Redirecting the Focus of the Agenda:
Testing the Zero-Sum Dynamics of Media Attention
in News and User-Generated Media

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This study uses the attention-allocation approach to examine the dynamics of media attention. Based on the assumption that media attention is limited, we tested the notion of zero-sum issue competition wherein increasing attention to one agenda decreases attention to existing agendas. Analyzing comprehensive data sets of Twitter, blogs, and online news for a four-month period after the 2014 Sewol ferry disaster in South Korea, this study finds displacing relationships between media attention to the Korean government and another target for blame: the ferry's owner, Byung-eun Yu. This zero-sum principle prevailed regardless of the media's political orientation, with mainstream and social media displaying similar patterns. Our follow-up time-series analysis hints at the intermedia influence from news coverage to Twitter posts.

Keywords: *zero-sum issue competition, intermedia agenda setting, Sewol ferry, big data*

When a natural or human-made disaster occurs, much attention from media and the public is directed at who is responsible for the tragic incident (Iyengar, 1990). Typically, it is the government that is expected to respond first to emerging threats and mitigate their damages (Boin, Hart, McConnell, & Preston, 2010). Consequently, the government's performance often becomes the primary target of media attention and public scrutiny (De Bruycker & Walgrave, 2014; Malhotra & Kuo, 2008). The political fallout of the government's failure to effectively handle the 2014 Sewol ferry tragedy in South Korea, which is the subject of this article, has mainly dealt with whom to blame for what went wrong. While the incumbent President Park's regime continuously suffered from the public outrage regarding the ill-advised rescue mission, Byung-eun Yu, the owner of the Sewol ferry, began to draw media attention as another potential

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[1] At the inception of this project, we were gravely concerned about the state of press and media, citizens' participation in civic affairs, and democracy in South Korea. We dedicate this work to the families of the Sewol ferry victims as our hearts go to more than 300 young souls we lost on April 16, 2014.

blame target for the tragedy. Meanwhile, the suspicion grew that Yu was used as a scapegoat to distract media and public attention away from the Park regime.

The case of the Sewol ferry offers a critical example to explore the question of attention dynamics in the emerging media environment. Does increasing media attention to a new target for blame crowd out news coverage of the government? If political actors who understand the attention dynamics can manipulate the allocation of media attention to their advantage, then the political implications could be immense (Geip, 2011). On a theoretical ground, this research contributes to media scholarship by addressing the relevance of the notion of zero-sum issue competition wherein attention to one issue displaces attention to others through various media outlets. Importantly, this study tests the zero-sum dynamics not only in traditional news media, where the production and broadcasting capacities are limited, but also in digital media, where those constraints are considerably resolved. Because of almost unlimited digital capacity, attention to one agenda may not necessarily decrease attention to other agendas. Finally, this study investigates the intermedia influence to elucidate how mainstream and social media affect one another to establish their issue dynamics.

To compare the carrying capacities of user-generated media and news media, this study focuses on the structure of two specific digital platforms: Twitter and blogs. We analyzed the data from Twitter and blogs, because (1) both platforms are known for being active online venues for discussing public affairs and events rather than interpersonal matters (Murthy, 2013; Parmelee & Bichard, 2011), (2) the imagined audience of tweets and blogs is relatively inclusive compared with other social networking services (e.g., Facebook), (3) text-oriented features are comparable to online news articles, and (4) the data are publicly available to researchers. Although we acknowledge that various forms of social media display unique structures, the network features and unlimited digital capacities of Twitter and blogs also point to generic principles behind the structure and function of these two venues and can, therefore, have significant implications across various digital platforms.

The case of the Sewol ferry is a striking example of the zero-sum issue competition. First, two main actors play a role in this issue, both of whom can be blamed for the Sewol disaster tragedy. At the same time, clearly contrasting reasons for attribution are offered for the two actors—with President Park for the government and ferry owner Yu for the private market failures. In this vein, the competition between the two actors illustrates the extent to which each of the two main sources of conflict gains public attention at the expense of the other. Because Park and Yu were the two most salient actors who were perceived to be responsible for the incident and/or rescue mission, this study focuses on media attention to these two actors (J. Park et al., 2016). In fact, numerous politicians and advocacy groups subsequently raised suspicion that the Park regime intentionally directed media attention toward Yu, using him as a scapegoat (D. Kim, 2016; J. Park et al., 2016).

Sinking of the Sewol Ferry

On April 16, 2014, the Sewol ferry capsized in the South Korean ocean on its way from Incheon to Jeju Island. More than 300 people died, including 254 17-year-old high school students on a school field trip. The lackluster rescue efforts that were poorly orchestrated by the Korean government fueled public

outrage: Sewol passengers were told to stay put for about two and a half hours and were trapped in the sinking ferry while a police helicopter hovered around the already-capsized ferry. The public discovered the ill-equipped Korean Coast Guard had never entered the sinking ferry to perform a rescue but offered help to those who had already managed to escape, including the Sewol captain and crew. Social media sites exploded, blaming the president for missing the optimal time for rescue.

The criticism that the media downplayed Park's failed leadership met with increasing suspicion that the Park regime used the progovernment media to divert the antigovernment sentiment to Yu, the owner of the Sewol ferry (Hong, 2014). Lending credibility to this idea, Yu's religious cult was newly uncovered in major South Korean daily newspapers, and overnight he became the most wanted fugitive in recent South Korean history as the police staged a nationwide hunt for his alleged mismanagement. Citizen journalists began to post comments on how the Park regime and right-wing media used Yu as a scapegoat, whereas critiques of Park Geun-Hye's incompetence were muted. The antigovernment sentiment turned a new course as protesters began to see Yu as merely a scapegoat for the Park regime to place blame on, focusing not on the collapse of political justice in South Korea but on the fault of a businessman who built his cult upon ill-conceived business practices. The rapid development of the Sewol ferry tragedy damaged the national psyche and led to collective depression among South Koreans (Y. Kim, 2014).

Situational Crisis Communication Theory

Situational crisis communication theory (SCCT) provides a framework for understanding observed dynamics of crisis responsibility and reputational damage in the context of the Sewol incident. SCCT posits that an organization or the actor's reputation is a valuable resource, which can be undermined by the public's perception of crisis responsibility (Coombs, 2014). It is further expected that, as the public's attribution of a crisis to an organization intensifies, the reputational harm increases. For example, if the public believes that a crisis is caused by natural disaster, rumor, or product tampering (i.e., victim cluster) and/or by technical errors (accidental cluster), then the potential reputational harm to an organization/actor is limited. On the other hand, if a crisis is perceived to be caused by human error or organizational misdeeds (preventable cluster), the organization should suffer from greater reputational damage (Coombs, 2007).

Applying SCCT to the Sewol disaster, two salient causes emerge. Although the initial cause of the incident—the sinking of the ferry—was mostly perceived as a mix of natural disaster and technical errors, the cause of the subsequent tragedy—the poorly administered rescue mission—was considered to be the misdeeds of various actors, including President Park, the captain and crew, and the Marines (i.e., organizational misdeeds; Coombs, 2007). Over time, as the lackluster rescue efforts received tremendous media and public attention, the reputation of the Korean government and President Park was severely damaged. Meanwhile, the emergence of and growing media attention to Yu would have been welcome for the Korean government, which was suffering from a responsibility crisis. The Korean government could have expected to reduce the public's perception of responsibility for the crisis by directing media attention toward Yu and highlighting the initial cause of the accident (i.e., a technical breakdown or Yu's organizational misdeeds).

Although SCCT offers a useful framework for understanding the dynamics of organizations and actors and their related crisis responsibility, the next section addresses the relationships among the volume of media attention to these organizations/actors.

Issue Competition and the Zero-Sum Principle

Media attention for an issue wanes mostly due to boredom effects among the audience (Neuman, 1990) and competing issues that crowd out an existing one from the media agenda (Brosius & Kepplinger, 1995). In the tradition of the agenda-setting literature, scholars (McCombs, 2014; McCombs & Zhu, 1995; Zhu, 1992) have addressed the notion of issue competition by focusing on the role of media in managing agendas. The limited capacity of the mass media, in terms of production and broadcasting, induces competition among news topics. Particularly in the traditional and constrained media environment, any topic that receives attention necessarily displaces media coverage of other topics.

Crisis events such as the Sewol ferry incident provide key contexts for research on issue competition. As dramatic events increasingly occupy space in newspapers and on newscasts, they can disrupt typical journalistic routines. Emerging crisis events offset existing issues in terms of both media attention and the public agenda. Major news events, such as disasters and political scandals, are regarded as "key events" that displace other news coverage (Geip, 2011). Brosius and Kepplinger (1995, p. 215) further specified terminology by distinguishing "killer issues" from "victim issues" to stress the difference between newly dominant issues and old issues that are crowded out. Furthermore, the dynamics of issue competition emerge evidently in case of a crisis because political groups want to gain political advantages by associating the negative consequence of a crisis with other political groups. Being aware of issue competition, political actors often attempt to distract the public by deliberately initiating media events (Geip, 2011). From the perspective of the public, it is critical to understand how political groups facing a national crisis attempt to manipulate public attention. When less meaningful issues or actors receive enormous media attention, more meaningful issues or actors will be ignored.

The Zero-Sum Principle in Traditional Media

The critical assumption of mass communication theories (e.g., agenda setting) is that the capacity of mass media is limited (McCombs & Zhu, 1995). Due to scarce media resources, competition takes place among various issues, aspects, and actors, and the notion of issue salience becomes a key element in the agenda-setting process. Researchers have identified three types of constraints that lead to the limited media capacity and eventually to issue competition (Jang & Pasek, 2015; Zhu, 1992): production capacity, broadcasting capacity, and audience capacity. In the traditional media environment, production capacity has been limited because journalistic resources (e.g., time, money, labor) are always in short supply. Additionally, news outlets have restricted broadcasting capacity. Given that traditional news media have limited column space and airtime to disseminate information, the amount of information published to the public is nearly constant. Notably, however, with news websites, news outlets now have more flexibility in information dissemination. Finally, the audience's limited attentional capacity should be considered. Even when an unlimited volume of media content is produced and disseminated, humans' psychological limits may influence the actual information exchanged and consumed. The limits of human

attention are particularly important in a digital media environment, where technical constraints become less relevant (Y. Park, forthcoming).

It is important to note that previous literature examined issue competition using correlations between the amounts of coverage of social issues (Brosius & Kepplinger, 1995; Geip, 2011; Zhu, 1992). Presumably, if social issues compete for a limited amount of media attention, then media coverage of social issues should be inversely correlated. For example, Zhu (1992) found empirical support for the zero-sum dynamic by observing negative relationships among three issues: the Gulf conflict, the economic recession, and the federal budget deficit. Whereas most efforts in this line of research have dealt with competition among different agendas, the current study focuses on competition among different actors surrounding one tragic incident. Assuming that the total amount of news coverage on the Sewol ferry incident is one large news pie, we test the displacement relationship between media attention to the Park regime and Yu. If the zero-sum principle is applicable to this within-issue competition, news coverage of the Korean government and Yu concerning the Sewol ferry should exhibit negative relationships. In this case, the Korean government and leaders would benefit from this attention dynamic by diluting media attention from the government and shifting it to the third party, Yu.

H1:   In coverage of the Sewol ferry incident, the daily volume of online news articles about the Korean government will negatively relate to the daily volume of online news articles about Yu.

In fact, the Park regime is critically accused of using Yu as a scapegoat and avoiding blame for the government's poor performance in the rescue mission. Additionally, conservative progovernment newspapers have been accused of tacit collusion by displacing news coverage of the government with coverage of Yu. Because the Korean government may obtain a political advantage from the potential zero-sum relationship between news coverage of the Korean government and Yu, two possible predictions emerge concerning the question of how zero-sum dynamics vary across media outlets. On the one hand, the displacement relationship between news coverage of the government and Yu may be more obvious in conservative news media than in their liberal counterparts. On the other hand, it is also possible that the zero-sum principle should apply to all kinds of news media, regardless of their political motives. Even liberal newspapers cannot be free from zero-sum dynamics as long as their production and broadcasting capacities are limited. Therefore, we ask the first research question:

RQ1:   How does the zero-sum principle apply to news media with different political orientations?

The Zero-Sum Principle in Changing Media Environments

Recent changes in the media environment provide reasons to reevaluate the assumption that news media's capacity is inherently limited. Digital media platforms—notably, social media—seem to amplify both production and broadcasting capacities. First, the overall production of news coverage expands with the rise of social media and citizen journalism (Napoli, 2011). Because ordinary citizens are empowered to produce and post information online, the monopoly that traditional media once held on news production has been substantially undermined (Deuze, 2008; Hermida, 2010; Lewis, Holton, & Coddington, 2014; Pavlik, 2013; Shoemaker & Vos, 2009). Second, the digital revolution enlarges the

carrying capacity of communication channels. The online platform can afford almost endless agendas and information (Pentina & Tarafdar, 2014). Thus, the digital space may not induce intense competition among information.

Little is known about whether the zero-sum principle that has governed issue competition in the traditional mass media also applies to social media platforms such as tweets and blog posts. Moreover, although digital media remove technical constraints on production and broadcast capacities, psychological limits on human attention may still function as a critical constraint. If this is a case, increasing social media attention to Yu may displace attention to the Korean government.

Therefore, we investigate the relationship between the number of tweets and blog posts about the Korean government and Yu. If the zero-sum principle holds relevance in a digital era, increasing tweets and blog posts about Yu should displace tweets and blog posts about the Korean government. However, given the dearth of research on issue competition in a digital realm, we present this issue as our second research question.

RQ2:   How does the zero-sum principle apply to Twitter and blogs?

Intermedia Influence

To assess whether social media platforms display similar patterns of issue dynamics, it is essential that we study how mainstream and social media influence each other. If social media content simply reflects agendas or attributes of agendas that are initially reported in mainstream news media, it is expected that issue dynamics in both media will look the same. Alternatively, if social media users set their own agendas and work independently from news media, issue dynamics in social media need not parallel those in news media. The possibility of intermedia influence has been widely acknowledged in journalism and campaign research (Boyle, 2001; Sweetser, Golan, & Wanta, 2008). While early studies sought to determine the news organizations that influence other media content (Reese & Danielian, 1989), media scholars began to expand their examinations by studying the intermedia influence among various media channels. Golan (2006) found that *The New York Times* affected American evening newscasts, and other studies (Boyle, 2001; Ragas & Kiousis, 2010; Roberts & McCombs, 1994) observed the significant intermedia effects of political advertisements or information subsidies on news media coverage.

More relevant to the current research is the intermedia process between traditional and social media. Although the hierarchical influence from traditional mainstream to user-generated media is taken for granted, observations about the bottom-up intermedia influence from social media to traditional media have yielded two schools of thought (Heim, 2013). Some contend that user-generated content can affect news media content because journalists often cite social media messages and rely on bloggers' specialized comments on a topic (Meraz, 2011). Others cast doubt on the role of social media in determining mainstream news content, arguing that a substantial part of user-generated content consists of users' reactions to and the relay of news coverage.

Empirical evidence for intermedia influence between mainstream news and social media is mixed (Conway, Kenski, & Wang, 2015; Jacobson, 2013; Jang, Park, & Lee, forthcoming; Y. Kim, Gonzenbach, Vargo, & Kim, 2016; Meraz, 2011, Neuman, Guggenheim, Jang, & Bae, 2014). Previous research found that news media reflect agendas from user-generated blogs, but not the other way around (Meraz, 2011). In a similar vein, audience comments on Facebook hinted at topics discussed in the television show (Jacobson, 2013). Other studies, however, suggested alternative perspectives. For example, a study by Groshek and Groshek (2013) failed to discover the agenda-setting power of social media, indicating that legacy news media such as *The New York Times* and CNN still serve as leading agenda-setters. Research by Conway et al. (2015) found symbiotic relationships between the Twitter feeds of political leaders and newspaper reports during the 2012 U.S. presidential election campaign. News media follow presidential candidates on certain issues, but on other issues, Twitter topics follow news media agendas. Overall, the literature found the possibility of bottom-up intermedia agenda setting in various contexts, but has so far been unable to specify the conditions and factors that influence the flow of intermedia agenda setting (cf. Jang et al., forthcoming).

Most efforts in this line of research have focused on the transfer of agenda salience. Despite some similarities, this study focuses on the two main actors of attentional dynamics within the issue, not across issues. It is not yet clear how the salience of actors or blame targets associated with crises can be transferred between traditional and user-generated media. Given that studies have thus far provided limited evidence in this regard, we ask the third research question.

RQ3:   *Does evidence of a time-series linkage of media volume run from news media to social media or the other way around?*

Method

Data

Data for this study were collected using the Sysomos Media Analysis Platform. Sysomos is a private firm providing electronic databases of media content from Twitter, blogs, and online news. Because Twitter's open access policy via Application Programming Interface has become increasingly restricted, it is necessary to work with a firm such as Sysomos to capture the full "firehose" of all tweets. Importantly, Sysomos also monitors entire archives of blog posts and news websites from all over the world, including South Korea. We chose Twitter and blog posts as our target social media because these text-oriented platforms display unlimited digital capacities and are actively used for discussing public matters (Murthy, 2013). Like other blogs, Twitter, often characterized as a microblogging service, reaches broader audiences that are not specifically defined. Our blog data included blog content posted on popular Internet portal sites in South Korea, including naver.com, daum.net, and nate.com.

Together these data sources offer a comprehensive portrait of the media environment that is ideal for assessing aggregate dynamics within and across media outlets over time. Metadata attached to media content allow us to filter the entire data set based on time, location, language, and Web domain. Using this filtering process, we limited our analysis to media content from South Korea that was written in

Korean. Then we analyzed Twitter, blog posts, and online news articles for a four-month period after the Sewol ferry incident, from April 16 to August 15, 2014. Because Sysomos removes spam tweets (e.g., Twitter bots), the data used for this study represent active accounts run by real people. We included retweets in our analysis because literature suggests that they are an effective indicator for the extent to which messages are perceived as important in the network (Larsson & Moe, 2012). We retrieved online news from newspaper websites (e.g., donga.com, hani.co.kr), cable network websites (e.g., jtbc.joins.com, ytn.co.kr, mbn.mk.co.kr), and aggregated news websites (e.g., naver.com, nate.com).[2]

Media Attention to the Sewol Ferry Incident

We assessed media attention to the Sewol tragedy by retrieving posts and articles that mentioned the "Sewol ferry" (in Korean). Our close examinations of sampled texts ensured that "Sewol ferry" is a representative search phrase to capture relevant media content about this incident. We did this retrieving process for Twitter, blogs, four newspaper websites (two conservative and two liberal Korean newspapers), and the Sysomos archive of online news content. During our field period, approximately 8.4 million tweets and 427 blog posts discussed the Sewol ferry incident. Two major conservative newspaper websites (joins.com and donga.com) produced 3,758 and 9,299 articles, and two liberal newspaper websites (khan.co.kr and hani.co.kr) produced 3,470 and 5,051 Sewol-related articles. Finally, the Sysomos news archive that monitors more than 200 local and national Korean news websites showed that 784,000 news articles were produced for four months.

Media Attention to the Sewol Ferry Incident and the Korean Government

To capture the extent to which media content about the Sewol ferry incident is associated with the Korean government, we used a Boolean search that paired "Sewol ferry" *with* "government" OR "Geun-hye Park" (president's name) OR "Blue house" (presidential residence).[3] Using this filtering process, we compiled the number of daily tweets, blog posts, four individual newspapers, and the Sysomos news archive. On average, 20% of tweets and 41% of blog posts concerning the Sewol disaster mentioned the Korean government. Additionally, 26% and 29% of Sewol-related news articles in *Joongang* and *Donga* (two conservative papers) and 45% and 47% of Sewol-related articles in *Hankyoreh* and *Kyunghyang* (two liberal papers) contained references to the Korean government.

Media Attention to the Sewol Ferry and Yu

Based on the same process, we retrieved media content mentioning both the Sewol ferry and Yu. Overall, 3% of tweets and 15% of blogs belonged to this category among all posts about the Sewol ferry.

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[2] We retrieved TV news stories (e.g., KBS, MBC, SBS) from aggregated news websites (e.g., naver.com). Thus, some of articles might have been excluded in our analysis based on the editorial decision of those aggregated portal websites.

[3] Although these three words are not literally the same, we used media attention to these words interchangeably. These were the three common words that refer to the Park regime as a target for blame.

Additionally, 13% and 12% of Sewol-related news articles in *Joongang* and *Donga*, and 9% and 9% of Sewol-related articles in *Hankyoreh* and *Kyunghyang* mentioned Yu in their reports.

Validation of Search Terms

"Sewol ferry" and other search terms used in this study for the Korean government and Yu appeared to have strong face validity in signifying attention to who is associated with the incident. Additionally, using procedures described by Stryker, Wray, Hornik, and Yanovitzky (2006), we assessed the precision of our search terms. Like Type I errors, precision refers to the "ability to avoid extraneous ones" (Stryker et al., 2006, p. 413). We had two coders review a random sample of 100 tweets, 100 blog posts, and 100 news articles from the Sysomos database for each search phrase. For search terms for the Korean government ("government" OR "Geun-hye Park" [president's name] OR "Blue house"), 98% of tweets, 94% of blog posts, and 91% of news articles were determined to be relevant. For search terms for Yu, 99% of tweets, 98% of blog posts, and 95% of news articles were deemed accurately retrieved. Thus, the average precision estimate was 96%. Average intercoder reliability is .83 (Cohen's κ).

Covariates

Literature indicates that time-series data tend to be vulnerable to the product of a trend and cyclical forces (Becketti, 2013). In particular, news content shows a strong weekly cycle due to the strict schedule for publication or broadcasting (Berkowitz, 1992). To control for long-term changes and cyclical processes, we controlled for days of the week in all statistical analyses. Each day of the week was treated as a dummy variable for all analyses. Moreover, we accounted for long-term trends in the volume of media content during two years with both linear and quadratic variables.

Analysis

First, this study examines the relationship between the amount of news coverage of the Korean government and Yu concerning the Sewol ferry incident. Additionally, we explore the extent to which political leanings of news organizations influence these dynamics. Moreover, this study examines the attention dynamics not only in traditional news coverage, where media capacity is limited, but also in social media, where the media capacity has been significantly expanded.

To explain the intermedia process between the traditional and user-generated media, we ran a time-series analysis using Granger causality (Granger, 1969). The Granger analysis examines whether the current value of y can be better predicted by past values of x and y together than by past values of y alone (Freeman, 1983). It should be noted, however, that Granger causality is distinguished from the scientific concept of causality given that Granger causality cannot tell to what extent other events outside the model precipitated both sets of values. Thus, in this study, we investigated whether today's volume of tweets or blog posts about the Sewol ferry issue is predicted by past volumes of news stories above and beyond the past volumes of tweets and blog posts.

Results

The focal point of this study was a comparison of media attention to the Korean government and Yu concerning the Sewol ferry incident. Figure 1 shows trend lines of news coverage for four months (122 days) since the accident. News coverage of both the Korean government and Yu was fairly steady, but attention to Yu spiked drastically when he was found dead.
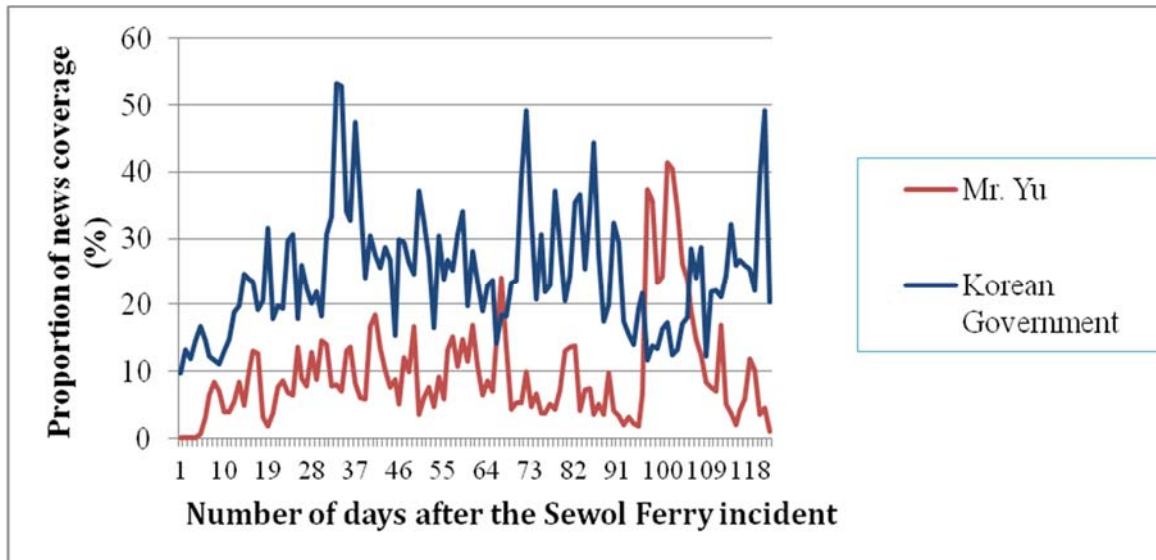
Figure 1. Trends in the proportion of news coverage of the Korean government and Yu.

To test our initial hypothesis about zero-sum competition between the Korean government and Yu, we regressed daily news coverage of the Korean government onto daily news coverage of Yu and the covariate variables. Table 1 summarizes the results from five ordinary least squares regression analyses. The results support H1. As shown in the first column of Table 1, news coverage of the Korean government is negatively associated with news coverage of Yu ($\beta = -.29$) after controlling for time-related covariates. This suggests that the zero-sum principle governs the dynamics between media attention to the Korean government and Yu. The presence of Yu seemed to occupy media attention that otherwise would have been directed at the Korean government.

Table 1. Attention to the Korean Government About the Sewol Ferry Incident in News Media.

	Aggregated	Conservative papers		Liberal papers	
	Online news beta	*Joongang* beta	*Donga* beta	*Hankyoreh* beta	*Kyunghyang* beta
Time	1.60***	1.69***	1.35***	1.05**	0.11
Time squared	−1.46***	−1.59***	−1.15***	−0.95**	−0.25
Monday	−0.08	0.10	−0.01	0.11	0.06
Tuesday	−.14	0.14	−0.09	0.06	0.08
Wednesday	−.03	0.17	0.08	0.14	0.03
Thursday	.08	0.21	0.03	0.11	0.06
Friday	−0.13	−0.05	−0.00	0.12	0.03
Saturday	−0.26*	−0.00	−0.14	0 .09	0.06
Attention to Yu	−0.29***	−0.28***	−0.37***	−0.42***	−0.38***
R^2	.28	.29	.27	.25	.19
N	122	122	122	122	122

$^*p < .05.\ ^{**}p < .01.\ ^{***}p < .001.$

RQ1 asked whether the power of the zero-sum principle varies depending on the political orientations of news organizations. The examination of two conservative and two liberal types of news coverage of the Sewol ferry suggests that news media cannot escape from the yoke of limited media capacity. Political leanings of news organizations did not undermine the robustness of the zero-sum principle. The two conservative papers, *Joongang* (β = −.28) and *Donga* (β = −.37), and the two liberal newspapers, *Hankyoreh* (β = −.42) and *Kyunghyang* (β = −.38), also exhibited significant displacement relationships between news coverage of the Korean government and Yu. Days of the week did not explain any variations of news coverage of the Korean government regarding the Sewol ferry incident.

RQ2 examined the relationship between media attention to the Korean government and Yu in the Twitterverse and blogosphere. Previous studies found that issue competition in traditional news coverage is subject to zero-sum dynamics based on the assumption that the size of the news pie is limited and constant over time. However, little is known about whether zero-sum dynamics persist even in a digital sphere in which production and broadcasting limitations have largely been eliminated. Interestingly, social media mirror the relationship observed in the news media (see Table 2). Both Twitter (β = −.36) and blogs (β = −.25) showed the displacement relationship between the content volume of the Korean government and Yu.

Table 2. Attention to the Korean Government About the
Sewol Ferry Incident in User-Generated Media.

	Twitter beta	Blog beta
Time	1.75***	0.31***
Time squared	−1.57***	−0.65***
Monday	−0.08	0.05
Tuesday	−0.15	0.04
Wednesday	−0.00	−0.06
Thursday	0.09	−0.07
Friday	−0.13	0.05
Saturday	−0.25*	−0.05
Attention to Yu	−0.36***	−0.25*
R^2	.29	.24
N	122	122

*p < .05. ***p < .001.

To assess intermedia influence, RQ3 asked whether the salience of the Korean government and Yu surrounding the Sewol ferry issue is transferred from one medium to another. To assess the temporal order, this study used a framework of Granger causality (Granger, 1969). As a first step of Granger analysis, we tested each vector autoregression (VAR) for stationarity (Becketti, 2013). This test identifies whether impulsive spikes, trends, cycles, and seasonal variations cause unrecoverable deviations from the average. All the VARs passed the test of stationarity. Next, we set up the proper lag length for our Granger regression analyses. Recently Neuman et al. (2014) confirmed that statistical criteria for lag selection, such as AIC and SBIC, indicate that a time lag of up to seven days is optimal. Following this suggestion, this study included one- to seven-day lags.

Table 3 summarizes the results of the Granger analyses. First, we examined the intermedia influence concerning all media messages about the Sewol ferry. As shown in the first column in Table 3, online news coverage of the Sewol ferry did not, according to Granger's method, cause the Twitter volume of the incident. In contrast, the possibility of a reverse influence, from Twitter to online news, was observed. On the other hand, we found that online news Granger-caused blogs, but not the other way around. This indicates the possibility that with regard to this national tragic event, Twitter users actively produced messages about the Sewol ferry throughout four months, to the extent that traditional news media reflected such an atmosphere of social media buzz. Blogs, however, seemed to be less active than Twitter, being Granger-caused by online news coverage.

Table 3. Granger Analysis Between Online News and User-Generated Content.

Intermedia influence				
From	To	Sewol ferry, χ^2	Sewol ferry and government, χ^2	Sewol ferry and Yu, χ^2
Online news	Twitter	11.77	3.50	26.42[***]
Twitter	Online news	15.13[*]	9.72	8.69
Online news	Blog	16.87[*]	7.04	9.48
Blog	Online news	13.47	8.12	6.67

Note. The χ^2 is a Wald test, which is a joint test of all of the lags for each of the variables in the equation.
[*]$p < .05$. [***]$p < .001$.

Next, we ran Granger analyses about media attention to the Korean government and Yu, respectively. Surprisingly, we found that online news coverage and social media content of the Korean government seemed to be entirely independent, without any evidence of intermedia influence in either direction. Perhaps most interesting is strong evidence of Granger causality from online news coverage of Yu to tweets about him. This observation suggests that tweets about Yu are highly dependent on news coverage. Given that Yu had not been a familiar figure among ordinary Twitter users and disappeared for a long time until he was found dead, it makes sense that users needed to rely on news coverage to seek information about him. Finally, we did not find any sign of intermedia influence between blogs and online news about Yu.

Discussion

This research begins with the assumption that social problems are constructed through a competitive process and may not simply reflect objective conditions in society. Concentrated media attention on a certain aspect of an issue does not mean that the aspect is most important in defining that issue. Likewise, if a certain aspect or issue vanishes from media discourse, it does not indicate that the problem has been resolved or no longer important. Media can neglect, distort, and magnify social issues by controlling the salience of issues, issue attributes, or issue actors, and that is where media theories such as agenda setting and framing offer great promise. However, a surprisingly understudied area is the way in which media define and track an issue as a function of competitive attention dynamics among issue actors. Notably, this article presents initial evidence for issue competition between within-issue actors, revealing that the zero-sum dynamics prevailed in both traditional news and social media. Our follow-up analysis about intermedia influence suggests that the robustness of this zero-sum principle may be transmitted from online news media to social media.

Our investigation of issue competition first focused on traditional news media. Assuming that the Sewol ferry incident is one large news pie, we expected that increasing news coverage of Yu would deflect media attention from the Park administration. This prediction was supported. The findings suggest that the Park regime might benefit from growing media attention to Yu, because public opinion blamed

President Park and the ruling party for the tragedy. Whether intentional or not, the administration could take advantage of the emergence of Yu by redirecting uncomfortable media attention to him.

We then tested the zero-sum principle separately for liberal and conservative newspapers. Because Yu's attention-grabbing power can lessen the burden of the conservative Korean government, it is possible that conservative media, which support the current regime, may decrease news coverage of the Korean government in response to the rise of news coverage about Yu. On the other hand, liberal media, which encounter an opportunity to attack the current regime, may not want to distract media attention to something else. However, this alternative possibility was rejected. The results showed that the zero-sum principle overshadowed the political agendas of all news outlets. These findings corroborated the observations of newsroom practices in which journalists have their own newsgathering routines and are assigned to separate departments such as politics, business, and sports (Bennett, 1990; Mitchelstein & Boczkowski, 2010). Even on a rare occasion when a crisis disrupted news routines, it was difficult to expect newsroom practices to reallocate their resources in response.

Another key theoretical contribution stemmed from the finding that social media also fall under the control of the zero-sum principle. This is surprising given that the technical constraints that have traditionally limited the production and broadcasting of news content do not appear to apply to the emerging media environment. In theory, by virtue of digital participation, the number of tweets and blog posts about the Korean government should no longer diminish in response to the rise of tweets and blog posts about Yu. However, despite the removal of traditional constraints, the current findings revealed that user-generated media did not function independently; instead, they mirrored the attention dynamics displayed in the mainstream media. In fact, these findings suggest the possibility that the audience's psychological constraint results in the zero-sum dynamics. As cognitive misers, individuals have a finite amount of cognitive resources to pay attention to and process information (Fiske & Taylor, 1991).

To elucidate the underlying process of this resemblance between mainstream and social media, we further explored the way in which two types of media interact with each other. If social media content about this issue or certain actors simply reflected the fluctuation of news coverage of the same issue or actors, that would explain why the zero-sum principle is also relevant to the dynamics of social media attention. Our time-series analyses showed that the intermedia process involved more subtle and complex dynamics across media channels. First, in terms of the overall attention to the Sewol ferry issue, the Twitter volume Granger-caused online news coverage of the incident. This suggests that social media play a significant role in sustaining the salience of this issue in traditional media as well as in public dialogues. Even when news organizations do not continue to present news reports about a certain topic due to new events or political pressure, the topic can survive and remain as main issues on social media. Since news editors and journalists tend to reflect public interest and sentiment in their news selection, popular agendas on social media are likely to be adopted as elite media agendas (Conway et al., 2015). The findings also resonated with the idea that social media do not always follow mainstream news content but often function as an alternative platform that initiates or lengthens the issue attention span (Jang et al., forthcoming; Shirky, 2011).

However, notably, users' tweets about Yu were highly dependent on news coverage of him, and this one-way intermedia influence might have led to the invariant relevance of the zero-sum principle to both mainstream and social media. If increasing news coverage of a new target for blame (Yu) had the trickle-down effect on social media, conversations about who should be responsible for the tragedy might have shifted their focus from the government to Yu. This result supports the findings that event-oriented news (e.g., crime, drugs, guns, terrorism, and protests) tend to flow from established news media to social media and social issue–oriented news (e.g., economy, politics, and environment) tend to generate the flow of agenda from social media to news media (Neuman et al., 2014).

Our findings also highlighted the theoretical significance of SCCT regarding the attributions of organizational responsibility for the crisis. According to SCCT, reputational damage may vary depending on the intensity of crisis responsibility and the type of perceived causes (Coombs, 2014). For instance, reputational harm to the Korean government would have been severe if the public perceived that the Sewol ferry tragedy was due to poorly orchestrated rescue efforts, which are controllable and preventable. On the other hand, the Korean government wanted to minimize the reputational damage; therefore, it would have been strategically beneficial if the public had paid attention to the sinking of the ferry, which could be attributed to largely uncontrollable factors such as natural disaster or technical errors. Thus, it is reasonable to perceive that the government might have welcomed media attention toward Yu, the owner of the ferry, as it could have reduced media attention toward the government itself. Our findings of zero-sum dynamics in both mainstream and user-generated media supported this organizational motivation. However, we still cautiously note that it remains unclear whether the government deliberately amplified media attention to Yu. Future studies should unlock these attributional dynamics more carefully by exploring additional contexts of disastrous or politically polarizing events.

A number of limitations should be considered when assessing the current findings. First, this study identified media content using a Boolean search. This method allowed us to analyze the attention dynamics regarding the key actors of this tragic event, but we were not necessarily able to consider such media attention as blame for the tragedy. Future research may use sentimental analyses to explore the dynamics of blame (Grimmer & Stewart, 2013). Second, the evidence of top-down intermedia influence raises additional questions that should be answered in subsequent research. For example, the intermedia process from mainstream to social media could mean several pathways. It is possible that ordinary users produce and disseminate digital content in response to mainstream media content, but it is also possible that professional journalists and other off-line elites dominate the flow of information in a social media world (Ausserhofer & Maireder, 2013). If they play the role of opinion leaders both online and off-line, the congruence in conversation topics between these two types of media is not surprising. Third, because both user-generated platforms, Twitter and blogs, are categorized as information-oriented social media, it is still unclear precisely how the intermedia influence emerges between relationship-oriented social media (e.g., Facebook) and online news media (C. Kim & Lee, 2016). It is possible that the intermedia influence among information-oriented media such as news and Twitter would be more robust than the link among media with different motivations. Future research on intermedia agenda setting should pay additional attention to the type of social media. Fourth, although this study did not directly test SCCT, future research on SCCT should pay systematic attention to the Sewol ferry crisis, which led to the president's impeachment. For example, the perceived gap in the attribution of rescue failure between the government

and public seemed to cause critical reputational harm to the Park regime. Finally, although this study focused on two major actors who received considerable media attention as a target for blame (D. Kim, 2016; J. Park et al., 2016), we did not consider the influence of other actors blamed for this accident. For example, the captain and 14 crew members of the Sewol ferry received prison sentences ranging from one and a half years to life for abandoning passengers. Furthermore, it should be noted that the Sewol disaster can be primarily attributed to the sinking of the ferry itself (e.g., capsizing, overloading, and discharging of ballast water) and the poorly administered rescue mission. Although Yu was linked more to the former and President Park was linked more related to the latter, this study could not reveal this subtle distinction in terms of the type of causes of this tragedy. The current analytical focus on two main actors was limited in the interpretation of this complexity; therefore, it would be interesting to examine how direct and indirect causes of a disaster alter the public's perceived responsibility of the incident.

Conclusion

By demonstrating that the zero-sum principle governs issue competition in both mainstream and user-generated media, the current research bears important political implications. Political authorities may take advantage of issue competition and create an environment where media attention is directed toward less meaningful matters highlighted by salient media events (Davis, 1996; Geip, 2011). When important political issues are neglected by media—and, eventually, by the public—the implications for society could be profound. Some scholars (Gil de Zúñiga, Molyneux, & Zheng, 2014; Shirky, 2011; Valenzuela, Arriagada, & Scherman, 2012) have expressed hope that user-generated social media represent an elaborate system of checks and balances for government performance, especially when mainstream media do not function properly. However, the current study found limited support for the independent role of user-generated media decoupled from mainstream media. The salience of Yu was transferred from top to bottom, not in the opposite direction, suggesting that mass media effects may be reproduced rather than counterbalanced through user-generated media.

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