Order Number 1342731

Internal media trends in agenda-setting: A media-to-media analysis of medical journals and mass circulation magazines

O'Connor, Linda Jo, M.S.

San Jose State University, 1990

U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106

INTERNAL MEDIA TRENDS IN AGENDA-SETTING: A MEDIA-TO-MEDIA ANALYSIS OF MEDICAL JOURNALS AND MASS CIRCULATION MAGAZINES

A Thesis

Presented to

The Faculty of the Department of Journalism

and Mass Communications

San Jose State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

By

Linda J. O'Connor

December, 1990

APPROVED FOR THE DEPARTMENT OF

JOURNALISM AND MASS COMMUNICATIONS

Dr. Stephen Greene

Dr. Dennis Brown

Dr. Serena Stanford

APPROVED FOR THE UNIVERSITY

ABSTRACT

INTERNAL MEDIA TRENDS IN AGENDA-SETTING:
A MEDIA-TO-MEDIA ANALYSIS OF MEDICAL
JOURNALS AND MASS CIRCULATION MAGAZINES

by Linda J. O'Connor

This thesis addresses the topic of whether agenda-setting occurs among media and examines this topic through content analysis of medical news from 1957-1987. The use of medical journal article authors as sources for follow-up stories by other media is also examined.

Articles on five major health topics appearing in three news magazines and in three women's consumer magazines were analyzed for topic similarity to articles appearing in medical journals. Articles with similar topics were then coded for sources, length, and time lag.

Research revealed that a relationship of space alloted to medical news may exist between similar topics in weekly and monthly publications, but no other significant relationships existed among the media sampled. Medical journals in this sample did not seem to set the agenda for medical news in news and women's consumer magazines.

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INTRODUCTION

Agenda-setting describes a complex interaction of editorial and audience needs and effects. The concept, introduced by McCombs and Shaw (1972), centers around the idea of a causal relationship between a media agenda and a public agenda, i.e., the issues the media deem important become the issues the public consider important or salient. This perceived importance then transmits from the media to the public after repeated exposure to specific topics. Effects researchers generally agree that the news topics the media report have been selected and ranked for the public by the time they get into print (DeGeorge, 1981; Eyal, Winter, & DeGeorge, 1981). This selection of important news by the media varies from medium to medium, however, so that by the time a particular item of information reaches the public, it may come from any variety of media. This study, then, proposes that agenda-setting may not start with the media; rather it may start with the sources selected or even with the ideas for stories.

Much of the research in agenda-setting examines the media agenda through content analysis of newspapers or television broadcasts, with little regard for influences of other media. Yet, advertising surveys suggest that 89% of

American adults read magazines and spend more time reading them (6 hours/issue) than reading newspapers (30-40 minutes/reader/issue) or watching television (2 hours, 53 minutes/day; Click & Baird, 1983, p. 3). Researchers suggest that magazines, while not exerting a major influence over the public, probably exert at least a subtle effect (Click & Baird, 1983).

Early agenda-setting research demonstrated intercorrelations between the *New York Times* and local newspapers (.66-.70), network newscasts (.66), and newsmagazines (.51-.54) (McCombs & Shaw, 1972). Another study examined the influence of two different newspaper agendas on a sample population; results conflicted depending on the type of medium used by the reader (McLeod, Becker, & Byrnes, 1974). A later study, however, demonstrated correlations only within newspaper media, and not within broadcast media nor between print and broadcast media (Tipton, Haney, & Basehart, 1975).

Current agenda-setting conceptualization, although it touches on the influence of different media, essentially ignores the role of secondary media in agenda-setting. The media agenda is typically viewed as a composite, with one or two media examined as the driving forces responsible for audience influence. This study examines the possibility that media may well set the agenda for each other. In this case, one medium serves as the media agenda and the other as the

audience. By examining any trend of agenda-setting from one medium to the next, the role of secondary media can be explored.

Because readers look to their magazines for in-depth coverage of issues and confirmation of existing beliefs or opinions (Wolseley, 1973), the magazine, especially the specialized magazine, may be an overlooked link in the support of agenda-setting hypotheses. The number of specialized magazines grew during the 1970s and 1980s (Wolesley, 1973) as the number of mass circulation magazines decreased. Historians of American magazine development attribute the increase in specialized publications to a need for survival. These specialized publications appeal to a narrow audience, as opposed to the mass circulation magazines that compete with numerous other magazines for the general public (Ford, 1969; Wolesley, 1973; Mott, 1957). Included among these specialized publications are science, health, and medical journals. Studies on the transmittal of health knowledge to the public suggest that magazines are an important source of such information (Wade & Schramm, 1969), women are the more avid readers of health and medical matters, and magazines allow greater (Shaw & Van Nevel, 1967) and better coverage of science (and medicine) than other media (Dunwoody & Scott, 1982). To tap these specialized magazines as a source of news, this study

utilizes content analysis to examine the agenda-setting influence of specialized medical journals to women's consumer or news magazines.

LITERATURE REVIEW

Impact of Magazines

Peterson (1964) suggested that magazines cannot be separated from their culture, and that the nature of this medium makes it suitable for introducing new ideas, sustaining long-term campaigns, and working "toward a cumulative effect rather than a single impact" (Click & Baird, 1983, p. 61). Wolseley (1973) acknowledged the influence of the public on magazine content by noting, "The magazines of any nation exist in circles corresponding to the circles created by the interests of the population" (p. 34). He also noted that constraints imposed by owners, publishers or editors can impinge on the news that reaches the magazine reader. Despite these constraints, Wolseley contended magazines appeal to readers who wish to read repeatedly stories that reinforce their opinions. At the same time he insisted that magazines exert some type of influence over time. This influence may occur in two directions, according to Wolseley, horizontally through general publications and vertically through specialized magazines. Some of these specialized publications are recognized as resources for reporters.

"When developments have not yet warranted substantial mass media coverage, specialized periodicals often herald new movements. The weekly publication of the prestigious *New*

England Journal of Medicine (NEJM), for example, is often so worthy of attention that stories based on its articles are immediately picked up by wire services, networks, and other mass media" (Merriam & Makower, 1988, p. 26). The more media that pick up a story, the greater the story's impact on the public mind (Merriam & Makower, 1988). This idea is in keeping with the agenda-setting argument.

The NEJM and the *Journal of the American Medical Association* (JAMA) were not always leaders in the health publication field. In the late 1890s and the early 1900s, competition was fierce among medical journals. Regional, state and city medical journals were common (Mott, 1957). As some journals succumbed and the number of surviving journals reached a constant level, the publishing organizations, often professional associations, settled on a uniform style and format that was glossy, predictable, and highly attractive to advertisers (Ford, 1969). These factors helped facilitate the success of the NEJM and JAMA as leaders in the field of medical journalism.

Message Transmittal through Content Analysis

Content analysis provides a way to examine the role of medical journals in the making of news, and perhaps in the sending of messages to other media. According to Holsti (1969), "Content analysis is any technique for making inferences by objectively and systematically identifying specified characteristics of messages" (p. 14). Wimmer and Dominick (1987) added that statements about changes in societal values can be inferred through content analysis studies at different points in time. In this study, inferences were sometimes made when tracking medical issues from medical journals to news and women's consumer magazines.

Issues to be compared in other agenda-setting studies were identified by respondents or selected by researchers. In this study, to make the number of medical issues reported in NEJM and JAMA more manageable, the five leading causes of death (cancer, heart disease, pulmonary disease, diabetes mellitus, and cerebrovascular disease) were selected as issue categories. Because these are and have been major causes of death in the United States, research funding over time most likely would be directed toward the amelioration of these maladies; more studies probably were conducted on these diseases, and their results published in the medical literature. In addition, it seems likely that the more

people affected by a disease (as suggested by the greatest number of deaths), the greater the public interest in the topic.

Prior selection of categories for agenda-setting studies has been criticized as leading and limiting to the personal viewpoint (DeGeorge, 1981). In the case of intermedia encoding and decoding, prior selection was necessary to sample frequently reported medical topics and to avoid the possibility that the public agenda sets the media agenda. Because issues may vary by type (DeGeorge, 1981), amount of time to public exposure (Eyal et al., 1981), and number examined (Eyal, 1981), specific topics were classified within issue categories (see Table 1).

Table 1

Classification of Topics within Issue Categories

Issue	Year	Topics
Cancer	1957	smoking & lung cancer, alcohol & cancer, viral theory of etiology
	1967	anti-cancer drugs, cancer detection
	1977	breast cancer & etiology, saccharin & other environmental carcinogens
	1987	interleukin-2, alcohol & breast cancer
Heart disease	1957	artificial hearts, rheumatic fever & etiology
	1967	heart attacks, heart transplant, coronary artery disease
	1977	bypass surgery, cholesterol
	1987	cholesterol cholesterol reduction therapies
Pulmonary disease	1957	Asian influenza, tuberculosis
	1967	influenza vaccine
	1977	pneumonia, Legionnaire's disease
	1987	colds, respiratory distress syndrome
Diabetes mellitus	1957	therapies
	1967	detection
	1977	juvenile diabetes
	1987	environmental influences
Cerebrovascular disease	1957	stroke
	1967	no issues
	1977	migraine alcohol & brain disease
	1987	stroke etiology, Alzheimer's disease

Although some of the issues were relatively nonspecific, e.g., Asian influenza, inferences were made about topic similarity based on source similarity and appropriate time lag. If the topic was the same, a search ensued for a match among journal article authors and sources mentioned in the news or women's consumer magazines. Although this technique resulted in inferences based on indirect relationships, Holsti defended this method by stating, "likenesses in the messages of two separate sources served as the basis for inferences about the similarity of motives..." (1969, p. 35). When inferences are made about the effects of messages, Holsti warned that factors other than the original communication that might affect the message recipient must be controlled.

Besides placing controls for directionality by developing time lag criteria for weekly and monthly publications, additional factors considered were the nature of the medical news, nature of the medium (news versus women's consumer magazines), level of analysis (individual medium versus aggregate media agendas), and long-term effects (four sample years over a 30-year time frame).

Articles selected for study included all nonfiction articles, health tips, and abstracts dealing with reporting or interpretation of empirical research regarding cancer,

heart disease, diabetes mellitus, pulmonary disease (including pneumonia and influenza), and cerebrovascular disease. Editorials, letters to the editor, cartoons, and researcher profiles were not counted.

This operational definition of news was supported by Tichenor, Olien, Harrison, and Donohue (1970, p. 675) in their study of selected science articles containing "information from one principal scientist," and "findings or interpretation from a field of empirical science." Cole (1975) analyzed science news stories for increasing conflict coverage, sampling "... all news stories which have substantial subject matter concerning results or interpretation of empirical research in the sciences, applied science, or development, technology, engineering, medicine, and public health" (p. 467).

Topics were considered similar if the main theme focused on research conducted in the respective areas and there was mention of the disease entity. Health tips were analyzed as separate articles and assigned to each topic accordingly.

Media and Public Agendas

Media agendas, traditionally, have been categorized by issues or topics and rank-ordered by frequency of appearance, by amount of coverage and by placement of news items (Funkhouser, 1979; Williams & Semlak, 1978; Gormley, 1975; Wanta, 1989). Studies have typically explored agenda-setting functions of the media on the public during political campaigns (McCombs & Shaw, 1972; Siune & Borre, 1975; Carey, 1976; Tipton et al., 1975). Exploration of agenda-setting effects in a nonpolitical campaign environment has been minimal (Sohn, 1978; Lang & Lang, 1981). In aggregate studies, the audience agenda has been measured through panel or trend analysis, with subjects asked to rank-order issues appearing in the media and to identify issues important interpersonally, or perceived as potentially influencing the lives of others (McLeod et al., 1974).

The media agenda measurements generally have been considered easy to conduct through content analysis methodology. Categories of information are identified as topics important to the media or judged by communicators as topics important to the public. Herein lies a weakness in agenda-setting methodology regarding the determination of media agenda content. In the case of McCombs and Shaw (1972), a political campaign was selected as the media

event. Salient topics were listed by the sample audience and identified as issues they believed important for the government to consider. However, according to agenda-setting theory, the public knows only those issues selected by the media; hence, inherent bias exists in this methodology. If issues were selected without initial media exposure, this method might be more valid. Because it is likely that prior media exposure exists, the influence of public needs on editorial selection may be the place to start. The public influence on media content relates back to the "vicious cycle of ignorance," alluded to by Cohen (1963), wherein the editor's lack of perceived public interest in a topic results in a lack of public exposure to that topic. Lack of public exposure results in continued ignorance. By asking the public to determine salient topics introduced by the media to see if they match the media agenda seems to be a confirmation of this cycle of ignorance. Issue saliency may be more realistically and more individually examined by taking a step back in the editorial process from news that appears in the media; e.g., sources of news and constraints on the media. Cohen (1963) agreed by writing:

> ...there is considerable evidence that much of the information on world affairs currently at the disposal of the general public comes to it not directly from the media but at one remove or more, via people who have a greater interest in the subject and expose themselves to mass media discussions of it, any alternative that increases the flow of information and analysis to these primary consumers should result in a subsequent larger flow to their secondary audiences (p. 262).

This supports the findings of McCombs and Shaw (1972) who suggested that subjects with high interest and affect rely less on the media as sources of political information, as well as the findings of Schoenfeld (1979) who suggested that policymakers may have other sources for information besides the media. Cohen's statements also support the notion that taking a step back to examine media-to-media agenda-setting may be helpful in exploring the same trend from the media to the public.

The public agenda has also proven difficult to measure (Lang & Lang, 1981; Becker, 1982). Various methods have been used to measure the impact of the media on the thought processes and opinions of the public (Roberts & Bachen, 1982), mostly at an aggregate data level, and only minimally at the individual medium or the individual public levels (Becker, 1982). To measure individual medium or public levels, McLeod et al. (1973) introduced the idea of issue salience frameworks--individual, community and perceived; the first two types derived respectively from definitions of intrapersonal (Lippmann, 1922; McCombs & Shaw, 1972) and

interpersonal (Park, 1925) interactions. Perceived issue salience suggests "that the media can change the views of social reality of its individual audience members by indicating which issues are being discussed...and therefore be the key issues in the campaign" (McLeod et al., 1974, p. 139). By assigning one medium the role of "media" and another the role of "individual audience," perceived issue salience provides a framework to develop operational definitions and several related hypotheses.

Contingencies

Contingencies to media-to-media agenda-setting are those factors other than the variables being measured that may influence the effects. Such contingencies include obtrusiveness of issues ("the amount of direct public contact with the issue independent of media emphasis," Winter, 1981, p. 236), or in this case the amount of contact with specialized sources; credibility of perceived sources (Siune & Borre, 1975); type and technical nature of the information presented; and how the information is presented (Winter, 1981). Measurement of interest, need for orientation, and influence of audience age and gender on agenda-setting effects are additional contingencies considered in many agenda-setting studies (Winter, 1981). In this study, editorial interest, need for primary orientation combined

with the secondary need for orientation, and space devoted to medical issues in a particular medium undoubtedly influenced effects.

Because medical journals tend to treat research articles with a consistent layout or display format, editors or selectors of medical news must make their choices based on content. On the other hand, it has been suggested that newspapers and media use graphic elements and positioning to influence the audience's perception of issue salience:

> Some news items are treated in detail; others are given superfluous attention; still others are completely ignored. In the same way, broadcast media can use a story in the leadoff position or not at all. Media very clearly reveal their assessment of the salience of an item. Agenda-setting posits that audiences adopt these media assessments and, in so doing, incorporate an equal set of weights into their own agendas (DeGeorge, 1981, p. 220).

Operationalization of issues may impose further contingencies on these measurements. Indexes have been formulated to measure issue awareness, issue salience, and issue priorities (measurement of salience and awareness by coverage and news placement in a medium). "There is no clear evidence about which model best exemplifies agenda-setting. It is probable, however, that the priorities model will work best--best describe reality--when there is high media emphasis and public exposure to a set of topics or issues and high influence of some intervening variable, such as

interest or need for orientation" (DeGeorge, 1981, p. 222). Using specialized medical journals suggests the reader has interest and need for orientation to a particular topic, especially in matters of health.

Agenda-setting methodology critics note the need for controls to conduct formal comparisons. "Satisfactory control conditions might be developed by contrasting the content agenda of a given medium or outlet to either a nonmedia agenda or the agenda of another medium or outlet" (McLeod et al., 1974, p. 141). Controls are also required for source and directionality to determine whether the public's agenda influences the media's more than the reverse.

Temporal Components

An additional contingency is the influence of time on exposure to issues. In both print and broadcast media, the estimation of the proper time frame and average time lag to demonstrate agenda-setting has been troublesome. "The media probably do not act alone in providing cues to the audience members about issues, the cues probably do not affect all audience members the same way, and cues may have more influence at one point in time and for one issue than at another point in time and for another issue" (Becker, 1982, p. 533).

Five temporal criteria have been proposed to systematically compare media and public agendas:

1. The time-frame, which is the total period under consideration, from the beginning to the completion of the data gathering process;
2. The time-lag, which refers to the elapsed time between the independent variable (the media agenda) and the dependent variable (the public agenda);
3. The duration of the media agenda measure, which is the total interval during which the media measure is collected;
4. The duration of the public agenda measure, refer ring to the overall time span during which the public agenda measure has been gathered; and
5. The optimal effect span or peak association be tween media emphasis and public emphasis of an issue (Eyal et al., 1981, p. 212).

The requirement that data be new and original for publication in medical journals assures a unidirectional flow of news (Relman, 1984). Time lag can be measured by identifying the time in weeks or months, depending on the medium, between appearance of topics in the medical journal to appearance in the news or women's consumer magazine. The nature of the medium, weekly or monthly, as well as constraints imposed by production schedules, determine the limits on duration of the primary and secondary media measures and the optimal effect span.

Sources

Studies of science communication have explored the mass media as sources of medical information for faculty and non-faculty physicians and scientists (O'Keefe, 1970), the mass media as sources of science and health knowledge for the public (Wade & Schramm, 1969), scientists as sources for the mass media (Dunwoody & Scott, 1982), source perceptions of accurate reporting in newspapers (Tankard & Ryan, 1974; Tichenor et al., 1970) and in magazines (Borman, 1978), completeness of science coverage in news magazines (Rich, 1981), reportage of science conflict over time (Cole, 1975), attitudes of scientists and journalists toward newspaper coverage of science (Ryan, 1979), and readership of science stories appearing in newspapers (Patterson, Booth & Smith, 1969; Nunn, 1977). No studies have explored the role of medical journals as sources for the mass media, nor their role in agenda-setting; in fact, the studies that have examined science sources for the mass media have completely bypassed the published reports as primary news sources.

Hypotheses

H1. Topics of articles appearing in the medical journals will be similar to topics appearing in news and women's consumer magazines.

H2. Sources of articles published in medical journals are more likely to be considered authoritative and therefore used as sources for articles later appearing in news and women's consumer magazines.

H3. When medical journals are used as sources of health articles for women's consumer and news magazines, specific medical journals will be cited less frequently in the later years than in the earlier years of the sample time frame. News magazines and women's consumer magazines will look at a variety of sources for medical news as magazine segmentation occurs.

H4. Production schedules and the nature of media, rather than issue salience, will cause a greater average time lag between appearance of topics in medical journals and appearance in women's consumer magazines than the average time lag to appearance in news magazines.

H5. There will be a greater amount of space in women's consumer and news magazines devoted to medical topics initially appearing in a medical journal compared to those not initially appearing in medical journals. If indeed medical journals set the agenda for other media, and if more space

is devoted to salient topics than to less salient topics, then magazines should devote greater space to those topics initially appearing in the medical journals.

METHODS

Populations and Sample

To explore the role of agenda-setting from media to media, this study examined the influence of medical trade journals on the content of medical news articles appearing over time in news magazines and women's consumer magazines. Various aspects of agenda-setting theory were tapped by using authoritative sources to predict the direction of news flow. The leading medical trade journals, and perhaps the most prestigious, the NEJM and the JAMA, represented the original sources of medical news (Gale, 1987).

News and women's consumer magazines, also selected on the basis of circulation figures, were represented by *Time, Newsweek, U.S. News and World Report, Ladies Home Journal, Good Housekeeping,* and *McCall's*. Mass circulation consumer magazines were limited to women's magazines since women are purported to be the more avid readers of health and medical news (Wade & Schramm, 1969; Survey Research Center, 1958).

A sample time frame of 30 years was selected to reflect the growth of the public's and media's interest in health and in medicine and to gather information over several decades.

The five leading causes of death by disease in the United States--heart disease, cancer, cerebrovascular disease, pulmonary disease (including pneumonia and influenza),

and diabetes mellitus--were selected as the topics most likely to receive public funding for research, and thus, media attention (U.S. Bureau of the Census, 1987). These topics persisted as leading causes of death during the sample frame (U.S. Bureau of the Census, 1971; U.S. Bureau of the Census, 1978) (see Figure 1).

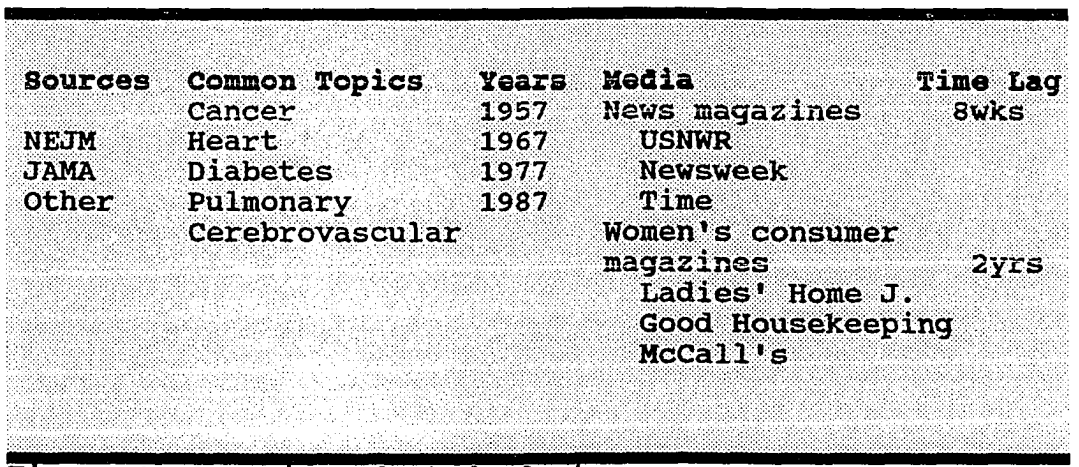

Figure 1. Overview of study design

Procedures

This study explored the role of medical journals (NEJM and JAMA) as primary news sources for medical news agendas in news magazines (*Time*, *Newsweek*, *U.S. News & World Report*) and in women's consumer magazines (*Ladies Home Journal*, *Good Housekeeping* and *McCall's*). Through content analysis, topics initially appearing in the NEJM and JAMA were matched to those later appearing in the six news and consumer magazines. When one of the five selected topics was identified in a news or women's consumer magazine, a search ensued for that topic in back issues or indexes of the NEJM and JAMA. Notation was made regarding frequency by year of appearance of topic, space alloted to the coverage of medical news by the mass media, citation frequency of the NEJM and JAMA compared to other sources of medical news, and time lag from original publication in the medical journals to appearance in the news and women's consumer magazines.

Content analysis was performed to determine topic similarity and coded for subject of article, length of article by number of words (calculated by average number of words per line times lines per column inch), sources, citations of other medical trade journals, and date of publication.

Analysis progressed from publication of a sample topic in a news or women's consumer magazine, tracing it to ap-

pearance in a medical trade journal, if possible, placing a lag limit of eight weeks on potential appearance in a news magazine and two years for consumer magazines. These time lag limits were imposed to allow for appearance of newsworthy items and at the same time restrict their potential news value to the reader. The two-year limit for consumer magazines allowed for several months delay related to production schedules.

Weekly news magazines were sampled one week each month, selected randomly among the four to five issues each month during the sample years of 1957, 1967, 1977, and 1987. This resulted in 12 issues each sample year for each news magazine. Women's consumer magazines were sampled once a month during 1957, 1967, 1977, and 1987, also resulting in 12 issues per sample year. Therefore, 72 mass circulation magazines were explored for articles based on the five leading causes of death.

Ten percent of the sample content was selected randomly and coded by an assistant. A 92 percent agreement was achieved between coders.

Analysis of Data

To determine any relation between appearance of topics in medical trade journals and in news and women's consumer magazines (H1), frequencies of appearance in NEJM, JAMA, or other medical trade journals were analyzed and compared to appearance in news and women's consumer magazines. Significance of association was assessed by chi square.

Frequencies were also recorded and analyzed using chi square to examine the relationship between sources for medical journal articles later used as sources for news and women's consumer magazine articles (H2).

Citation frequencies for the NEJM, JAMA, and other medical journals were compared through contingency tables as a yearly total for each magazine (H3). Chi square was used to assess the relationship between frequency totals. Unfortunately, only four actual citations were counted in the sample, all in NEJM in 1987. Therefore, further analysis of these data was inappropriate.

Time lag was assessed by length of time in number of weeks or months from topic appearance in medical journals to appearance in news or consumer magazines (H4). Mean lag times were computed for each topic area and compared for each magazine group by *t*-tests. In addition, time lag was graphed against length of articles for each magazine group.

Any relationships were explored through the Pearson correlation coefficient.

Space devoted to medical issues (H5) was analyzed by examining length of article and topic similarity (by topic area as defined) for each magazine group. Comparisons of length of similar and dissimilar topics were made by *t*-test. In addition, topics were rank-ordered based on total length per year per topic. Spearman's rho was utilized to compare overall rankings of space alloted in magazine groups and medical trade journals during the sample years.

RESULTS

H1: Table 2 records the number of articles of similar and dissimilar topics during the four sample years. Although the data, in some cases, showed a greater percentage of stories associated with topics in the medical journals, as composite scores for magazine groups the relationship was not significant. No significant relationships were noted when topics were analyzed for similarity between the NEJM or the JAMA and the news or consumer magazines (news: X^2 (2, N = 78) = 2.71; women's consumer: X^2 (2, N = 77) = 2.17). It seemed, however, that certain topics were more prevalent during certain years, e.g., pulmonary disease in 1957 because of the Asian influenza epidemic, heart disease in 1967 because of heart transplant surgery techniques, cancer in 1977, and heart disease and cancer in 1987 related to cholesterol and exercise. It is likely that these were not exclusive to medical journal reports, but rather were topics that predominated medical and science news in all forms of media during those times. When topics of high salience exist among the media, it seems unlikely that medical journals will set the agenda for other media. This does not preclude the idea, however, that other media may set the agenda for news and women's consumer magazines.

Table 2

Number of Articles with Topics Similar and Dissimilar to Medical Journal Articles

Media	Similar	Dissimilar
	Number (%)	
News		
US News & World R.	7 (41)	10 (59)
Newsweek	8 (22)	29 (78)
Time	5 (21)	19 (79)
Total News	20 (26)	58 (74)
Women's Consumer		
Ladies Home J.	6 (30)	14 (70)
Good Housekeeping	11 (22)	39 (78)
McCall's	3 (43)	4 (57)
Total Women's	20 (26)	57 (74)
Totals	40 (35)	115 (65)

H2: Likewise, no significant relationship was observed between sources used for news or consumer magazine articles and sources (including authors and their research facilities) of the medical journal articles (X^2 (1, N = 40) = 1.8, see Table 3). It appears that news and consumer magazines use a variety of sources to develop stories for medical readers. Among sources other than medical journals, the most common in this sample were presentors at medical society meetings and medical specialists from hospitals or clinics in the same geographical area as the magazine office. Many of the magazine article authors gave no indication (newspaper or otherwise) of the origin of their feature story, and no articles mentioned as an initial source a newspaper or press service.

Table 3

Number of Similar Sources of Articles with Similar Topics by Media

Media	Similar Sources	Dissimilar
News	13	6
Women's	10	11
Totals	23	17

H3: Because of the low citation frequency of the NEJM or JAMA articles in the sample years for the sample topics, it was not possible to compare data regarding greater or lesser incidence of citations over the 30-year time period of the study to reflect increasing segmentation of medical trade journals.

H4: No relation was observed (see Table 4) between lag times for news and consumer magazines of similar articles in two of three testable topic areas: cancer (t (17) = 1.12, N.S.); heart disease (t (10) = 0.97, N.S.); pulmonary disease (t (8) = 1.94, p<.05, one-tailed); diabetes and

cerebrovascular disease had insufficient data. A slight relation existed between news and consumer magazine groups when they were compared aggregately across all topics (t (39) = 1.88, p<.05, one-tailed). There was, however, no linear relation (see Figures 2 and 3) between mean length of an article in the news or consumer magazines and the mean lag time to appearance (r_{news} = .14; $r_{women's}$ = .01).

Table 4

Mean Time Lag: News versus Women's Consumer Magazines of Similar Articles by Topic Area

	Mean Time Lag			
Group	News		Women's Consumer	
	# weeks	(n)	# months	(n)
Cancer	5.7	(8)	3	(10)
Heart Disease	3.3	(4)	4.7	(7)
Pulmonary Disease	2.8	(8)	8	(1)
Diabetes	0	(0)	1	(1)
Cerebrovascular	0	(0)	5	(1)

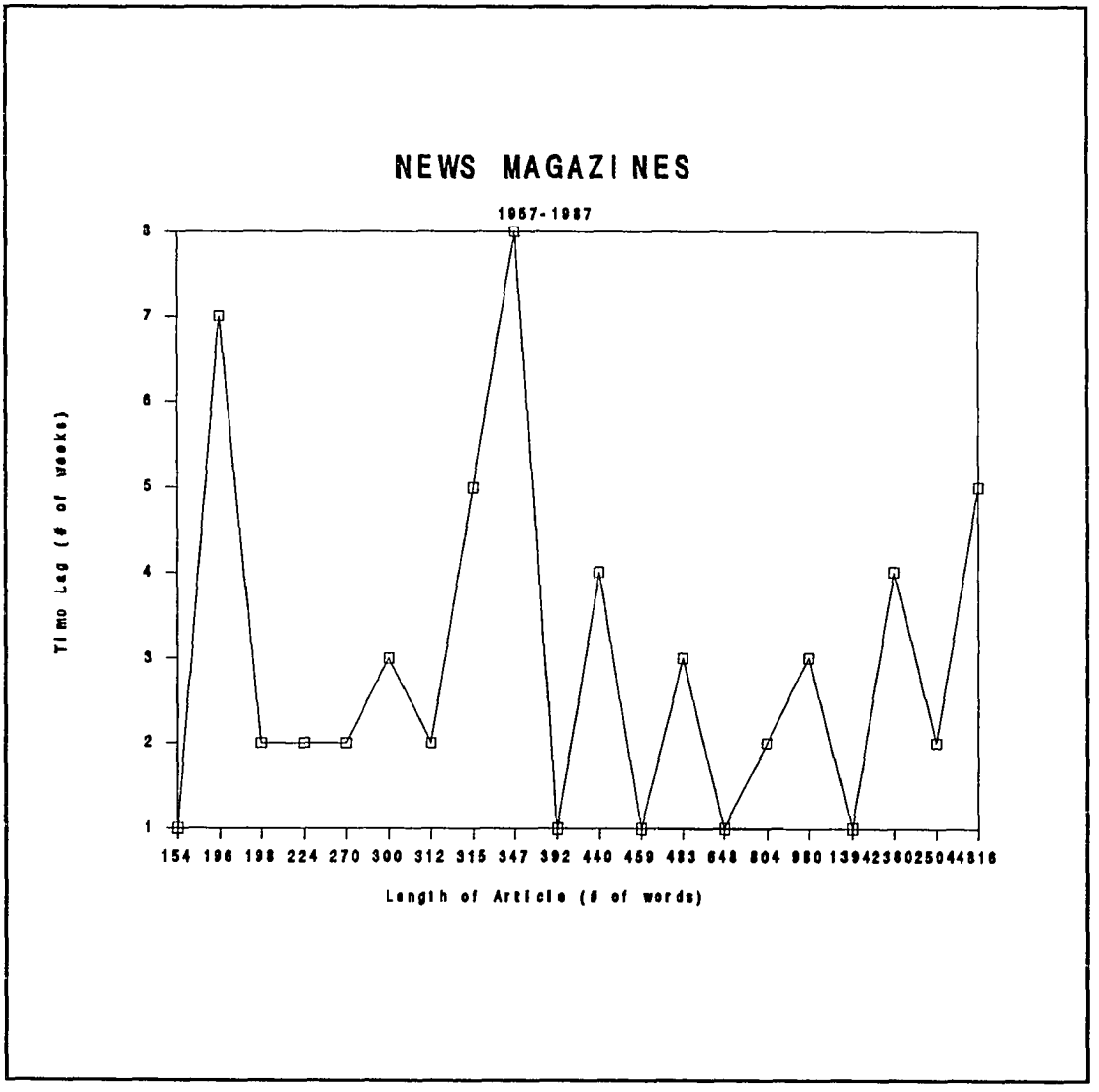

Figure 2. News magazines: time lag versus length

H5: No difference was found (t (154) = 0.00, N.S.) to support the idea that more space might be devoted to articles in news and women's consumer magazines that had topics similar to articles initially appearing in NEJM or JAMA (see Table 5). The relative rank-ordering of total space in news and consumer magazines devoted to medical topics similar to those appearing in NEJM or JAMA matched the total space in news and consumer magazines devoted to medical topics not related to those initially appearing in medical trade journals (ρ = +1.0). There appeared to be the same amount of space devoted to these particular topics during these particular years, regardless of whether the news came from medical journals or from other sources. This again may reflect topic salience or diversity of sources.

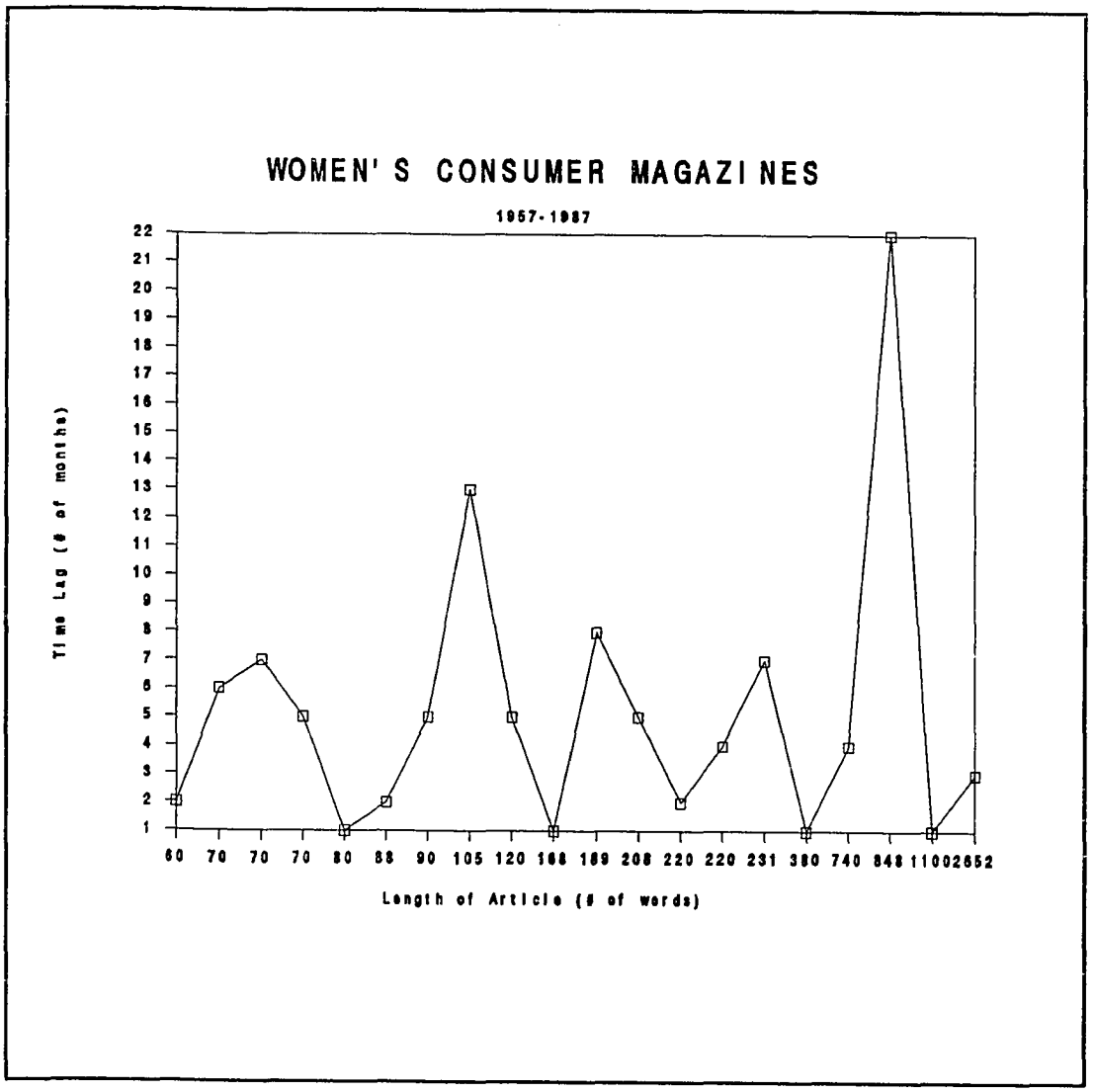

Figure 3. Women's consumer magazines: time lag versus length

Table 5

Rank Order: Length/Similar Topic versus Length/Dissimilar Topic

Topic	Similar	Dissimilar
	length in column inches (rank)	
Cancer	15082 (1)	35263 (1)
Heart	6218 (2)	21653 (2)
Pulmonary	4756 (3)	11858 (3)
Cerebrovascular	208 (4)	3060 (4)
Diabetes	168 (5)	1137 (5)
Mean	632.6	633.1
n	40	115

DISCUSSION

Salience may play a more striking role in agenda-setting functions among media than originally thought. That the news and women's consumer magazines in this sample did not rely predominantly on medical trade journals speaks well for the media's use of a variety of credible sources, guards against unilateral viewpoints and provides opportunity for balanced reporting. It was unclear, however, in many articles, where the idea for a story originated. Of those articles in which the source could be identified, media obtained medical news from naturally-occurring events, government agencies, associations devoted to the treatment of one type of disease (e.g., American Cancer Society), association conferences and educational meetings, press releases from research facilities and academic institutions, and local or renowned physician specialists.

No relationship of topic similarity between magazine groups was revealed in this sample; however, this method of inferring topic similarity is less precise than counting only topics matched by specific medical journal citations only. Therefore, it is still possible that an original idea for an article may come from a report in a medical journal, but the citation may be unreported intentionally or unintentionally. Intentional omission of a medical journal

citation may occur to avoid the admission that certain medical news is not really new, i.e., it has been published previously in a medical journal. Unintentional omission may occur when medical news is transmitted interpersonally and then becomes the basis for a story idea. In either case, it seems that in this study neither the publishing journal nor the sources associated with the report were significantly used for follow-up, expanded stories. In addition, regardless of the amount of space devoted to follow-up articles, article length did not seem to be determined by time. The topic itself seemed to be the more important factor in determining length, as suggested by the between-group relation of lag time to appearance of stories about pulmonary disease, specifically influenza, a prominent topic in the 1957 and 1967 medical news. The indirect measurement of topic similarity through inference, however, makes these statistical inferences inconclusive. Keeping in mind the inherent weakness in this topic similarity measurement, results of this study suggest that salience may determine timely appearance in a consistent manner between news and women's consumer magazines.

Criteria that editors and medical news reporters or writers use to select and display topics are factors that might influence the message recipient (news and women's consumer magazines). Among these criteria are typical

organizational and social constraints, including medium infrastructure, management philosophies, and effect of the audience on the journalists.

Additional factors influence medical news specifically: types of research funded through academic and private sources, economic feasibility of maintaining a medical department in a particular medium, whether or not a medical department subscribes to medical journals (similar to newspapers subscribing to wire services), ability of the medical department staff to interpret technical medical reports and news releases, confusion within the medical community regarding potential publication of their research findings if data are prepublished in other media (Relman, 1984), perceived reader interest in a specialized topic, criticism by medical professionals regarding inaccurate or inadequate coverage of medical news issues (O'Keefe, 1970), and reporters' or editors' perceptions of source credibility. If a topic meets these criteria, editorial preference or medium constraints may still enter into the decision for article length and type of display. The assignment of salience, length and placement of an article relates back to the suggestion made by Roberts and Bachen (1982) that the public agenda may set the media agenda, despite the attempts to control directionality of time. Hence, while a topic may be salient and timely, the space

allotted to it in a news or women's consumer magazine may be a function of various editorial selection contingencies, perhaps based on the public agenda or that of other media.

Additional research is necessary to refine the methodology in order to assess the possibility of intermedia agenda-setting. Perhaps selecting less salient topics, examining all magazine issues of a particular and more recent year, sampling other media, particularly electronic media rather than medical journals, might make identification of similar topics in magazines easier. The relationship of time lag between weeklies and monthlies suggested in this study, and the unidirectional flow of certain types of news stories may provide controls needed to support the concept of agenda-setting among media.

Intermedia correlations of issue rankings have been inconsistent in studies with significant relationships between public and media agendas; yet, in this study, although rank orderings of space devoted to similar medical topics were strongly correlated across media types, issues were not. The fallibility of rank order as a measurement of agenda-setting has been proposed by others as well (DeGeorge, 1981; Eyal, 1981). The literature review and this study reveal that operationalization of an issue and measurement of individual issue awareness continue to be elusive targets for agenda-setting researchers. While a

study of intermedia agenda-setting attempts to examine effects on an individual rather than aggregate level, as called for but not attempted by the same researchers, the vague conceptualization of an issue makes replication almost impossible. Inference required to match media topics, despite intercoder validation, seriously challenges content analysis methods required to examine media relations.

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