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First and Second Levels of Intermedia Agenda Setting: Political Advertising, Newspapers, and Twitter During the 2012 U.S. Presidential Election

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In a world of big data, with more information at the audience's fingertips than ever, gatekeepers such as media and political parties still play a huge role in mediating issues to the general public. Recognizing this issue, this study investigated the first and second levels of intermedia agenda setting between political advertisements, newspapers, and Twitter postings (tweets) about Barack Obama and Mitt Romney during the 2012 U.S. presidential election. A series of computerized content analyses with ARIMA time-series modeling were employed. Our findings will extend agenda-setting theory to the social media environment.

Keywords: agenda setting, news, Twitter, political advertising

During the general election cycle, candidates for president send their messages out through a host of platforms, including television advertising (Sweetser, Golan, & Wanta, 2008). Political advertising plays a role in influencing the general public. It can alter the media agenda and coverage of issues, define a candidate's image, and ultimately influence voter turnout (Bichard, 2006; Johnston & Kaid, 2002). Scholars have found that news coverage can be "horse race reporting" in which issue-centric information about "winning, losing, or repositioning strategic plans during an election" dominates news coverage (Boyle, 2001, p. 27). Furthermore, the agendas of newspapers and local and network news become more similar as Election Day nears. Scholars link this effect to shared journalistic norms and routines that result in exposure to similar issue agendas (Boyle, 2001).

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However, with the expansion of the Internet, the media landscape has changed dramatically. The emergence of citizen journalists through blogs and social media has resulted in changes to the traditional gatekeeping functions and norms that journalists practice (Carpenter, 2010; Goode, 2009; Lewis, Kaufhold, & Lasorsa, 2010). With these new advances, questions arise about media effects and political advertising. Does political advertising affect coverage of political campaign issues? Do ads that highlight certain campaign issues or aspects of a candidate's image have an effect on the news coverage that results?

Candidates themselves are a main force in shaping an election, but few studies have been conducted about the effects candidates have on the media's agendas (Heim, 2013). Given that many people use media selectively and that media now tailor content to specific audiences on specific platforms (Boyle, 2001), the influence of a presidential candidate's political advertising is likely not uniform. For example, agendas may differ by format of media (online vs. offline) and political ideology of the media (conservative vs. liberal; Vargo, 2011; Vargo, Guo, McCombs, & Shaw, 2014).

Therefore, this study examines whether and to what extent a candidate's political advertisements are related to the issue and attribute agenda of major newspapers (i.e., *The New York Times* and *The Washington Post*) and social media (i.e., Twitter) as well as how the agendas of two traditional newspapers related to the agendas of social media during the 2012 U.S. presidential election. This study will extend agenda-setting theory to the social media environment and may guide future political campaign planning.

Literature Review

Political Advertising and Media Coverage

In political campaigns, candidates use various strategies to reach their target audience. Among these strategies, advertising has been recognized as a key part of campaigning (Sweetser et al., 2008). Although candidates also integrate other strategies, such as official websites and blogs, into their media campaigns, U.S. candidates still spend the largest amounts of their campaign budgets on televised political advertising (Tedesco, McKinnon, & Kaid, 1996). Relative to commercial radio, direct mail, and Internet advertising, U.S. candidates spent the most money on television advertising in both the 2008 and the 2012 presidential elections (Bachman, 2012; James, 2010).

The relationship between political advertising and media coverage has changed drastically since the emergence of the Internet (Heim, 2013). The traditional press is no longer the only means by which audiences can read and express political views. Now, traditional news reporters compete with bloggers on all types of media, including Twitter, which millions of people use to post their reactions to and interpretations of political campaigns (Heim, 2013; Vargo et al., 2014). Tedesco's (2005) study of the 2004 presidential election in the United States revealed an intercandidate agenda-setting effect such that newspapers affected Kerry's agenda whereas Bush's agenda affected newspapers. Tedesco's findings raised a question about whether the president influences newspaper agendas or vice versa (Sweetser et al., 2008, p. 200).

Twitter Use in Politics and Journalism

Since the microblog Twitter has become a popular form of social media, journalists and political leaders (e.g., the president, candidates, members of Congress, governors, mayors) have employed it to communicate with their public (Parmelee, 2014). Golbeck, Grimes, and Rogers (2010) found that members of the U.S. Congress employed Twitter to spread information about political issues to be supported by the public. Similarly, Howard (2010) revealed that federal and state agencies used Twitter to make the public aware of issues and respond to issues. Through in-depth interviews with political Twitter users, Parmelee and Bichard (2012) found that Twitter is recognized as the most popular medium for political persuasion, and issues emphasized on Twitter influence other platforms, such as news, talk radio, and blogs.

Journalists also increasingly use Twitter as a means of news gathering and interacting with their users (Hermida, 2010; Lasorsa, Lewis, & Holton, 2012). Parmelee (2014) noted the potential of Twitter as a useful marketing tool because it lets journalists get real-time information from various sources. Second, Twitter facilitates the reporting of complex and delicate information based on its asynchronous and always-on nature. Finally, Twitter enables cost-efficient news gathering and reporting because it is free to access.

Compared to other social media such as Facebook, which makes use of a private or at least semiprivate network of users, Twitter has been regarded as a public medium in that both users and media can access the public information on Twitter without reciprocal permission between users (Grant, Moon, & Grant, 2010; Kwak, Lee, Park, & Moon, 2010; Vargo et al., 2014). Furthermore, as Twitter has grown quickly because of its openness to the public, it is regarded as the most accurate media to evaluate public opinion during elections (Brustein, 2010). These characteristics of Twitter may offer politicians and journalists more open communication with large numbers of the public. Despite Twitter's popularity with politicians and journalists, however, it is not clear whether and how their tweets are related to both political candidates' campaigns and political journalists' news coverage. Perhaps the biggest case study for this relationship is the 2012 general election, which is the first presidential election that involved both campaigns heavily using Twitter (Conway, Kenski, & Wang, 2015).

First- and Second-Level Agenda Setting and Agenda Building

To explicate the role of three key components of a political campaign—a candidate's or a political party's campaigns, news coverage, and public opinion—in shaping the salience of issue agendas and attribute agendas, prior research has used first- and second-level agenda setting and agenda building as theoretical frameworks (Kiousis, Mitrook, Wu, & Seltzer, 2006; Kiousis, Popescu, & Mitrook, 2007). In particular, prior research findings suggested that political campaigns can influence the salience of political issues and candidate attributes in news media and public opinion by first- and second-level agenda-setting and agenda-building processes (Kiousis et al., 2006; Kiousis et al., 2007).

First-level agenda-setting research has investigated the transfer of issue salience from the media agenda to the public agenda (McCombs, 2004; McCombs & Shaw, 1972). As such, first-level agenda-

setting research has focused on the media salience of "objects" (e.g., issues) that increases the salience of the same "objects" in public opinion (Kiousis & McCombs, 2004; McCombs, 2004; McCombs & Shaw, 1972). Whereas first-level agenda setting is concerned with "objects," second-level agenda setting is concerned with "attributes." Often compared with framing, second-level agenda setting suggests that the media dictate how issues are thought about through the selection and placement in their coverage of agendas focusing on certain attributes (McCombs, 2004). In the context of elections, second-level agenda setting hypothesized that

> the agenda of substantive attributes of candidates (e.g., descriptions of their personality, their stands on issues, etc.) presented in the mass media influences the agenda of substantive attributes defining the images of the candidates among voters. (McCombs, Llamas, Lopez-Escobar, & Rey, 1997, p. 706)

Whereas first- and second-level agenda setting is related to the influence of the media agenda on the public agenda about objects and attributes, agenda building is concerned with the formation of a certain media agenda as a result of public relations efforts (Kiousis et al., 2007; McCombs, 2004). As Gandy (1982) noted, the broader concept of agenda building is the determination of "who sets the media agenda, how and for what purpose it is set, and with what impact on the distribution of power and values in society" (p. 266). Beyond the relationship between media and public salience, agenda-building research investigates the interactions among sources (e.g., public relations practitioners, policy makers, media, the public) that influence the formation of the media agenda (Kiousis et al., 2006). Hence, agenda building can explicate the originating role of sources in making news. Still, it does not address the process of issue salience transfers between the media (Kiousis et al., 2006). The agenda-building process more explicitly involves relationships between the media agenda and the public agenda with the emergence of second-level agenda setting. In terms of the transfer of salience between the media agenda and the public agenda, the concept of agenda building offers a framework not only to examine how to form object and attribute salience but also to explain that certain attributes of an object presented in media can influence the salience of the issue in public opinion (i.e., the compelling-arguments hypothesis; Kiousis et al., 2007).

Likewise, the theoretical grounding of first- and second-level agenda setting provides unidirectional effects of the relationships between the media agenda and the public agenda on the salience of political issues (first-level effects) and candidate attributes (second-level effects), whereas agenda building suggests that a certain source (e.g., a political campaign) can affect issue and attribute agendas of the media. Based on the logic of first- and second-level agenda setting and agenda building, it can be assumed that candidates' issue and attribute agendas in their political campaigns can affect candidates' issue and attribute agendas in the news media. However, the concepts of agenda setting and agenda building still cannot comprehensively explain the dynamic interrelationships in agendas between different media (e.g., newspapers vs. Twitter) or between sources and media (e.g., political advertisements vs. newspapers and Twitter). To address this gap in the literature, this study draws upon the concept of intermedia agenda setting to further address the intermedia relationships between political candidates' campaigns, journalists' news coverage, and tweets.

Intermedia Agenda Setting

In agenda setting research, the question of who sets the media agenda has become an important research topic beyond the original proposition that media sets the public agenda. McCombs (2005) described the relationship between different media sources and media agendas as the fourth stage of agenda setting. Intermedia agenda-setting research focuses on how the media agenda is shaped by sources and whether a media agenda shapes other media's agendas (Lopez-Escobar, Llamas, McCombs, & Lennon, 1998; Reese & Danielian, 1989; Wanta & Foote, 1994). According to McCombs (2005, pp. 548–549), journalists make news by "continuous interaction of news organizations with numerous sources and their agendas." In particular, journalists tend to use the work of the elite press including *The New York Times* and *The Washington Post* as well as national television networks as a barometer of news value (McCombs, 2005). This tendency results in highly homogeneous agendas across all the news media.

White (1950) first examined the concept of intermedia agenda setting by investigating the news selection of Mr. Gates, a news wire editor in the United States Midwest. White found a positive relationship of the news selection between daily newspapers and national news agencies. Since then, a large amount of literature has supported White's findings. Specifically, Snider (1967) found a significant correlation between Mr. Gates's selections, newspapers and wire services. Other researchers also found an intermedia agenda-setting influence between newspapers as well as between newspapers and television. For example, Gilbert, Eyal, McCombs, and Nicholas (1980) revealed *The New York Times* as an important source in intermedia agenda setting across the United States. Reese and Danielian (1989) found that news coverage of drug issues in *The New York Times* influenced that of other newspapers, such as *The Washington Post* and *Los Angeles Times,* as well as of reporting on network television news.

The emergence and spread of the Internet has provided a new paradigm in agenda-setting research (B. Lee, Lancendorfer, & Lee, 2005). Unlike traditional media such as newspapers, television, and magazines, the Internet is based on interactivity, which opens up the possibility of two-way communication between politicians and their public (B. Lee, et al., 2005). Increasing numbers of Netizens—people who actively participate in communicative activities such as seeking information, expressing their views, discussing various issues, and building their own community—also influenced the agenda-setting process by creating agendas online that others perceived as salient issues (B. Lee et al., 2005; Ruggiero, 2001). Groshek and Groshek (2013) argued that

> agenda setting is no longer conceived of as only a top-down process from mainstream print and broadcast media to audiences, but also as a dynamic process where, under certain conditions, citizen reporting advanced in online spaces can give shape and definition to media and policy agendas among the public. (pp. 16–17)

Indeed, many researchers have investigated how agenda setting works online, although the concept of the "Internet agenda" has not been consistently defined (Sweetser et al., 2008). In particular, the influx of networking channels such as blogs, Facebook, and Twitter has brought about contradictory perspectives of intermedia agenda setting between social media and traditional media (Heim, 2013). Some have argued that traditional news media rely on issues brought up in social media to obtain more

specialized knowledge and analysis, while others have claimed that social media gets stories from traditional media. Given that news media use social media to communicate with their users, this study will give additional insight into the intermedia agenda setting between traditional news media and social media.

First- and Second-Level Intermedia Agenda Setting: Political Advertisements, Newspapers, and Twitter

Roberts and McCombs (1994) first incorporated the role of political advertisements in intermedia agenda setting. They examined the intermedia agenda setting effects of political advertisements in a local daily newspaper and three local television stations and political advertisements in the Texas gubernatorial election in 1990 and found that the agenda of political advertisements at Time 1 affected the agenda of newspaper and television news at Time 2. Lopez-Escobar et al. (1998) found both first- and second-level intermedia agenda-setting effects of political advertising on the news agendas of both newspapers and television during the 1995 Spanish election. Specifically, they demonstrated effects of intermedia relationships between political advertising and television and newspaper news on the agenda of issues (first-level agenda setting) and attributes (second-level agenda setting). In line with these findings, Boyle (2001) showed that political advertisements of candidates Bill Clinton and Bob Dole affected political coverage of the campaign presented in both newspapers and television in the 1996 U.S. presidential election.

In terms of intermedia agenda setting online, several scholars have examined the intermedia relationship between online news coverage, online public forums, and candidate's campaigning through websites. Roberts, Wanta, and Dzwo (2002) found that U.S. online news media content influenced informed discussion on electronic bulletin boards for three issues with a time-lag difference in influence from one to seven days. B. Lee et al. (2005) examined the intermedia influence of Internet bulletin boards on newspaper coverage during the 2000 general election in South Korea in terms of both first- and second-level agenda setting. Their cross-lagged correlation analyses demonstrated that newspapers influenced Internet bulletin boards through first-level agenda setting, whereas Internet bulletin boards affected newspapers through second-level agenda setting. J. K. Lee (2007) investigated the intermedia agenda relationship between eight blogs and mainstream news media such as *The New York Times*, CNN, the Associated Press, and *TIME* magazine. Findings showed that the blog agendas were similar to the agendas of the mainstream media regardless of liberal or conservative political identification. Sayre, Bode, Shah, Wilcox, and Shah (2010) traced the relationship between YouTube videos and traditional news media and found a potential intermedia agenda setting action of YouTube videos on traditional news media.

Similarly, the Twitter agenda influenced the agenda of *The New York Times* (Zhao et al., 2011) and of CNN headlines and Google trends (e.g., Kwak et al., 2010). Meraz (2009, 2011) examined the first- and second-level agenda-setting relationship between political blogs and online versions of traditional news agenda across the ideological spectrum. Findings revealed that political blogs set the agenda of the online version of traditional news agenda, whereas the reverse pattern was not shown (Meraz, 2009). However, at the second level of intermedia agenda setting, liberal and moderate blogs were significantly

correlated with the traditional news media attribute agenda but conservative blogs were not (Meraz, 2011).

Taken together, prior studies have demonstrated intermedia agenda-setting effects between political advertising and media agendas, as well as between media agendas offline and online. However, very few studies have focused on the first- and second-level intermedia agenda-setting influence between political advertising and media agenda in the social media environment. Furthermore, no study has examined the relationship between political advertising, newspapers, and Twitter while simultaneously considering the political identification of the media and the candidate. Hence, this study extends the first- and second-level intermedia agenda-setting research by comparing issues and attributes embedded in political advertising, newspaper coverage, and tweets across the ideological spectrum.

Research Questions

This study sought to investigate first- and second-level intermedia agenda-setting effects between candidates' political advertisements, two major newspapers, and tweets, focusing on the political identification of the newspapers in the 2012 presidential campaign. Presidential candidates employ televised political advertising to affect the public and media agenda, but there have been inconsistent findings about the direction of intermedia agenda setting between political advertisements and newspapers in addition to between newspapers and Twitter. Furthermore, few studies have focused on the political ideology of newspapers in relation to the candidate's political advertisements and Twitter. As such, the following research questions are advanced:

RQ1: *How are the candidates' issue agendas in their political advertisements related to the candidates' issue agendas presented by newspapers and the issue agendas posted on Twitter?*

RQ2: *How are the candidates' attribute agendas in their political advertisements related to the candidates' attribute agendas presented by newspapers and the attributes of candidates posted on Twitter?*

RQ3: *Will the candidates' issue agendas and attribute agendas presented in* The New York Times *and* The Washington Post *differ from those on Twitter?*

Method

To answer the research questions, this study employed content analyses to identify the candidates' agendas of political advertisements and media agendas of newspapers and Twitter. To determine the candidates' agendas, candidate-controlled messages were examined. To collect data, researchers started collection during national party conventions because they were the first planned media event in the presidential campaign season. This was followed by the candidate debates, which can draw national attention in news coverage and Twitter participation (Lin, Keegan, Margolin, & Lazer, 2014). In 2012, the Republican National Convention was held from August 27 to August 30, and the Democratic National Convention was held from September 4 to September 6. Data were collected from September 7

(after the national conventions) to November 5 (before the presidential Election Day). As a result, a total of advertisements (n = 186), newspaper articles (n = 666), and tweets, (n = 47,243) about the two candidates was collected.

Sample

The samples consist of three types of units: campaign-related television advertisements, national newspaper articles, and tweets. Advertisements were collected from the official websites of the Political Communication Lab of Stanford University (http://pcl.stanford.edu/campaigns/2012/). After excluding nine advertisements without accessible transcripts, a total of 186 televised political advertisements (65 for Obama and 121 for Romney) were used for analysis. During the same campaign period, two national daily newspapers were chosen: *The New York Times* and *The Washington Post*. Both newspapers have high circulation rates and are regarded as elite newspapers that lead news coverage in other media (McCombs, 2005; Meraz, 2009, 2011). A total of 666 newspaper articles from *The New York Times* and *The Washington Post* about Obama and Romney were analyzed. Only news articles written for publication in the United States were used for sample. As a result, 349 articles on Obama (*The New York Times*: 203, *The Washington Post*: 146) and 317 articles on Romney (*The New York Times*: 195, *The Washington Post*: 122) were found. As for Twitter, researchers gathered tweets with keywords "Obama" and "Romney" from a professional data-mining company. A total of 29,218 tweets for Obama and 18,025 tweets for Romney was used for this study. The researchers analyzed the data to ensure that no tweets that originated from news organizations or the candidates were included in the Twitter data set. In a manual content analysis of the 5,424 users found in the data set, no users were found to be news media organizations or the candidates.

Coding Categories

Drawing upon prior agenda-setting studies, issue agendas were operationalized as "media or candidate attention to an issue" (Sweetser et al., 2008, p. 206). To examine first-level intermedia agenda setting, specific issues were selected and coded by reviewing the political advertisements, newspaper articles, and tweets. The coding units for issues were adapted and modified from previous agenda-setting research that used lexicon-based lists to extract issues from text. (For a review of the lexicon used, see Vargo et al., 2014.) This lexicon was used because it was built and validated for the 2012 general election. The issues were coded with a dichotomous variable as present (1) or absent (0). The top eight issues were identified as follows:

(a) Economy: economy, economic, tax, laid off, layoff, employ, monetary, hire, money, business, start-up, GDP, poverty, fiscal, debt, recession, income, financial, finance, recovery, recoveries, bankrupt, budget, stock market, free market, revenue, trade, deficit, salary, expenditure, inflation, labor, manufacturing, home, millionaire, middle-class, middle-income, billionaire, 47%, mortgage, house, housing, job, industry, infrastructure, poverty.

(b) Foreign affairs: foreign policy, foreign affairs, Bin Laden, Al Qaeda, terrorist, terrorism, Saddam, Persian Gulf, Osama, Middle East, Iraq, Palestinian, Iran, Afghan, Israel, Muslim, Islam, Chinese,

Palestine, North Africa, Arab, Syria, Libya, nuclear, Asia, China, Russia, North Korea, war, oversea, extremist, diplomatic, diplomacy, Libyan, Putin, Taliban, Pakistan, Moscow, Kim Jong-il, bomb, military, air force, troop, Army, forces, summit meeting, trade, threat.

(c) Individual liberties: abortion, single mom, women, woman, baby, babies, birth control, gay, same sex, same-sex, homosexual, lesbian, LGBT, don't ask, don't tell, Roe v. Wade, marijuana, drug, gun, violence, religion, Christian, civil right, civil liberty, social justice, race, religious, civil liberties, pro-choice, pro-life, single mother.

(d) Immigration: Latino, Latina, immigration, immigrant, immigrate, Mexico, Mexican, Dream Act, Hispanic, border, safety, visa, green card, passport, citizenship.

(e) Functioning of government: role of government, size of government, big government, small government, bigger government, smaller government, overbearing government, big spending, overspending government, intervention, debt ceiling, fiscal cliff, federal government, budget deficit.

(f) Education: education, student, teacher, tuition, school, college, No Child Left Behind, academic performance, university, teaching, loan.

(g) Environment: environment, gas, gasoline, energy, climate, global warming, pollute, pollution, oil, soil, water, solar, utilities, electricity, fuel, greenhouse, emission, fossil fuels, carbon, hybrid, green, clean air, coal, nuclear power, drill.

(h) Social welfare: Obamacare, healthcare, health care, welfare, uninsured, insurance, veteran, Medicaid, medical, elderly, hospital, pension, poor, kid, parenthood, single mother, doctor, grandmother, grandfather, grandparent, patient, senior, birth, HIV, cancer, hospital, retire, Medicare.

For second-level intermedia agenda setting, the agendas of attributes of candidates presented in the political advertisements, newspaper articles, and tweets were content analyzed. Based on the coding units of attributes of candidates that were used in prior studies (e.g., Boyle, 2001; Heim, 2013), four categories of candidate qualifications (i.e., experience, intelligence, leadership, and decisiveness) and four of candidate personality traits (i.e., integrity, change/status quo, positivity/negativity, and compassion) were coded using a dichotomous answer of 0 (absent) or 1 (present). The eight aforementioned attributes of candidates were identified as follows:

(a) Experience: experience, experienced, performance, inexperience, cultivated, prepared, qualified, talented, potential, unqualified, undesirable, desirable, succeed, success, failure, crash, struggle, accomplish, troubled, wrong, right, flaw, mistake, gaffe, achievement, record.

(b) Intelligence: intelligent, smart, dumb, knowledgeable, sophisticated, known, knowing.

(c) Leadership: projected leader, failed leader, leadership, responsible, responsibility, promise, promising, irresponsible, salesmanship, great leader, public servants, prospective leader, esteemed leader, charismatic, strong, weak.

(d) Decisiveness: passionate, decisive, decision, confidence, confident, compete, conviction, bold, aggressive, consistency, arbitrary, reckless, feckless, wrong, relentless, effective.

(e) Integrity (morality and honesty): candid, honest, moral, true, transparency, dishonest, abuse, fraud, liar, lying, immoral, false, unfair, trustworthy, credible, credibility, faith, genuine, authenticity.

(f) Change/Status quo: (real/big) change, changing, new, challenge, transform, progress, status quo, old, insurgent, youthful, conservative, obsolete, young.

(g) Positivity/negativity: good, bad, hope, optimist, optimism, pessimist, pessimism, positive, positivity, negative, negativity, nice, support, endorse, like-minded, unlike-minded.

(h) Compassion (caring people): compassion, disheartened, mindful, care, caring, familiar, responded, empathetic, sympathetic, sympathy, sympathizer, aloof, apathetic, distant, remote, empathy.

Computer-Assisted Content Analysis and Intercoder Reliability Test

To analyze a large amount of data simultaneously, the researchers employed a computer-assisted content analysis. Because the computer-assisted content analysis program can only search text, the televised advertisements were automatically transcribed to text using the transcription service on YouTube. To determine whether coding units for the eight issues and eight attributes of candidates (four candidate qualifications and four candidate personality traits) were valid, a random sample of transcripts of televised political advertisements, newspaper articles, and tweets was chosen. The coding units were included in the Excel equation only if the text of televised political advertisements, a newspaper article, or a tweet contained more than one coding unit for issues and/or attributes. To compare the computer-assisted content analysis with a manual content analysis, two coders were trained, and an intercoder reliability test was conducted using 240 randomly selected coding items. Kappa scores were as follows: economy: .933, foreign affairs: .734, individual liberties: .911, immigration: 1.000, functioning of government: 1.000, education: 1.000, environment: 1.000, social welfare: .842, experience: .814, intelligence: 1.000, leadership: .793, decisiveness: .783, integrity: .830, change/status quo: .700, positivity/negativity: .857, and compassion: .839.

Results

To answer the research questions, a series of ARIMA time-series modeling analyses were employed. ARIMA analysis, often used with time-series agenda setting analysis, has been recognized as an effective way to predict dependent variables (Vargo, 2011). Furthermore, compared to other time-

series analysis, ARIMA analysis has an advantage to mathematically model the various time-series components by addressing the issues of stationarity and autocorrelation (Gonzenbach, 1996). The data collection period of this study is 62 days (points), from September 7 to November 5, so the generally required amount of 30 to 40 points for a significant ARIMA analysis was satisfied (Sayre et al., 2010; Vargo, 2011). To answer RQ1 and RQ2, a total of 96 ARIMA time-series modeling analyses (16 issue and attribute agendas × three media [Twitter, *The Washington Post*, and *The New York Times*] × two candidates) were conducted. The time lag for each ARIMA model ranged from 0 to 4. In addition, 48 ARIMA time-series modeling analyses (16 issue and attribute agendas × one medium [Twitter] × two candidates) were conducted to answer RQ3. The time lag for each ARIMA model ranged from 0 to 2. The Appendix provides an example of ARIMA models for the issue of Individual Liberties for Romney.

Specifically, RQ1 explored how the candidates' issue agendas in their political advertisements are related to the candidates' issue agendas presented by newspapers and tweets. As shown in Tables 1 and 2, for Obama, the salience of four issues in newspapers (i.e., Economy, Foreign Affairs, Immigration, and Social Welfare; avg $r^2 = 0.184$) and three issues on Twitter (i.e., Economy, Foreign Affairs, and Individual Liberties; avg $r^2 = 0.192$) could be partially explained by political advertisements ($p < .05$). For Romney, the salience of four issues in newspapers (i.e., Economy, Environment, Individual Liberties, and Social Welfare; avg $r^2 = 0.131$) and three issues on Twitter (i.e., Foreign Affairs, Individual Liberties, and Functioning of Government; avg $r^2 = 0.315$) could be partially explained by political advertisements ($p < .05$).

RQ2 explored how the candidates' attribute agendas in their political advertisements are related to the candidates' attribute agendas presented by newspapers and tweets. Tables 1 and 2 indicate that for Obama, the salience of four attributes in newspapers (i.e., Decisiveness, Intelligence, Leadership, and Positivity/Negativity; avg $r^2 = 0.183$) and five attributes on Twitter (i.e., Change, Compassion, Experience, Integrity, and Leadership; avg $r^2 = 0.191$) could be partially explained by political advertisements ($p < .05$). For Romney, the salience of three attributes in newspapers (i.e., Change, Compassion, and Positivity/Negativity; avg $r^2 = 0.168$) and four attributes on Twitter (i.e., Change, Experience, Integrity, and Leadership; avg $r^2 = 0.156$) could be explained by political advertisements ($p < .05$).

***Table 1. ARIMA Significant Stationary R^2* of Political Advertisements.**

	Obama	Romney
# of significant newspaper issues	4	4
# of significant newspaper attributes	4	3
# of significant Twitter issues	3	3
# of significant Twitter attributes	5	4

Table 2. ARIMA Average Stationary R^2 of Political Advertisements.

	Obama	Romney
avg r^2 for newspaper issues	0.184	0.131
avg r^2 for newspaper attributes	0.183	0.168
avg r^2 for Twitter issues	0.192	0.315
avg r^2 for Twitter attributes	0.191	0.156

RQ3 asked whether the candidates' issue agendas and attributes presented in *The New York Times* and *The Washington Post* differ from those on Twitter. Tables 3 and 4 show that for Obama on Twitter, the salience of three issues (i.e., Economy, Foreign Affairs, and Individual Liberties; avg r^2 = 0.176) and five attributes (i.e., Change, Experience, Integrity, Leadership, and Positivity/Negativity; avg r^2 = 0.145) could be partially explained by newspapers ($p < .05$). For Romney on Twitter, the salience of three issues (i.e., Foreign Affairs, Immigration, and Individual Liberties; avg r^2 = 0.217) and five attributes (i.e., Change, Compassion, Integrity, Intelligence, and Leadership; avg r^2 = 0.172) could be partially explained by newspapers ($p < .05$).

Table 3. ARIMA Significant Stationary R^2 of Newspaper Coverage.

	Obama	Romney
# of significant Twitter issues	3	3
# of significant Twitter attributes	5	5

Table 4. ARIMA Average Stationary R^2 of Newspaper Coverage.

	Obama	Romney
avg r^2 for Twitter issues	0.176	0.217
avg r^2 for Twitter attributes	0.145	0.172

In sum, overall, the results demonstrated significant relationships between the candidates' issue and attribute agendas of political advertisements, newspapers, and tweets. To additionally support time-series analysis, all issues and attribute agendas were summed for each day, and daily salience of agendas for each candidate was graphically charted in Figures 1 and 2. All values were charted in log (14), which allowed for the optimal *y*-axis convergence. As a result, spikes and trends of daily salience of agendas were shown to be similar between political advertisements, newspapers, and tweets for both candidates.

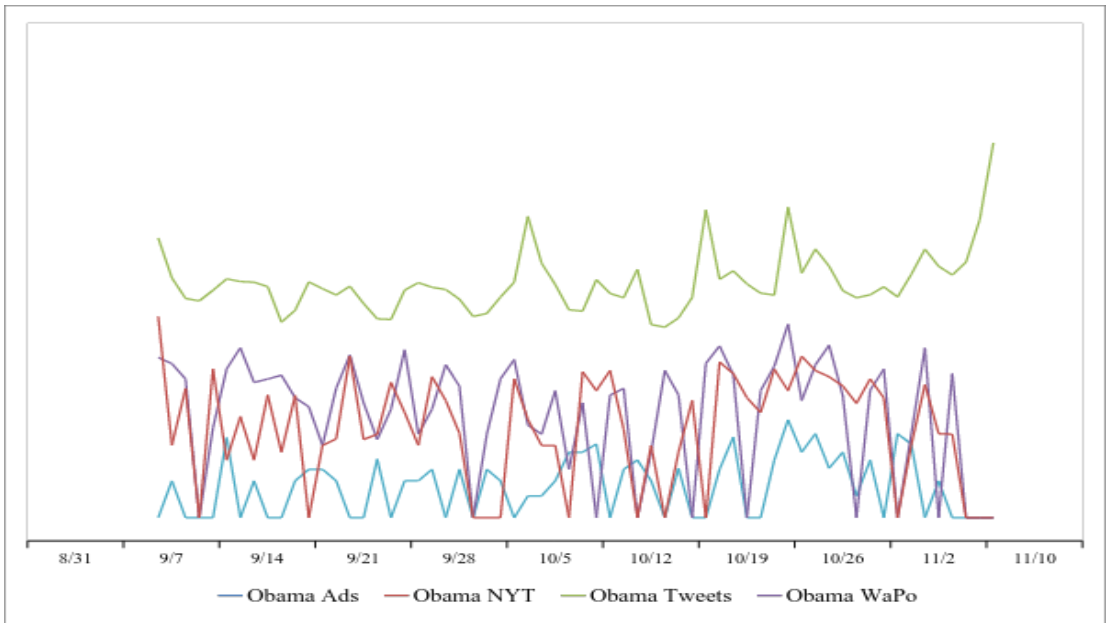

Figure 1. Daily salience for issue and attribute agendas for Obama.

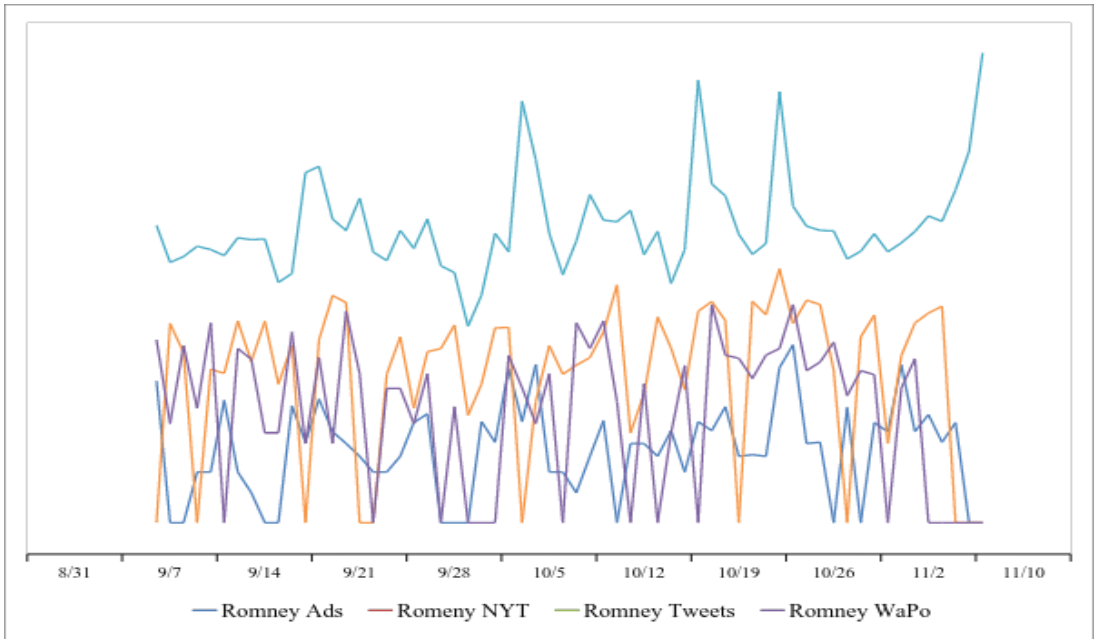

Figure 2. Daily salience for issue and attribute agendas for Romney.

Discussion

By employing the ARIMA time-series analysis, this study incorporated social media including Twitter in the first- and second-level intermedia agenda setting relationship between political advertisements and newspapers. This study further looks at the influence of intercandidate agenda setting in the intermedia agenda-setting process. The overall findings demonstrated an influence of first- and second-level intermedia agenda setting between political advertisements, newspapers, and tweets for both candidates. Specifically, the issue and attribute agendas of each candidate's political advertisements were positively correlated with the agendas of newspapers and tweets. In addition, the issue and attribute agendas of newspapers about each candidate were positively correlated with the agendas of tweets. More important, our findings demonstrated that the explanatory powers of the first- and second-level intermedia agenda setting influence differ by the candidate and the media.

Findings for RQ1 and RQ2 show that issue and attribute agendas in candidates' political advertisements tend to positively influence the issue and attribute agendas in newspapers and tweets. This is in line with other studies that have shown political advertisements to affect the media agenda through creating campaign issues and images (Bichard, 2006; Johnston & Kaid, 2002). Politicians especially have employed Twitter as a key campaign tool to communicate with the public (Golbeck et al., 2010; Parmelee & Bichard, 2012). Most prior studies also have demonstrated first- and second-level intermedia agenda-setting effects of political advertisements on the news agendas of newspapers and television news in the election context (Boyle, 2001; Lopez-Escobar et al., 1998; Roberts & McCombs, 1994). Others have shown intermedia agenda-setting effects between social media and traditional media output (Conway, Kenski, & Wang, 2015). However, no empirical study has investigated the intermedia agenda-setting influence among the three media outlets (i.e., political advertisements, newspapers, and social media). In this regard, our findings will contribute to expanding intermedia agenda-setting theory in the social media environment.

The findings for RQ3 demonstrated that the issue and attribute agendas of candidates in newspapers positively influence the issue and attribute agendas in tweets. In the literature, an intermedia agenda-setting relationship has been found between media in different online contexts (e.g., online news, online public forums, electronic bulletin boards, blogs, User-Created Content; see Kwak et al., 2010; Lee et al., 2005; Lee, 2007; Meraz, 2009, 2011; Roberts et al., 2002; Sayre et al., 2010; Zhao et al., 2011). In particular, because journalists in mainstream media use Twitter as a source for news gathering and interacting with their users, it is unclear whether mainstream media still have agenda-setting power over social media. Our findings confirmed the intermedia agenda setting influence of traditional mainstream newspapers on tweets. However, one question still remains: Do the agendas of mainstream newspapers influence the agendas of Twitter accounts depending on whether it is a news account or an individual account? It would be interesting to examine this question in future studies.

Our findings also revealed an intercandidate agenda-setting effect. For Obama, the attribute agendas of newspapers were more influenced by political advertisements than the issue agendas of newspapers were, whereas for Romney the issue agendas of newspapers were more influenced by political advertisements than the attribute agendas of newspapers were. However, for both Obama and Romney,

the attribute agendas of tweets were more influenced by political advertisements and newspapers than the issue agendas of tweets. These findings suggest that liberal or conservative political identification of newspapers may affect their selection of either issue-focused or attribute-focused news stories about the candidate. Furthermore, these findings raise a question about how people use Twitter in a political context. Do they mainly use their Twitter accounts to communicate their thoughts and feelings about a candidate with others? Or do they inform others about what is happening with a candidate? Future work can shed light on this question.

Taken together, the findings of this study offer evidence supporting intermedia agenda-setting effects between political advertisements, newspapers, and Twitter. Given that only a few studies have looked at agenda-setting effects between political advertising and media agenda in the social media environment, this study provides theoretical contributions by extending intermedia agenda-setting theory to the social-media context. Beyond previous theoretical frameworks, such as first- and second-level agenda setting and agenda building, first- and second-level intermedia agenda-setting theory offers a logical connection in understanding the transfer of issue and attribute agendas between political advertisements, newspapers, and tweets. This knowledge is useful not only in explaining the role of political campaigns in making agendas in offline and online media but in helping political campaign staff to build appropriate strategies for drawing media attention to influence their target public.

Despite the theoretical and practical contributions of this study, the findings should viewed with caution. First, the sample size of the newspaper articles will prevent wide generalization of our findings. Because *The New York Times* and *The Washington Post* have been regarded as representative elite press outlets that exemplify highly similar agendas to other news media in intermedia agenda-setting studies (McCombs, 2005), researchers included only these two newspapers in our analysis. However, findings could be different in other news media settings. Hence, future studies that replicate this study with other news media will increase the external validity of our findings.

Another limitation is the possible bias of sampling methods. Political advertisements, newspaper articles, and tweets mentioning candidates' names were gathered using automated methods. Although this study collected data using systematic methods that are thought to be as exhaustive as possible, the sample is not a census. Larger data sets that include larger time periods and more keywords could potentially be used to analyze and compare the intermedia agenda-setting relationships.

The coding categories of the agendas of issues and attributes could also pose a limitation. To compensate for this drawback, the coding categories were created based on prior studies of agenda setting (Boyle, 2001; Heim, 2013; Vargo et al., 2014) and conducted intercoder reliability tests after training coders. However, there has been no consistent operationalization and categorization of issue and attribute agendas in the literature. Future scholars should attempt to develop comprehensive operational definitions of these concepts.

Finally, the time frame of the data is limited because researchers collected it during the 2012 presidential election cycle. This timing was advantageous to study the candidates' agendas of issues and attributes, but future studies of intermedia agenda setting need to be done in a nonelection setting.

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Appendix
Example of ARIMA Models for Issue of Individual Liberties for Romney

Dependent Variable				Estimate	*SE*	*t*	Sig.
Twitter (a)	Natural Logarithm	Constant		1.996	.338	5.900	.000
		AR	Lag 1	.694	.106	6.574	.000
The Washington Post (b)	No Transformation	Constant		.872	.136	6.423	.000
	No Transformation	Numerator	Lag 0	.724	.296	2.444	.018
The New York Times (c)	No Transformation	Constant		1.410	.205	6.863	.000
	No Transformation	Delay		5			
		Numerator	Lag 0	1.846	.468	3.947	.000

Note: (a) r^2 = .428; Ljung-Box Q = 14.505, *df* = 17, *p* = .631, Outliers = 0. (b) r^2 = .091; Ljung-Box Q = 24.607, *df* = 18, *p* = .136, Outliers = 0; (c) r^2 = .221; Ljung-Box Q = 10.819, *df* = 18, *p* = .902, Outliers = 0.