medical informatics shows signs of interdisciplinarity with other fields, especially in articles indexed in SSCI.

DESS H. Gauging faculty utilization of science journals: a defensive strategy for a lean budget era. Sci Technol Libraries 1997;16(3/4):171-190.

The Rutgers Science Research Libraries used three different methods to identify candidates for retention and elimination. Most users are faculty and graduate students.

First, in 1991, faculty primary users of two branches were sent a complete list of current subscriptions, with current subscription price listed for each title. Recipients were asked to indicate frequent use, occasional use, or not used for each titles. There was a 50% response rate. Interdisciplinary users were not surveyed, using this method.

Also in 1991, a reshelving study was conducted at the main science library and three branches. Colored dots were affixed as journals were reshelved over a one semester period. Interdisciplinary use was included, using this method. Not surprisingly, more low use titles were identified through this method than through the faculty preference survey.

Finally, in 1996, Science Citation Index was searched for articles with corporate source Rutgers for 1994 to 1996. A total of 4336 publications in 1239 serials were found. Works cited in the 4336 articles were also examined. Journals were cited from a low of one time to a high of 2256. A total of 21,328 articles were cited. They found that Rutgers faculty tended to publish in only 175 of the 1239 titles. Nearly two thirds (14,129) of the cited references were from journal titles cited only once. Only 10% (2160 titles) of the cited titles were cited six or more times. For titles held in the Chemistry Library, where the author works, highest used and highest cited titles showed a 25 of 35 title overlap. Over one-third of the journals held were not used or were little used by Rutgers faculty.

Overall findings are that results for the three methods correlated well for high use titles but there was great discrepancy among the three methods for low use titles. Both the reshelving study and the SCI study identified low use titles. However, the two methods

identified quite different lists of low use titles. This was probably because the reshelving study included student use and the SCI study did not. The authors conclude that the study successfully identified high use titles. Low use results are less clear cut. In order to avoid serious errors, faculty are being consulted before cancellations are made.

With the advent of online serials, cancellation decisions are becoming even more complex. If a volume of a title is available online, will it still be available five years from now? Will faculty actually use journals in online form?

CILBERTI A, ET AL. Empty handed? A material availability study and transaction log analysis verification. J Acad Librarianship 1998 Jul;24(4):282-289.

This study was conducted at Adelphi University. Survey forms were distributed to OPAC and CD-ROM users at randomly selected hours over a three week period. The exact nature of the survey form is unclear without checking the reference to Kantor's book. Apparently respondents gave a description or the work or subject sought and either described or checked off problems in finding materials, either in the OPAC or database or on the shelves. Follow up searching was done by staff shortly after each form was submitted, to determine the reason for failure.

Two hundred eighty-nine (66%) useable responses were received for OPAC searches and 65 (44%) responses were received for CD-ROM searches. Respondents were approximately two-thirds undergraduates, one-third graduate students, and a few faculty. The overall success rate was 58%, which falls into the range found in previous studies. However, searching for journal articles was successful only 45% of the time. Success is presumedly placing one's hands on the desired item or on material on the desired subject. Errors were categorized as library errors and user errors. Two-thirds of the errors were library errors and one-third were user errors. Over 40% of the library errors were because the title was not owned.

Transaction log analysis of unsuccessful OPAC searches showed that the OPAC result was as the user reported but that all search steps taken were not reported.

This study could be improved with a more detailed description of the survey form and a definition of success.

KILKER J, GAY G. The social construction of a digital library: a case study examining implications for evaluation. Inf Technol Libraries 1998 Jun;17(2):60-70.

Written by a doctoral candidate and a professor of communication, this is a case study evaluation of The Making of America (MOA) Digital Library prototype at Cornell University. The MOA Digital Library is composed of nineteenth century journals.

The Social Construction of Technology (SCOT) framework is used. SCOT posits that technological change is a social process. Any one technology serves multiple relevant social groups, which have different conceptions of the technology. Relevant social groups in this case are funder, librarians, developers, evaluators, and various levels of user. Each group has a different experience, technical expertise, and goals which color their views of the product and the evaluation process. Varied results are expected from the variety of groups. This is called interpretive flexibility. The SCOT concept of closure applies less well to soft technologies, such as a digital library, than to a hard technology, such as a scanner. Multiple versions of software can be developed and then co-exist for different user groups.

The researchers found that the SCOT concept of interpretive flexibility worked well in the Digital Library context but that the relevant social groups and closure concepts required modification. Specifically, the authors addressed interactions among relevant social groups and varying abilities to influence the technology as being important. In this case, various groups' influence was mediated by that of another. For instance, evaluators mediate the users' responses and librarians' mediate funders' expectations. They call varying abilities to influence the technology "relevancy" but do not propose criteria to determine who should be the most influential.

The SCOT succeeds in showing us a way to understand a technology from the perspective of multiple groups. It does not, however, provide much guidance as to how to put the knowledge into practice. Health sciences libraries could use the framework to elucidate the differing perceptions among multiple user groups, when developing or improving services and systems.

CITERA M. Distributed teamwork: the impact of communication media on influence and decision quality. J Am Soc Inf Sci 1998 Jul;49(9):792-800.

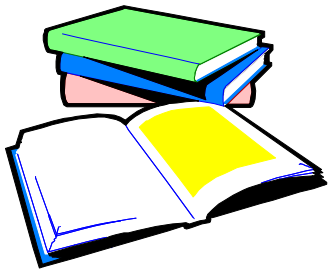
Written by a psychologist, this article concerns differences in individual influence and decision quality

across communication media. In this era of distributed work teams, this research is highly relevant. Past research has found that participation of group members was more equal when communication was via a computer, rather than face-to-face. Equal participation is assumed to increase group efficiency and task performance. This study looks specifically at the effect of social influence as an explanation for the equalization effect. Social influence is defined as "the similarity between an individual's original position and the group's final decision.

Social influence could be manifest as individuals dominate in face-to-face situations being less dominate on the computer, or less dominate individuals being less apprehensive about evaluation, when working on the computer and therefore becoming more assertive when working on the computer. Hypotheses were formulated, based on these ideas.

Sixty-four undergraduate students were placed in groups of two. A within-subjects design was used. All groups did three survival tasks, one each face-to-face, telephone, and computer. Subjects first did the task individually and then were asked to reach group consensus. The between-subjects variable was domination and the within-subjects variable was communication medium. The independent variable was method of communication and the dependent variables were influence and group decision quality. Each subject was rated on degree of domination.

Repeated measures analysis of variance was used to analyze the data. Results show that the level of influence for dominating participants did not vary across media. However, the level of influence for less dominating participants did change significantly across media. Influence was higher by phone or by computer than face-to-face. The quality of group decisions was equal across the three media. These results point to the evaluation apprehension explanation. Although less dominate individuals were probably more comfortable using less immediate media, there was no improvement in group decision making.



The author suggests the study should be repeated, using more types of media, larger groups, and different types of tasks.

HAYTHORNTHWAITE C, WELLMAN B. Work, friendship, and media use for information exchange in a networked organization. J Am Soc Inf Sci 1998 Oct;49(12):1101-1114.

In a related article, these authors used social network analysis to study how work and friendship relationships in a university research center affected the choice of medium for the exchange of different kinds of information.

A social network consists of actors and the ties between them. The ties are a function of pairs of actors. Pairs were established by asking the thirty-five faculty, students, and staff in the center to identify twenty lab people with whom they correspond most frequently. Twenty-five lab members responded and identified a total of 378 respondent-correspondent pairs which were used in the study. Frequency of correspondence, topic of correspondence (both personal and work-related), medium (scheduled face-to-face, unscheduled face-to-face, telephone, fax, e-mail, and videoconferencing), and the nature of their working and friendship relationship with the correspondent were assessed via questionnaire. Six hypotheses were used in the study.

Topic of correspondence, after factor analysis, was found to fit into the categories of receiving work, giving work, collaborative writing, computer programming, sociability, and major emotional support. The average pair engaged in three of the six types of information exchange. Sociability was the most frequent type of exchange; major emotional support , the least frequent. Contact was made most frequently by unscheduled face-to-face encounters, followed by e-mail, and then by scheduled face-to-face meetings. Telephones, faxes, and videoconferencing were rarely used. The type of tie also affected what the pair communicated about.

Their results suggest "that the use of media . . . was socially determined as well as technologically and normatively determined." "The intensity of the work tie and the intimacy of the friendship were each independently related to a higher frequency of information exchange, maintenance of more information exchange relationships, and the use of more available media."

Health sciences librarianship is widely regarded as a cohesive professional community. It might be interesting to use social network analysis to study our ties with each other, with our users, with others in our institution, with those in our professional organization, and with the outside world.

A Proposed Research Agenda For Investigating Editorial Peer Review

By Jon Eldredge, MLS, Ph.D.

Introduction

Only a handful of librarians have published their research or observations concerning editorial peer review. These librarians include Lois Ann Colaianni [1], Susan Crawford [2, 3], David Kronick [4], A. Carolyn Miller [5], and Ann Weller [6, 7] Yet, these librarians have been recognized widely for their important contributions, based upon the prestige of the journals in which their articles have been published and the number of times they have been cited by others. Ann Weller has been a particularly prolific researcher and author concerning editorial peer review.

Other librarians should consider pursuing research in the area of editorial peer review. Librarians are uniquely positioned as a profession to lend their expertise to the important task of ensuring quality control at professional journals. Editorial peer review may be defined as the practice of submitting manuscripts for review to "experts who are not part of the editorial staff" for their evaluations as part of the acceptance process for publishing by journals [8]. The author makes reference to some useful sources in this modified bibliographic essay to point the way for interested colleagues toward conducting their own research in this diverse field.

Historical Research

The health sciences librarian with a preexisting penchant for historical research will find a wealth of research opportunities for investigating the development of editorial peer review. A better understanding of how peer review evolved during the tumultuous beginnings of print publication may lend insight into how peer review will evolve in electronic publishing. Most historians agree that peer review arose in response to the practical problem for the sponsors of a journal who wanted to ensure the highest quality to its contents [9]. As Zuckerman and Merton note, the early medical society sought to transform the status of its journal from "the mere *printing* of scientific work into its *publication*" [10].

There are two major related controversies in the history of peer review that further research might resolve. First, when did peer review begin? Second, to what extent did European and American journals practice peer review over the past two centuries? Christopher Booth finds evidence to suggest that the *Philosophical Transactions of the Royal Society* in London formed a peer review committee in 1752 to improve the quality of published manuscripts [11]. Librarian David Kronick reports, however, that as early as 1751 the Royal Academy of Surgery in Paris practiced a form of peer review [12]. Furthermore, Kronick asserts that peer review was a prevalent practice in European scientific societies by the late 18th century, but he offers little evidence to support this proposition [13]. The facts may be on Kronick's side, he simply does not supply the evidence. Kronick's book describes a faster pace of diffusion of peer review practices than does Burnham, who suggests that peer review for medical journals did not become institutionalized until the second half of the 20th century [14].

Researching the evolution of editorial peer review practices in the United States would be a more accessible project for many health sciences librarians due to the more immediate availability of original materials. Two articles can lead researchers to the appropriate primary sources. First, Ebert provides a chronological inventory for U.S. medical journals that began publication during the years 1797 through 1849 [15]. John Shaw Billings, creator of *Index Medicus* and inspiration for what later became the National Library of Medicine [16], provides a geographic inventory of medical journals for about the same period [17].

When peer review began in the U.S., and the extent of its prevalence have not been investigated very thoroughly. Much of what we know about peer review during the era of 1797 to 1900 in the U.S. has been derived from research addressing other issues. Cassedy implies that peer review may have been common by the 1850s in the U.S., although he mentions at least one notable exception [18]. Cassedy refers in his discussion to what may be the first known journal review, published by SB Hunt in the *Buffalo Medical Journal and Monthly Review* in 1856. The text of this review of a new journal,

The Medical World, suggests that another journal, the *Boston Medical and Surgical Journal*, had never practiced peer review or any other quality control during the early 19th century. The review states, about the predecessor of the present day *New England Journal of Medicine*,: "The right of rejection of an article was one never exercised, (for occasionally a subscriber is lost in that way,) and side by side in the same number, were to be seen brilliant productions of men of science, and the miserable self-puffing 'report of a remarkable case' of some ignoble quack" [19]. As a point of contrast, the physician-librarian research team of Kahn and Kahn suggest that the first medical journal in the U.S., the *Medical Repository* that began in 1797, practiced a basic form of peer review [20]. With so many conflicting accounts, librarians investigating the history of editorial peer review in the U.S. will certainly provide valued research.

Does Peer Review Encourage Censorship?

Censorship often has been a contentious issue for U.S. librarians due to our long history of fighting for freedom of expression and thought. Librarians could make a substantive contribution by determining whether peer review has an inherent tendency to encourage censorship. Most claims of peer review leading to censorship, regrettably, have been couched more in the realm of opinion or historic anecdote than in empirical evidence. The threat of censorship due to peer review processes probably seems intuitively obvious [21] to most observers, but this author finds the evidence to be less than compelling.

Horrobin has written probably the most persuasive argument for the possibility of peer review leading to censorship. He cites a number of well-known historical examples of possible censorship. In the face of little solid evidence, however, he eventually has to base his argument on "what if" propositions. His evidence, by definition, relies upon the absence rather than the existence of publications [22]. Moran and Mallory compile historic examples to suggest that peer review does lead to censorship and then argue that librarians should be actively countering censorship through creation of innovative collection development policies [23]. They cite two historical examples of alleged censorship due to peer review: Beauperthuy's discovery that insects transmit Yellow Fever and Semmelweis' discovery of the septic cause of Childbed (Puerperal) Fever. Beauperthuy's published his discovery during the 1850s while he was living in eastern Venezuela of the cause of Yellow Fever in a local journal titled *Gaceta Oficial de Cumana*. Two French journals published the same article in 1856. Beauperthuy's published discovery appears to have been ignored for a number of years rather than censored [24]. Semmelweis' appears to have been censored, although not due to peer review. Political repression in Vienna and Hungary, inaccurate reporting about his findings in other languages, and forms of resistance to his ideas appear to be the actual causes of the censorship [25]. Interested readers can examine a translation of Semmelweis' then controversial publication in Thoms' book [26].

Three other historic figures are regularly cited as the victims of censorship due to peer review: Thomas Huxley [27, 28], Edward Jenner [29, 30], and Hans Krebs. In his autobiography, Krebs points out that while *Nature* rejected his manuscript on the Krebs (Citric Acid) Cycle, the journal *Enzymologia* published it within two months [31] so it seems difficult to accept the rejection of his manuscript by one journal as censorship. Huxley's famous quote in a 1852 letter ("You have no notion of the intrigues that go on in this blessed world of science" [32] that laments the possibility of censorship by a competitor serving as a peer reviewer has two interesting sequelae. Later the same year, he received a medal from the Royal Society to which he had submitted his manuscript [33]. The next year, the manuscript in question was published by the Royal Society as the article "On the morphology of the Cephalous Mollusca" [34]. Edward Jenner's Smallpox vaccine was based upon his initial experience with one patient. He apparently was persuaded by a colleague to collect data involving a larger number of patients prior to publishing his findings [35]. This suggestion strikes the modern reader as merely practicing sound science, not as censorship [36].

A more recent historical example of possible peer review-censorship connection involves the discovery of Helicobacter pylori as the cause of gastritis and stomach ulcers. This discovery involved Australian physician Barry Marshall and his pathologist colleague J. Robin Warren during the 1980s. Monmaney has dramatically told this story in the *New Yorker* [37]. This research topic offers the appealing element of actually interviewing Drs. Marshall and Warren, and possibly their colleagues, to

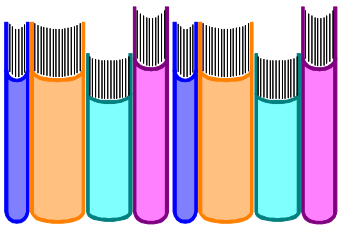
disentangle elements of their stories to determine if editorial peer review led to censorship. An ambitious researcher also could interview the editors of journals, most of whom should be still alive, to learn their perceptions of Marshall's manuscripts in the peer review process. The published record suggests, however, that Marshall's theory was not censored since he succeeded in initially publishing his findings [38] in *Lancet* in 1984 and *Medical Journal of Australia* [39] Both of these journals are listed by the 10th edition of *Serials Directory* as "Peer Reviewed", which would seem to contradict the hypothesis that Marshall's manuscripts had been rejected through the peer review process. Yet, the author's research recently has challenged the accuracy of these lists of peer reviewed journals [40]. Two facts about Dr. Marshall's experiences emerge from the published record. First, his manuscripts were rejected by publications such as the *New England Journal of Medicine* as inconclusive [41]. Second, his ideas were widely disputed within his specialty. Whether editorial peer review can be blamed for censorship in this instance does not at all seem clear to the author. Perhaps a researcher can investigate this intriguing example involving the possibility of peer review leading to censorship.

The author welcomes anyone with an interest in pursuing any of these historic examples of possible censorship to examine the sources cited in this article, and form their own hypotheses. The author found that his reading of these sources failed to convince him of the existence of censorship, thereby confirming his null hypothesis at the time, viz. that peer review does not lead to censorship.

Ethics of Research on Peer Review

The "ethics" referred to in this section relate to the use of potentially unethical methods by researchers who have been investigating the subject of peer review itself. Indeed, there have been a number of documented instances of unethical activities that have occurred as part of the editorial peer review processes at certain journals [42] such as redundant publication [43]. The ethics of the methods employed by researchers on peer review are the point of this cautionary note.

Librarians designing research projects are advised to reflect upon the ethical dimensions of their research methods. Some of the most fascinating studies on possible bias in peer review by Mahoney [44] and Peters and Ceci [45] also have been criticized for their possibly unethical use of peer reviewers as human guinea pigs. One critic



opinioned about a practical dimension of this ethics controversy: "...reviewers may not want to volunteer to do the generally thankless review task if they think it is part of a research study of themselves" [46]. Another critic noted that "...this sort of research creates distrust whilst itself requiring trust to be effective" [47]. This ethical controversy became a political issue [48]. two years ago when the physicist Alan Sokal tested the validity of the peer review process by submitting a satiric manuscript to a journal as a biting criticism of the political correctness movement in academe [49]. While each of these researchers have defended their methods, librarians are cautioned to be aware of the ethical controversies surrounding some methods of inquiry on peer review processes.

Identifying Peer Review Practices

Librarians already have been heavily involved in the task of identifying which journals practice peer review, the characteristics of those practices, and the relationship of those practices to other aspects of the sponsoring journals. Interested readers are referred to the previously cited works of Weller, Colaianni, Eldredge, and Miller for details.

Peer Review for Electronic Journals

A few years ago some suggested that electronic journals would eliminate the need for editorial peer review. Yet, the consensus of nearly all groups involved in scientific and medical communication recently has reaffirmed the importance, *possibly the greater importance*, of peer review in the electronic age. The 1998 MLA annual meeting included a well-attended program on this subject. Recent research [50] has reminded us of the rampantly inaccurate information transmitted on the World Wide Web, which further confirms the need for strong peer review practices in electronic publishing.

The pertinent question, instead, relates to *how* peer review will occur in an increasingly electronic journal publishing environment. This research arena opens up an incredible array of opportunities for librarians to

collaborate with others in investigating how peer review might be made most effective in electronic publishing. The ongoing electronic publishing experiment [51] involving the *Medical Journal of Australia* offers an exciting model [52] for librarian collaboration. A collection development librarian named Ross Coleman at the University of Sydney in Australia has been a central participant in this venture [53] This area of research on peer review may very well be a "growth industry" for librarian collaboration with other researchers during the next decade.

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