

How Intrinsic and External News Factors Affect Health Journalists' Cognitive and Behavioral Attitudes toward Media Relations

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Using a nationwide survey of 309 U.S. newspaper health journalists, this study examines how intrinsic and extrinsic news factors influence journalists' perceptions and use of public relations materials. Health topics, reliance on medical journals, and metropolitan market predict how journalists view corporate pharmacy media relations, while reliance on other media influences how journalists use public relations materials.

Introduction

The study of the interaction between journalists and public relations practitioners has focused on misperceptions about their relationship and the potential for conflict in that relationship (Shin & Cameron, 2003, 2005). A recent study using content analysis examined how external factors influenced the description of public relations in U.S. newspapers (Lim & Bae, in press). However, only a few studies have examined the relationship between journalists and public relations practitioners in health journalism. Previous studies on the health journalists' source selection in health reporting describe the probabilities of health journalists' reliance on public relations materials compared to other resources and show that health journalists get initial ideas mostly from health care provider, followed by press releases, press conferences, wire service reports, and medical journals (Viswanath, et al., 2008).

The present study advances research in this area by analyzing data from a nationwide survey of 309 U.S. newspaper health journalists about their cognitive and behavioral attitudes toward public relations materials and explores how these attitudes are influenced by individual-level, media-routine, and organizational-level factors. Previous survey research examining the attitudes of health journalists working for different types of news media found that newspaper journalists are more skeptical about public relations resources than television and magazine journalists (Len-Rios et al., in press). However, little attention has been paid to exploring the intrinsic and external predictors influencing newspaper journalists' skeptical views of public relations resources.

The purpose of this study is to examine the influences of intrinsic and external news factors (Shoemaker & Reese, 1996) on newspaper health journalists' attitudes toward corporate pharmacy media relations and behaviors in using public relations materials. These factors consist of 3 types: 1) individual-level factors (a journalists' gender, personal interest in health, educational background, and level of journalistic experience); 2) media-routine factors (news topics, use of medical journals, and reliance on other media); and 3) organizational-level factors (newspaper market size).

This study specifically focuses on health journalists' attitudes toward corporate pharmacy media relations, which is defined as a news release distributed by a public relations agency representing local in-store pharmacies. Most survey research on health journalists' reliance on public relations materials categorizes public relations resources too broadly, such as a website or print materials, and focuses on government's or public health organizations' websites and press releases. However, this research elucidates the meaning of public relations resources and examines how corporate pharmacy media relations is viewed and influenced by factors endemic to journalists' news production process.

Theoretically, this study investigates health journalists' gatekeeping role by looking at the relationship between intrinsic or external news factors and journalists' self-reported behavior regarding public relations materials. Also, this study provides meaningful practical implications to media relations professionals working in a public relations agency representing the pharmaceutical companies as their clients.

Literature Review

Source-Reporter Relationships

In the context of gatekeeping, it would seem that journalists and public relations practitioners would play opposing roles—with public relations professionals seeking to deliver their messages to journalists' news audiences and with journalists resisting those messages as to avoid the appearance of bias. In reality, public relations professionals provide a service to journalists by putting them in contact with news sources and supplying them with story ideas and background material at little cost (Curtin, 1999). In fact, some research indicates that a larger proportion of journalists view their relationships with practitioners as positive rather than neutral or negative (Sallot & Johnson, 2006). Other research has found that journalists and public relations practitioners misperceive each other. In a survey of journalists and PR practitioners, Shin and Cameron (2005) found “a tendency to perceive the other profession as a source of conflict in the source-reporter relationship although each profession actually shows some degree of accommodation or collaboration to the other profession” (p. 325). Also, scholars suggest that while journalists may say they dislike public relations practitioners in general, they are likely to say that they interact well with the public relations practitioners they know (Cameron, Sallot, & Curtin, 1997). Furthermore, a study of how three large newspapers reported on the field of public relations found that while PR was most often defined by its media relations function, the field was depicted more favorably more often than not (Bishop, 1988). Business, entertainment, and health publicity were the three topics to receive the most positive treatment in newspaper content.

Numerous studies confirm that many journalists rely on and use public relations materials to create news content (De Semir, Ribas, & Revuelta, 1988; Morton, 1986, 1988; Morton & Warren, 1992; Turk, 1986; Walters & Walters, 1992). It has been argued that health journalists may be more likely to use public relations materials because of the technical nature and specialization required to understand health issues (Cho & Cameron, 2007).

Factors Affecting News Selection and Content

Reviewing the intrinsic and external news factors as outlined by Shoemaker and Reese (1996) and exploring how these factors have been used to explain journalist attitudes and behavior in preceding studies further illuminates the foundation for this research. There are five

levels in a communication setting that may influence media content: individual, routines of media work, organizational, social/institutional (extramedia) and ideological. While Shoemaker and Reese (1996) have charted how these different levels might influence media content, we examine how they might influence attitudes and behaviors, which subsequently affect media content. In this study we focus on the first three levels and how they influence health journalists' thoughts and behaviors toward public relations material.

The first level, the individual level, covers factors that are intrinsic to the journalist, which include gender, personal interest in health, education, and professional experience, among others. It is worth noting that health is something that journalists do experience in their personal lives and so they might maintain stronger beliefs on this subject than they would on topics that do not affect them directly. According to Shoemaker and Reese (1996), these individual-level characteristics directly and indirectly shape media content. Gender and personal interest in health would have an indirect influence and be limited by professional values and organizational routines. Education and professional experience would have a direct effect on media content because they shape professional roles and ethics. As to how much influence these individual factors have, the consensus from Shoemaker and Reese (1996) and Weaver and Wilhoit (1996) is that the influence is limited unless the individuals have the power to influence media routines in their organizations. It is important to empirically measure these influences in research.

The second level of influence on media content is work routines, which include "those patterned, routinized, repeated practices and forms that media workers use to do their jobs" (Shoemaker & Reese, 1996, p. 105). The benefit of these routines is typically increased efficiency, less uncertainty, and overall consistency with a media product. Health journalists have systems to help them distill the sea of medical information. As with political news organization rules and procedures, these "quasi-natural" rules (Cook, 1998, p. 71) offer a means to an end. Notable *New York Times* health and science journalist Gina Kolata (2003) describes in her book how she receives hundreds of press releases each week, some based on good science, but many based on inadequate, unreliable research. She writes about "hucksters who promote programs with not even a pretense of objective evidence" (p. 11), studies with miniscule sample sizes and no control group, and data that are statistically insignificant. The work routines of the health journalist help him or her to separate the good science from the bad science and to predict which stories will resonate with readers.

One of the variables in news routines is news values, which reflect what journalists think audience members find interesting and important (Shoemaker & Reese, 1996). In this research, we ask health journalists about the topics they frequently cover in order to reveal which subject matter has news value within their routines. As part of their news routines, it is likely that health journalists typify information to be a story about cancer, diabetes, heart disease, etc... just as Tuchman's (1973) news journalists had typifications for hard news, soft news, and so forth. The health topics that journalists repeatedly cover show that the organization finds these topics to be inherently appealing, so they may influence behavior and attitudes toward public relations. Additionally, the way in which health journalists deal with raw material, or external sources and suppliers of news is the second variable we analyze within news routines. Sources take many forms, including expert interviews, press releases, journal articles, and lay people interviews. Shoemaker and Reese (1996) point out that public relations in particular has been a key part of systemizing connections between journalists and institutions. We ask what kind of influence their source preferences as a news routine have on journalists' behaviors and attitudes. A final variable in work routines that we examine is the reliance on other media, also called intermedia

agenda-setting and sometimes derided as “pack journalism.” Looking for consensus on what is news provides consistency across news organizations and helps a journalist avoid error. This kind of intermedia influence could be just as valuable to health journalists as political news journalists because they face the constant flow of medical science news as well as the challenge of weighing the rigor and veracity of such news.

The third level of influence on media content that Shoemaker and Reese (1996) illuminate is that of the organization, which is more macro in scope than the previous two levels. Qualities of a news organization affect how it is bureaucratically structured and how it meets economic goals. One variable within organizations is the market they serve. Whether a news outlet serves a national, metropolitan, or community audience means that it will have different organization roles and structure and will seek to gain financial benefits from different types of markets. This could in turn influence attitudes and behaviors of the health journalists working for the organization.

Studies have analyzed individual-level factors, media-routine factors, and organizational factors that influence how reporters do their jobs, but less is known about how these factors may be specifically related to the use of public relations. Studies in journalism have examined how individual-level factors affect journalists’ decisions. Research on the topic of gender has been mixed. Some research has found that reporter gender sometimes influences news content (Armstrong, 2004; Zeldes, Fico, & Diddi, 2007) and is associated with certain types of news stories, while other research has found no or weak associations (Everbach, 2005). For instance, Rodgers and Thorson (2003) found gender effects for news routines in the use of sources, but the newspaper market factors mitigated some of those differences with fewer distinctions between male and female reporters in the larger circulation markets.

With regard to health reporting specifically, Corbett and Mori (1999) examined television news story content about cancer from 1975 to 1995 and found that male reporters reported more often on gender-specific cancers and tended to use more medical research in their reports whereas female reporters’ stories were more likely to include celebrities. In a study of hormone replacement therapy stories, researchers (Nelson & Signorielli, 2007) found that female reporters wrote nearly three-quarters of the stories and used a “self-help” frame more than twice as often as did males. Male reporters, however, were almost four times as likely to use an “economic” frame to their stories than were females. Other research on reporter gender and reporting on gender-specific cancer stories in general audience and Black newspapers found no association between reporter gender and staff written stories about cancer or gender-specific cancers (Len-Ríos, Park, Cameron, Luke, & Kreuter, 2008). However, there has been little research in the public relations literature that we are aware of that specifically tests the association between health reporters’ gender and acceptance of public relations materials. Only a few studies have examined the relationship between reporter gender and the tone of frames of public relations in the U.S. newspaper coverage of broad topics (Lim & Bae, in press) and the relationship between Indonesian journalists’ gender and the use of public relations materials (Sinaga & Wu, 2007).

Journalistic experience and media routines have also been thought to be associated with journalists’ attitudes and behaviors. One study of Indonesian journalists shows that those with more experience were more likely to use public relations sources for story ideas (Sinaga & Wu, 2007). The same study did not show gender effects or education effects for the use of public relations materials. However, little research has evaluated whether journalistic experience is related to health journalists’ attitudes and behaviors toward public relations sources. Viswanath et al. (2008) simply showed the profiles of U.S. health journalists from a 2005 national survey of

health journalists and described that more than one-third of U.S. health journalists had more than 20 years journalistic experience. Turk (1986) found that media-routine factors were more prominent than organizational factors in the use of public relations materials for print journalists. She discovered that identifying the newsworthiness of the materials had more sway on journalists' news selection choices than did staff size. Similarly, Berkowitz (1990) found that local television journalists were more apt to select stories that were timely and had great impact. As for market size, some research has indicated that newspaper market size does affect news release acceptance rates (Curtin, 1999), while other research has found that newspaper and TV market size do not predict attitudes towards public relations practitioners or PR materials (Cameron & Blount, 1996; Pincus, Rimmer, Rayfield, & Cropp, 1993).

Research of how the news factors influence perception and use of public relations materials shows significant results from the effects of reliance on medical journals and other media. In tracking scientific journal press releases and subsequent newspaper coverage, Kiernan (2003) found that coverage of a journal article was principally determined by whether the Associated Press picked it up. Kiernan clarifies that newspapers would often run original stories, instead of just running the AP story. Although public relations efforts through the press releases seemed to have no direct effects on newspaper coverage, they were successful when using the channel of the wire service. "When it comes to breaking news about scientific research, newspapers try to make sure that they cover the stories that other newspapers cover. The goal is not to be different, but to be the same" (Kiernan, 2003, p. 917). The present research also questions whether reliance on medical journals and other media has an effect on behaviors toward public relations material.

More recently, Tanner (2004) conducted a national survey of television health journalists and found that the most frequently used sources for story ideas were personal contacts from public relations practitioners and news releases. She also found that actual story selection was determined more by journalists' perceptions of the audience's interest in the story, and this did not vary by TV market size. She did find, however, that the experience level of the journalists appeared to be associated with perceptions of news source influence on story content.

Conversely, results of a national survey of 774 health journalists working for a variety of media found that journalists reported relying more on other news media and their own personal interest in determining story ideas, although they said they still used public relations resources (Len-Ríos, Hinnant, et al., 2008). An analysis of a subset of that data by Len-Ríos, Hinnant and Park (In press) examined journalistic rules for using public relations materials. They found that the rules for using public relations materials varied by media. Newspaper and freelance journalists reported that they viewed it as more inappropriate to use government news releases than did magazine, trade publication, or television health journalists. In addition, they found that news markets served and experience level influenced perceptions of news release material. National journalists were less likely to say it was appropriate for them to use news releases from a local university or local state health department, and newspaper journalists with more experience were more likely to say it was inappropriate to use news release material from a local in-store pharmacy. However, the differences between highly experienced and less experienced newspaper journalists in their attitudes toward public relations do not reveal that journalistic experience is a significant predictor of newspaper journalists' attitudes toward corporate pharmacy media relations. Moreover, journalistic experience or news markets may not predict actual use of public relations materials in health reporting. Other individual characteristics or media-routine factors may better account for journalists' attitudes toward corporate pharmacy

public relations or behaviors in using public relations materials when looked at in combination with other factors.

Previous studies found that medical journals and press releases are highly selected resources by health journalists across all types of media (Viswanath et al., 2008; Weitkamp, 2003). However, the intertwined relationship between reliance on medical journals or other media and journalists' attitudes or behaviors towards public relations materials has not been studied. Research to date suggests that health journalists do rely on public relations practitioners to produce news content, but that there may be individual level differences (e.g., experience), media-routine factors (e.g., reliance on other media), and organizational factors (markets served) that affect use of public relations materials. Thus, we present the following research questions:

RQ1: Will individual-level factors (gender, personal interest in health, educational background, and level of journalistic experience) predict how health newspaper journalists perceive corporate pharmacy media relations and use public relations materials?

RQ2: Will media-routine factors (news topics, use of medical journals, and reliance on other media) predict how health newspaper journalists perceive corporate pharmacy media relations and use public relations materials?

RQ3: Will newspaper market size as an organizational-level factor predict how health newspaper journalists perceive corporate pharmacy media relations and use public relations materials?

RQ4: Which of the three-level factors will be the strongest predictor of health newspaper journalists' attitudes toward corporate pharmacy media relations and behaviors in using public relations materials?

Method

A professional research center at a Midwestern university conducted the survey between January-February 2008. The survey questioned health journalists about their attitudes, opinions, and newsgathering behaviors. The Association of Health Care Journalists developed a sampling frame using Bacon's Media directory online of the names of 2,966 health journalists, of which 2,805 were valid. The final response rate for the survey was 61.9% using standards by the American Association of Public Opinion Researchers. The final number of eligible completed surveys of newspaper journalists was $N = 309$.

Predictor Variables

Individual-level variables. Individual level variables included the journalists' gender, their use of their own personal interest or that of someone on staff in health generating story ideas (7 = very often; 1 = not at all), training in health reporting (yes or no), and years of journalistic experience.

News-routine variables. Variables that represented media news routines were news topics, use of medical journals, and reliance on other media for story ideas. For news topics, journalists were asked if they ever wrote stories about cancer, heart disease, nutrition/fitness/diabetes prevention, mental illness, healthcare policy, and strokes. Use of medical journals was measured by asking journalists whether they often get health "story ideas from a medical journal" with the response category (7 = very often; 1 = not at all). Reliance on

other media was measured by “how often do you get story ideas from reading newspapers or other news publications” (7 = very often; 1 = not at all).

Organizational variables. Newspaper market size was used to represent the organizational-level factor. To determine the newspaper market size that the journalists served, they were asked whether they served a (1) national, (2) metropolitan, or (3) small community audience.

Criterion Variables

The two outcome behaviors measured were *health journalists' attitudes* and *health journalists' behaviors*. Journalists' attitude toward corporate pharmacy media relations was measured by asking journalists how appropriate “developing a story about local in-store pharmacies from a news release sent by a public relations agency representing the pharmacies” (7 = highly appropriate; 1 = highly inappropriate). Journalists' behavior in using public relations materials was measured by asking how often journalists get story ideas from “a public relations person who pitches a story” (7 = very often; 1 = not at all).

Findings

Descriptive statistics were used to summarize the profiles of respondents in this survey. Almost 62% of the respondents were female reporters, while 38% were male reporters. The average years of journalistic experience reported by journalists was 19 years. Nearly 20% of the respondents had had special training in health reporting. In addition, 6% of the respondents worked for national media markets, 52% worked for metropolitan media markets, and 42% worked for small community media markets.

To answer RQ1, RQ2, and RQ3, a series of stepwise regression analyses were used. The analysis was set up to separately examine each of the three sets of predictor variables: individual-level factors, media-routine factors, and organizational-level factors on the criterion variables. For RQ4, a hierarchical regression was conducted to explore the relative strengths of all of the independent variables found statistically significant in the previous regression analyses.

RQ1 asked whether individual-level factors, such as gender, personal interest in health, educational background, and level of journalistic experience, would predict health newspaper journalists' attitudes toward corporate pharmacy media relations and behaviors in using public relations materials. As a result, none of the individual-level factors were entered into the regression equation. In other words, none of the individual-level factors were significant predictors of both attitude and behavior criteria variables in the regression analyses. Thus, both health newspaper journalists' attitudes toward corporate pharmacy media relations and behaviors in using public relations materials were not predicted by individual-level factors. However, it should be noted that journalists' gender correlated with the frequency of using public relations practitioners who pitch a story for their health story ideas ($r = .11$; $p < .05$). Specifically, female journalists say they got health story ideas from public relations materials more frequently than male journalists. Nonetheless, according to the regression tests conducted in this study, journalists' gender did not contribute significantly to frequency of using information from a public relations practitioner's pitch.

Second, RQ2 addressed whether media-routine factors, such as news topics, use of medical journals, and reliance on other media, would predict health newspaper journalists' attitudes toward corporate pharmacy media relations and behaviors in using public relations materials. When examining influences of media-routine factors on health newspaper journalists'

attitudes toward corporate pharmacy media relations, only two predictors were entered (See Table 1). Health news topic (stroke and stroke prevention) and the use of medical journals were the only significant predictor variables of health journalists' attitudes toward corporate pharmacy media relations. According to the results, health journalists who covered strokes or stroke prevention held negative attitudes toward using a news release provided by a public relations agency representing the pharmacies ($B = -.68$; $SE = .20$; $p < .001$), and frequency of using medical journals was positively related to health newspaper journalists' attitudes toward corporate pharmacy media relations ($B = .16$; $SE = .06$; $p < .01$). So, the more frequently health journalists get health information from medical journals, the more favorably journalists felt towards corporate pharmacy media relations. Even though other health topics (i.e., heart disease, obesity, mental illness, and healthcare policy) correlated with journalists' attitudes toward the use of a news release sent by public relations agency representing the pharmacies, those health topics did not contribute significantly to journalists' attitudes toward corporate pharmacy media relations.

Regarding the influences of media-routine factors on health journalists' behaviors in using public relations materials, only one variable was entered into the regression equation (See Table 2). The results showed that the reliance on other media was a significant predictor of health journalists' behavior in using a public relations practitioner who pitches a story for their health story ideas ($B = .42$; $SE = .06$; $p < .001$). Apparently, reliance on other media accounted for more than one-third of the variance in the regression model ($R^2 = .37$). The more frequently health journalists read other newspapers and news publications, the more often they get health story ideas from a public relations person who pitches a story. In contrast to the attitude criterion variable, neither health topics nor the use of medical journals correlated to the behavior criterion variable—frequency of using public relations materials.

Third, RQ3 asked whether newspaper market size as an organizational-level factor would predict health newspaper journalists' attitudes toward corporate pharmacy media relations and behaviors in using public relations materials. The first stepwise regression was conducted to examine whether the newspaper market size that health journalists served predicted health journalists' attitudes toward using a news release sent by public relations agency representing the pharmacies. Health newspaper journalists' perception of corporate pharmacy media relations was regressed on newspaper market size: national audience, metropolitan audience, and small community audience market. As seen in Table 3, only one newspaper market size, metropolitan audience market, was a predictor of health journalists' attitude toward corporate pharmacy media relations ($B = .61$; $SE = .20$; $p < .01$). Whether or not health newspaper journalists serve a metropolitan audience was positively related to their attitudes toward corporate pharmacy media relations. In other words, health newspaper journalists who served a metropolitan market thought using a news release sent by public relations practitioners representing the pharmacies was more appropriate. Additionally, a descriptive analysis of our data showed that the average of respondents thought corporate pharmacy media relations was somewhat inappropriate ($M = 3.01$, $S.D. = 1.77$). Indeed, health journalists who served national markets ($M = 3.19$, $S.D. = 2.00$) and small community markets ($M = 2.67$, $S.D. = 1.54$) evaluated corporate pharmacy media relations as less appropriate compared to journalists who served a metropolitan audience ($M = 3.33$, $S.D. = 1.87$). However, in regards to the second dependant variable, journalists' behaviors in using public relations materials, a result of the second stepwise regression analysis, in which the behavior criterion variable was regressed on newspaper market size, showed that none of three

newspaper markets was a predictor of health journalists' behaviors in using public relations materials.

Finally, a hierarchical regression was conducted to answer RQ4 about the relative strengths of all of the independent variables found statistically significant in the previous regression analyses. In the previous analyses, three variables were significant predictors of health journalists' attitudes toward corporate pharmacy media relations and only one factor, reliance on other media, was a significant predictor of health journalists' behaviors in using public relations materials. Since the reliance on other media was the only important predictor of the second criterion variable, health journalists' behaviors in using public relations materials, only the first criterion variable, health journalists' attitudes toward corporate pharmacy media relations, was regressed on three independent variables: 1) health topic (stroke), 2) frequency of using medical journals as media-routine factors, and 3) market size as an organizational-level factor. Three predictors were entered in the regression equation one at a time. As a result, all three variables that were significant predictors of health journalists' attitudes toward corporate pharmacy media relations in the previous analyses remained statistically significant when they were examined simultaneously in this model (Table 4). Specifically, journalists who reported on writing about strokes served as the strongest predictor ($\beta = -.17$; $p < .01$), followed by metropolitan market size and the use of medical journals. More specifically, health journalists who had covered stroke or stroke prevention stories were more likely to regard corporate pharmacy media relations as inappropriate. On the other hand, frequency of using medical journals ($\beta = .13$; $p < .05$) and whether or not health journalists serve metropolitan media market ($\beta = .13$; $p < .05$) accounted for a similar proportion of the variance in health journalists' attitudes toward corporate pharmacy media relations. As explained earlier, the more often health journalists use medical journals for their health story ideas, the more favorably they felt towards corporate pharmacy media relations. In addition, health journalists who worked for metropolitan media markets are more likely to believe that corporate pharmacy media relations is appropriate.

Discussion

In terms of how the news factors affect journalists' attitudes and behaviors toward public relations material, our findings reinforce findings from previous research. First, we examined four individual level characteristics; two that would have direct effects, education and level of journalistic experience, and two that would have indirect effects on media content, gender and personal interest in health. The idea that the influence of gender and personal interest in health is limited (Shoemaker & Reese, 1996; Weaver & Wilhoit, 1996) is supported in that gender and personal interest in health were not significant predictors. Gender, however, correlated with being receptive to story idea pitches, which provides some support to Lim and Bae's (in press) findings that women were more positive about public relations material. Even though this study found that female reporters more frequently use public relations materials for their health story ideas compared to male reporters, reporter gender was not a significant determinant of behaviors in using public relations materials in health reporting. The other individual-level characteristics, which were health journalists' education and level of journalistic experience, would be expected to have more predictive power than personal characteristics because Shoemaker and Reese (1996) point out that they shape professional roles and ethics. However, journalists' education and level of journalistic experience did not significantly predict attitudes toward corporate pharmacy media relations. In this study, the four individual-level variables did not appear to have

much influence, whether direct or indirect. There are likely other factors, beyond individual-level characteristics, that predict journalists' attitudes and behaviors toward public relations materials.

The second level of influence, which is that of media routines, did show predictive power. These news values were predicted by reporting on the health news topic of stroke and stroke prevention, and use of medical journals. The health news topic of strokes could be different from the other health topics in that there is low public understanding of stroke and stroke prevention (Greenlund, et al., 2003). It is possible (though it deserves further exploration) that there are not many public relations campaigns devoted to strokes and stroke prevention, which would help explain the low public recognition of the strokes. If health journalists who cover stroke and stroke prevention were not accustomed to receiving public relations material, this unfamiliarity could breed discomfort with the material. Our data found that a minority of health journalists had covered strokes. Fully 41% of respondents said they had not reported on strokes. This was relatively high compared with journalists who said they had not reported on other health topics [i.e., cancer (16 %) heart disease (16.6 %), obesity (12%), mental illness (26.1%), and healthcare policy (35.7%)]. Thus, a lack of specialization of health journalists in reporting on strokes compared with other health topics may also provide an explanation for the negative view of using pharmacy public relations materials.

Along the same lines, the journalists who reported more frequently using medical journals more frequently for story ideas in their media routines would likely be very familiar with the news releases that the medical journals themselves distribute, which would lead to evaluating the use of public relations information as appropriate. As an extension of previous research on health journalists' use of medical journals and reliance on public relations resources, this study revealed the interconnected relationship between reliance on medical journals and journalists' attitudes towards public relations materials. It is generally considered that deadline pressure is one of the reasons why journalists rely on medical journals or public relations materials (Catalán Matamoros, Axelsson, & Strid, 2007; Viswanath, et al., 2008; Weitkamp, 2003). Because of the high credibility of medical journals, health journalists also prefer to use medical journals as sources for their stories (Conrad, 1999; Viswanath, et al., 2008). It may also be that medical journals are one of the counterbalancing sources to corporate sources of information when it comes to understanding the efficacy of drug effectiveness since the information from medical journals is peer reviewed. Also, when health journalists rely on medical journals, they might need to reshape complex and difficult health topics for a broad range of audiences. Thus, it is possible that frequent use of medical journals lead to positive attitudes toward the use of all public relations resources because they have a better understanding of the information. With regard to health journalists' behavior in connection with public relations, the finding that reliance on other media meant an increased likelihood of using public relations practitioners for story ideas makes sense. If health journalists are already looking to other media in order to decide what is news, this routine could seamlessly extend to looking to public relations practitioners for help in deciding what is news.

Finally, organizational factors, which are part of the third level of influence, showed predictive power in terms of health journalists' attitudes toward corporate pharmacy media relations. The finding showed that health journalists who serve a metropolitan market were more accepting of news releases from a public relations agency representing the pharmacies. One explanation might be that health journalists have different news values depending on the media market journalists serve. Metropolitan markets are bigger than small community markets and have different publication schedules as well as purposes and goals. Small community markets

tend to cater to community news and hyper-local information and are often bi-weekly or weekly. That means they have less news hole to give to things that are not specifically local events or activities. National media tend toward covering public health stories with national implications and would be less likely to write about local in-store pharmacies as regularly as a metropolitan area that may have many pharmacy chain stores in its metro area, which would increase the news value of the story's "impact."

The characteristic that makes this research unique is that we have looked at how Shoemaker and Reese (1996)'s first three levels influence an entity that is on the fourth level because public relations campaigns are considered an extramedia source. Instead of looking at the effects of lower level factors on media content, we look to their effects on another intermediate level, which in turn affects content. This study revealed that media-routine levels are the most influential factor on this source within the extramedia level, because media-routine factors consistently influenced both health journalists' attitudes toward corporate pharmacy media relations materials and the use of public relations materials. Under the news production process in health journalism, this study specifically looked at corporate pharmacy's media relations, which is differently rated by health journalists compared to news releases from the government or public health agencies (Len-Ríos, Hinnant, et al., 2008). In sum, not only did this study clearly specify the category of public relations resources, but it also explored factors in predicting health journalists' evaluations of acceptance of corporate pharmacy media relations as well as their use of public relations materials.

The present study also provides practical implications to media relations practitioners working for corporate pharmaceutical industries. In light of the significant role that journalists' use of medical journals has on attitudes toward corporate pharmacy media relations, public relations practitioners should contact health journalists who already use medical journals as sources in their stories because they may be more receptive to corporate pharmacy media relations. Additionally, health journalists' reliance on other media significantly predicts behaviors in using public relations materials. Thus, distributing news releases to a broad range of news media or targeting bellwether news media in health journalism would be important for media relations professionals to maximize their potential to reach audiences.

One possible limitation is that this study is based on the data from a survey on health journalists' self-reported behaviors regarding the use of public relations materials. It is possible that actual behaviors in using public relations materials during the journalistic news selection process are different from our survey results. Thus, future research should compare a survey result with a content analysis of health news in order to shed a light on the relationship between health journalists and public relations practitioners working for the corporate pharmacy media relations. In addition, other variables representing Shoemaker and Reese's (1996) factors should be measured. There could be other factors not measured here that relate to why newspaper health journalists who report on pharmacies would turn to medical journals. Future research should also explore these other factors.

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Table 1

Regression analysis for media-routine factors on health journalists' attitudes toward corporate pharmacy media relations

Variables	B	SE	β
Health Topic: Stroke (yes = 1)	-.68***	0.20	-.19
Use of medical journals	.16**	0.06	.15
Non significant variables			
Reliance on other media	.07		
Health Topic: Cancer	-.06		
Health Topic: Heart disease	-.05		
Health Topic: Obesity	-.08		
Health Topic: Mental illness	-.09		
Health Topic: Health policy	.08		

Note: $R^2 = .224$. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 2

Regression analysis for media-routine factors on health journalists' behaviors in using public relations materials

Variables	B	SE	β
Reliance on other media	.42***	0.06	.37
Non significant variables			
Use of medical journals	.03		
Health Topic: Cancer	.04		
Health Topic: Heart disease	.08		
Health Topic: Obesity	.03		
Health Topic: Mental illness	.01		
Health Topic: Health policy	.03		
Health Topic: Stroke	.10		

Note: $R^2 = .371$. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 3

Regression analysis for newspaper market size as an organizational-level factor on health journalists' attitudes toward corporate pharmacy media relations

Variables	B	SE	β
Metropolitan market (yes = 1)	.61**	0.20	.172
Non significant variables			
National market	.06		
Small community media	-.05		

*Note: $R^2 = .172$. * $p < .05$, ** $p < .01$, *** $p < .001$.*

Table 4

Regression analysis of all variables on health journalists' attitudes toward corporate pharmacy media relations

Variables	Health journalists' attitude		
	B	SE	β
Media-routine factors			
Health Topic: Stroke (yes = 1)	-.62**	.20	-.17
Use of medical journals	.13*	.06	.13
Organizational-level factor			
Metropolitan market	.45*	.20	.13

*Note: $R^2 = .259$. * $p < .05$, ** $p < .01$, *** $p < .001$.*