CHANNEL DIFFERENCES IN POLITICAL CAMPAIGN ADVERTISEMENTS AND THEIR EFFECTS ON INDIVIDUALS' COGNITIVE, EMOTIONAL, AND BEHAVIORAL RESPONSES IN SOCIAL MEDIA CONTEXT

by

YEOJIN “JULIE” KIM

SHUHUA ZHOU, COMMITTEE CHAIR

WILLIAM J. GONZENBACH
JENNIFER D. GREER
JAMES LEEPER
CAROL B. MILLS

A DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the College of Communication and Information Sciences in the Graduate School of The University of Alabama

TUSCALOOSA, ALABAMA

2015
ABSTRACT

This dissertation examined cognitive, emotional, and behavioral responses to different channels of political campaign advertisements in the social media context. Different channels such as social media platform (Facebook vs. Twitter), level of interactivity (high vs. low) and modality (visual vs. audiovisual advertisements) were manipulated as predictors of campaign learning, candidate evaluation, and political behavior. Several theories and concepts regarding interactivity (i.e., the theory of user control, the theory of structural isomorphism, the media richness theory, the social presence theory, cognitive load, and disorientation) and modality (i.e., the dual coding theory, the cue summation theory, the limited-capacity information processing theory, and multiple resource theory) were employed to investigate what conditions of modality and interactivity embedded within social media have the strongest effects on users’ cognitive, emotional, and behavioral responses in political campaign advertisements. Data were collected from 317 participants who completed the online experiment via Amazon Mechanical Turk.

Findings demonstrated that interactivity, modality, and social media platform differently influenced campaign learning, candidate evaluation, and political behavior. Facebook generated greater campaign learning than Twitter without consideration of other factors such as interactivity and modality, and audiovisual advertisements generated greater campaign learning than visual counterparts. However, no significant effects of interactivity on political outcomes were found. Interestingly, however, under combined conditions of social media platform and modality, a significant interaction was found in campaign learning and candidate evaluation.
Further, there were significant effects of social media when political, cognitive, and emotional involvement with social media were added as covariates, showing that Twitter generated more political behaviors than Facebook.

Conceptually, the present study provides a better understanding of the validity of traditional theories about medium and communication channel, especially in the social media context, by reexamining different conceptualizations of medium, channel, mode of presentation, and media platform and by reviewing unique characteristics of social media. This study provides theoretical contributions to the understanding of cognitive, emotional, and behavioral reactions to different channels in the political campaign context by adding an explanation of the effects of interactivity and modality in relation to social media. Practically, the findings of this study may help candidates and political campaign practitioners build appropriate strategies for political campaigns through social media platforms to encourage their target publics to engage in political activities including political learning, candidate evaluation, and political behaviors.
DEDICATION

This dissertation is dedicated to God, my loving parents, and other people who have supported me with prayers, encouraging words, and endless love.
LIST OF ABBREVIATIONS AND SYMBOLS

\( \alpha \)  Alpha: Cronbach’s index of internal consistency

\( df \)  Degrees of freedom: number of values free to vary after certain restrictions have been placed on the data

\( F \)  Fisher’s \( F \) ratio: A ration of two variances

\( M \)  Mean: the sum of a set of measurements divided by the number of measurements in the set

\( Mdn. \)  Median: value that separates the highest and lowest halves of a sample population

\( SD \)  Standard deviation: value that represents the degree to which measurements in a set vary in relation to the mean.

\( SE \)  Standard error: estimate of the SD based on estimated means in a statistical model

\( p \)  Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value

\( \eta^2 \)  Eta squared: the ratio of variance explained in the dependent variable by a predictor while controlling for other predictors

\( t \)  Computed value of \( t \) test

<  Less than

>  Greater than

=  Equal to

\( H \)  Research Hypothesis

\( RQ \)  Research Question
ACKNOWLEDGMENTS

This dissertation would not have been completed without the guidance and support of several individuals. When I felt down or depressed about writing my dissertation while applying for jobs, their encouragement gave me strength.

I would like to express my deepest gratitude to my chair and advisor, Dr. Shuhua Zhou. Without his letter of acceptance, I would never have been able to study and do research at the University of Alabama. For four years, he has supported me emotionally and intellectually. He has spent time reading drafts of my research papers and dissertation even on weekends and has accommodated unscheduled office visits for me. Whenever I needed assistance with recommendation letters, doing research, and adjusting myself to campus life, he helped me as much as he could. His support has motivated me to work hard, to do my research in a timely manner, and to dream of becoming a professor. I would also like to thank Dr. Jennifer Greer. As a professor, as a researcher, and as a mother, her untiring efforts have been an example to me as a female scholar. Despite her extremely busy schedule, she always tried to make everything possible and successful for me. I will never forget doing several research projects with her and talking with her about my job situation as well as her letter of recommendation for my job search. Her insightful advice and comments on my research projects, dissertation, and job search enabled me to think about what I can do at present and what I should do for my future as a researcher and a professor. I am grateful to Dr. Carol Mills, who inspired me to love students as a teacher. Whenever I was troubled, she always listened to my problems carefully, understood my heart, and gave me good, warm-hearted advice. She was also pleased to give much time in
writing recommendation letters for me. I could feel and know how much she cares about me. Thanks to her continuous emotional support, I could get over difficult situations and come out on top again. I would like to thank Dr. William Gonzenbach for his encouragement in my research and practical advice for my teaching skills. He provided me an opportunity to be his teaching assistant and taught me how to teach students. When I failed in my job search and attempts at publication, he always gave me positive words and guided me to try once more. His help was a great encouragement to me. I am indebted to Dr. James Leeper for his time to teach me statistics and the long discussions we had that helped me analyze the data for my dissertation. Without him, I would not have finished my dissertation on time. He has spent time answering my questions and giving comments even during summer break. His insightful comments and guidance on data, methodologies, and analyses helped me proceed. I warmly appreciate his generosity and his passion for teaching. I would like to thank my peers, professors and staff at the University of Alabama whom I have had the chance to learn from and work with while completing the doctoral program. I am greatly indebted to the people of faith at the Korean Presbyterian Church of Tuscaloosa, who made unforgettable, beautiful memories with me and who have prayed for me during the past four and a half years.

To my parents, Unsik Kim and Myoungbin Im, whom I admire the most as instructors in my life, thank you for your enduring support, sacrifices, and prayers. To my sister, brother, uncle and aunt, I cannot express how grateful I am for your support and care throughout these years. Finally, thanks to God, who is always with me and will keep me wherever I go and who will bring me back to this land.
# CONTENTS

ABSTRACT ................................................................................................ ii
DEDICATION ........................................................................................... iv
LIST OF ABBREVIATIONS AND SYMBOLS ...........................................v
ACKNOWLEDGMENTS ........................................................................ vi
LIST OF TABLES ..................................................................................... xi
LIST OF FIGURES .................................................................................. xii
CHAPTER ONE: INTRODUCTION ..........................................................1
CHAPTER TWO: LITERATURE REVIEW ..............................................7
  Communication Channel .........................................................................7
    Communication Channel in Political Campaigns .....................................7
  Reexamination of McLuhan’s Concept of Medium ..................................12
    Interactivity ..........................................................................................18
  Modality ..................................................................................................26
Cognition, Emotion, and Behavior ............................................................29
  Cognitive, Emotional, Behavioral Effects of Interactivity .....................29
  Cognitive, Emotional, Behavioral Effects of Modality ..........................36
Effects of Political Advertising ..................................................................45
  Channel Differences in Political Advertising ......................................45
  Cognitive, Emotional, and Behavioral Responses to Political Advertising .................................................46
Covariates ..............................................................................................50
Cognitive and Emotional Involvement with Communication Channel...50
Political Involvement.................................................................................54
Overall Summary, Experimental Hypotheses and Research Questions ....57
CHAPTER THREE: RESEARCH METHOD ..........................................64
Participants and Design..............................................................................64
Stimuli........................................................................................................65
Procedure ...................................................................................................66
Dependent Variables..................................................................................67
Campaign Learning..................................................................................67
Candidate Evaluation................................................................................68
Political Behavior.....................................................................................68
Covariates .................................................................................................69
Cognitive Involvement with Social Media Platform .........................69
Emotional Involvement with Social Media Platform .........................70
Political Orientation................................................................................71
Political Participation...............................................................................71
CHAPTER FOUR: RESULTS ..................................................................72
Study Participants......................................................................................72
Manipulation Check..................................................................................74
Data Analysis.............................................................................................75
CHAPTER FIVE: DISCUSSION ..............................................................93
No Significant Effects of Interactivity on Political Outcomes ............94
Interaction Effects of Modality and Social Media on Campaign Learning.............96
LIST OF TABLES

1. Demographics of Study Participants .......................................................... 72

2. Mann-Whitney *U* Test of High and Low Interactive Channels on Campaign Learning ................................................................. 76

3. Comparing Candidate Evaluation and Political Behavior between High and Low Interactive Channels .......................................................... 77

4. Mann-Whitney *U* Test of Facebook and Twitter on Campaign Learning ........................................................................................................ 78

5. Comparing Candidate Evaluation and Political Behavior between Facebook and Twitter ........................................................ ..................... 79

6. Mann-Whitney Test of Visual and Audiovisual Advertisements on Campaign Learning .................................................................................... 80

7. Comparing Candidate Evaluation and Political Behavior between Visual and Audiovisual Advertisements ............................................................ 81

8. Tests of Between-Subjects Main and Interaction Effects:
   Interactivity, Modality and Social media as Predictors of Campaign Learning ........................................................................................................ 82

9. Tests of Between-Subjects Main and Interaction Effects:
   Interactivity, Modality and Social media as Predictors of Candidate Evaluation ........................................................................................................ 85

10. Tests of Between-Subjects Main and Interaction Effects:
    Interactivity, Modality and Social Media as Predictors of Political Behavior ........................................................................................................ 88

11. Results of Hypotheses and Research Questions ...................................... 89
LIST OF FIGURES

1. Interaction of Modality and Social Media Platform on Campaign Learning .................................................................83

2. Interaction of Modality and Social Media Platform on Candidate Evaluation .................................................................86
CHAPTER ONE
INTRODUCTION

During political campaigns, the communication channel is an integral means for political candidates or parties to share political messages and promote their political goals (Kaid, 1981). In U.S. elections, new technologies have radically changed the way campaigns are waged (Medvic, 2011). Growing out of a long history of print media in the nineteenth century and the significant role of radio in political campaigns through World War II, television has become a powerful medium in United States politics (Purvis, 2001). Since televised political advertising was first successfully used in the 1952 Eisenhower-Stevenson election, it has been widely utilized by candidates to promote their campaign messages and has become the biggest media impact maker in U.S. elections (James, 2010; Kaid, 1999; Kaid & Johnston, 2001; NPR, 2014; Poor, 2013; Tedesco, McKinnon, & Kaid, 1996). The 1960 Kennedy-Nixon debates, the first televised presidential debates in the U.S., were pivotal in demonstrating that candidates’ images on television dominate the electoral process (Keating & Latane, 1976).

With the development of digital technologies, candidates have taken advantage of the wide reach of the Internet as a new, important campaign tool. Candidates use their websites to communicate with their public, elicit campaign-relevant outcomes such as fundraising and volunteer mobilization, and even convert traditional messages such as press releases and television advertisements to a digital format (Kaid & Postelnicu, 2005). As such, Internet advertising incorporates the text and visual information of print advertising as well as the
audiovisual information of television advertising (Dijkstra, Buijtels, & van Raaij, 2005; Snyder, 1996).

Barack Obama led the “digital revolution” in the 2008 presidential campaign (McKinney & Banwart, 2011). When Obama was elected president, scholars claimed that “while many presidential elections become nothing more than a mere footnote in history, the 2008 campaign and election changed history” (McKinney & Banwart, 2011, p. 1). This notion highlights not only that Obama is the first African-American president in the United States, but also that he inspired young voters’ engagement by successfully using social media such as Facebook and Twitter in his presidential campaign in the “social media election” (McKinney & Banwart, 2011; Rutledge, 2013).

In the 2012 U.S. presidential election, the top presidential candidates, Mitt Romney and Barack Obama, developed social media strategies to successfully engage with voters (Andrews, 2015). Political analysts claimed that social media, especially Twitter, was a big factor in Obama’s victory (Gaudin, 2012). The 2012 election has been dubbed “the first Twitter election” because the largest numbers of tweets in the history of social media related to a single event were sent throughout the campaign (Capobres, 2012; Fouhy, 2012). On election night, Obama victory tweets lit up the “Twittersphere” and became the most retweeted posts ever (Tsukayama, 2012). Noting the major trend in the 2015 midterm elections that “candidates [are getting] really serious about their personal brand and their connection to the public,” analysts further forecast that social media will play a still bigger role in the 2016 U.S. presidential campaign, especially compared with television (ABC News, 2013; Andrews, 2015; Snyder, 2014, para 6; The Associated Press, 2013).
However, in spite of the increasing use of social media and its growing importance for political campaign advertisements based on its interactive nature, whether political advertising exposure via social media such as Facebook and Twitter affects audience response to the political process remains unknown. Empirical findings focusing on the effects of social media as a political campaign tool provide mixed evidence. Some studies provide evidence that social media in political campaigns increased voter’s political cognition, emotion, and behaviors (Bollen, Mao, & Pepe, 2010; Hesseldahl, MacMillan, & Kharif, 2008; Marchese, 2008; Owen, 2008), while others found no significant relationship between social media use and such political outcomes (Ancu & Cozma, 2009; Gil de Zúñiga, Puig, & Rojas, 2009). These studies investigated the relationships between social media use and political outcomes without considering the conceptualization of the social media. Therefore, this study investigates the conceptualization of the social media in order to look at the effects of the social media platform per se on political outcomes.

Moreover, prior research on the effects of social media has failed to consider the unique characteristics of social media. Although candidates have employed a variety of social media channels such as Facebook, Twitter, and YouTube for their political campaigns (Kennedy, 2013), candidates use each of the channels in a distinct way to reach voters. During the 2008 presidential campaign, for example, the Obama camp used Twitter to send out voting reminders and Facebook to interact with users (Rutledge, 2013). A 2014 report from the Pew Research Center also supports the idea that different social media channels offer a different use experience in the political context. According to the report, although social media play a role as prominent sources of political information, two of the most popular social media, Facebook and Twitter, provide users with different experiences of gaining political information based on the user’s
different purpose of using each medium (Gottfried, 2014). Specifically, more politically interested users tend to use Twitter more than Facebook to gain political information because Facebook offers more opportunity for users’ involvement in various social and informational activities than Twitter (Gottfried, 2014). Delacourt (2014) also recognized the difference between Facebook and Twitter, stating that “Facebook is personal, Twitter is political” (para 1).

In terms of channel effects in political advertisements, most previous researchers have investigated the direct effects of political campaign advertising on political attitudes and behaviors by focusing on political advertisements alone rather than considering the role of political advertisements in relation to other factors underlying the effects such as the candidate and advertising contents. As Kaid (2002, 2003) pointed out, research on channel differences in political advertisements has never been very successful because some candidates appear to do better on one medium, some on another. Further, prior studies failed to compare different channels with the same contents, and the evidence is sparse about channel differences for cognitive, emotional, and behavioral effects of political advertisements in the social media context (Eveland & Dunwoody, 2002; Kaid, 2002, 2003). Given that the possibility of social media as a catalyst to mobilize potential voters’ political cognition, emotion, and behaviors has been continuously raised, however, the effects of channel differences in social media should be investigated while taking into account other factors affecting outcomes.

Therefore, the purpose of this study is to investigate whether and/or how different channels of political advertisements affect the audience’s cognitive, emotional, and behavioral responses in the social media context. This study is designed to investigate the effects of different social media channels on users’ processing of embedded visual and audiovisual ads in terms of cognition, emotion, and behavioral intention. To examine different characteristics of
social media, the current study uses the concept of interactivity. Although this concept was originally developed to explain users’ participation from a computer-mediated communication perspective and relationships between users from an interpersonal communication perspective, recent studies have applied the concept to social media, where both mass and interpersonal communication take place (Ha & James, 1998). Social media are designed for interactivity, but the functional and emotional engagements of each social medium are distinct from one another. Hence, this study employs the concept of interactivity to understand the different interactive natures of different channels of social media. Further, this study focuses on Facebook and Twitter because they are the most popular social media (i.e., having the largest numbers of estimated monthly visitors as of 2014) as well as the most frequently used in political campaigns (eBizMBA, 2015). The current study also compares the effects of different modalities embedded within social media. This comparison will provide important insight into expanding our understanding of human sensory modes in the social media context.

Several theories and concepts regarding interactivity (i.e., the theory of user control, the theory of structural isomorphism, the media richness theory, the social presence theory, cognitive load, and disorientation) and modality (i.e., the dual coding theory, the cue summation theory, the limited-capacity information processing theory, and multiple resource theory) were used as theoretical backgrounds of this study. An online experiment is conducted to investigate what conditions of modality and interactivity embedded within social media have the strongest effects on users’ cognitive, emotional, and behavioral responses in political campaign advertisements.

---

1 In December 2014, eBizMBA, an eBusiness guide that finds the Internet’s best resources, reported the top 15 most popular social networking sites. They ranked Facebook as the most popular social networking site, with 900,000,000 estimated monthly visitors, and Twitter as the second most popular, with 310,000,000 estimated monthly visitors.
Eight political advertisements are created, varying in a 2 (social media platform: Facebook, Twitter) X 2 (interactivity: high, low) X 2 (modality: visual, audiovisual) design.

The findings of this study are significant for several reasons. First, the present study contributes to understanding how valid traditional theories about communication channels are in the social media environment. In particular, the study reexamined different conceptualizations of medium, channel, mode of presentation, and media platform in the social media context and also reviewed unique characteristics of social media. Second, this study advances social media research in the political advertisement and persuasive contexts by furthering the understanding of users’ responses to media channels. An answer about whether different features of communication channels at different levels of interactivity and modality can be manipulated to elicit individuals’ cognitive, affective, and behavioral effects is very valuable, especially in the political campaign context. Third, the findings of this study have practical uses for designing appropriate strategies for political campaigns through social media platforms to promote communication between candidates and publics.
CHAPTER TWO
LITERATURE REVIEW

This chapter includes four sections. The first section reviews and reexamines communication channel research including communication channels in political campaigns, McLuhan’s concept of medium, and characteristics of social media platform including interactivity and modality. The second section reviews relevant theoretical backgrounds related to individual’s cognitive, emotional, and behavioral responses to the interactivity and modality of the channel, especially in the social media context. The third section discusses previous research regarding the effects of political advertising in different communication channels. The fourth section presents the research hypotheses and research questions arising from the literature review.

Communication Channel

Communication Channel in Political Campaigns

Trent and Friedenberg (2008) noted that “the sophisticated use of modern technology has brought significant alterations to political campaign communication” (p. 14). Political candidates have used the new communication channels that result from technological advancements as tools in their campaigns and hired specialists who understand the media topography for selecting target voters. To illustrate, Dwight Eisenhower was the first to use televised advertising in the 1952 presidential campaign, John Kennedy was the first to use his own public opinion polling specialist in the 1960 presidential campaign, George McGovern was the first to start mass direct mail fundraising in the 1972 presidential campaign, Jimmy Carter used conference phone calls to communicate with voters in Iowa and New Hampshire in the 1980 presidential campaign,
Ronald Reagan used satellite transmissions at fundraisers and rallies in the 1984 presidential campaign, Ted Kennedy was the first U.S. senator to have a website in 1993, Dianne Feinstein created the first candidate website in the 1994 U.S. Senate election in California, Bill Clinton and Bob Dole delivered their messages to voters through their websites in the 1996 presidential campaign, and Barack Obama and John McCain used social media such as Facebook and Twitter to communicate with voters in the 2008 presidential campaign (Kim & Khang, 2014; Trent & Friedenberg, 2008).

Before the emergence of the Internet technology, political campaigns in the election context have been accompanied by massive campaign coverage by media and social interactions through interpersonal campaigning (Cho, 2005). In light of campaign coverage by media, print media and radio were the dominant media in political campaigns in the first half of the twentieth century. Both print and radio advertisements provide candidates with the opportunity to present their messages to targeted voters in the appropriate geographic area without limiting the length of the messages (Trent & Friedenberg, 2008). With the advent of televised advertising in the 1952 presidential campaign, however, television outlets underestimated the power of print media and radio as vehicles for political advertisements (2008). Unlike print media and radio, television is the only medium that utilizes two senses—seeing and hearing—and thus it conveys more campaign information to larger audiences in a shorter time (2008). However, as political campaigns on television increasingly focused on candidate images such as personal characteristics rather than policy issues, scholars were concerned about the decreasing discussion of issues, while others argued that the technological attributes of television such as vivid images, soundbites, and the dramatization of personal stories provoke emotional responses from voters,
learning about politics, and more positive ratings of a political candidate (Altheide & Snow, 1991; Ansolabehere, Behr, & Iyengar, 1993; Bucy & Newhagen, 1999; Davis & Owen, 1998).

While making use of media, candidates were still engaging in interpersonal campaigning. The candidate’s interpersonal campaigning was primarily held by arranging small social gathering such as coffees or the door-to-door canvass (Trent & Friedenberg, 2008). In the casual or formal formats, candidates and their party got an opportunity to promote interpersonal communication with neutral and friendly voters in the social gathering setting (2008). Such events provided candidates with opportunities to not only pay personal attention to their supporters but also establish a relationship with them (2008). In a similar vein, candidates engaged in door-to-door canvassing to identify voters who are favorable or unfavorable to them and to reinforce their positive image (2008).

Discussions about the role of old and new communication technologies in political campaigns were already under way when the Internet appeared (Trent & Friedenberg, 2008). In contrast to television, which has the downside of enormous production and advertising costs compared to other media, the Internet is a cost-effective and high visible communication channel that enables political candidates and parties to reach large numbers of voters in short periods of time, convey information about the candidates and the campaign to voters, and elicit voters’ support (2008). The potential of the Internet was highlighted in the 2000 presidential election as a variety of online services such as online voter registration, online fundraising, and online volunteer sign-up were developed (2008). Through these online services, candidates and their teams can communicate directly with the voters by sending messages to voters and getting feedback from them (2008).
Further, as the Internet facilitates two-way communication between candidates and voters, it has been recognized to have more characteristics of interpersonal campaigning than traditional media such as the print, radio, and television (2008). Before the advent of the Internet, the candidate’s interpersonal campaigning was primarily held by arranging small social gathering such as coffees or the door-to-door canvass (2008). In a form of being casual or formal, candidates and their party got an opportunity to promote interpersonal communication with neutral and friendly voters in the social gathering (2008). Such events provided candidates with opportunities not only to pay personal attention to their supporters but to establish a relationship with them (2008). In a similar vein, candidates served the door-to-door canvass to identify voters who are favorable or unfavorable to them and to reinforce their positive image (2008). The Internet allowed candidates to simulate an interpersonal transaction with potential supporters by hosting a small personal gathering online to recruit voters, volunteers, and donors (2008). The Internet offers interpersonal communication not only between the candidate and voters but between voters. Given that people tend to rely on the opinion of their friends or relatives when they have few sources of information about the candidate or the campaign, the interpersonal capacity of the Internet demonstrated the possibility of social capital and civic engagement (Putnam, 1995).

Since Obama’s successful use of social media as a campaign tool in the 2008 presidential election, scholars have predicted that social media has the great potential to bring about a radical change in political communication strategies (Chi & Yang, 2011; Hong & Nadler, 2012; Shogan, 2010). Social media have blurred the boundary between mass communication and interpersonal communication more than traditional media (Meijer & Thanes, 2013; Shultz, Utz, & Göritz, 2011). As a mass medium, social media play a role as a broadcasting channel like traditional
media (Meijer & Thanes, 2013). For example, government agencies or politicians use social media to broadcast their messages to large audiences. As an interpersonal medium, on the other hand, social media are better suited for two-way communication between organizations and users as well as between users than traditional media and websites (Mayfield, 2011; Shultz, Utz, & Göritz, 2011). In particular, scholars have paid attention to the increasingly personalized and dialogical campaigning in social media (Enli & Skogerbø, 2013). Social media have the ability to construct public or semipublic profiles, articulate users’ networks, and communicate with their online and offline networks based on common interests, unlike earlier communication technologies (Boyd & Ellison, 2007; Kushin & Kitchener, 2009; Woolley, Limperos, & Oliver, 2010; Zhang, Seltzer, & Bichard, 2013). As social media such as Facebook and Twitter provide semi-public and semi-private settings for self-representation, the boundaries between public and private roles online and offline have become blurred (Enli & Skogerbø, 2013; Enli & Thumin, 2012). In fact, politicians use social media to share thoughts and photos from their private lives to attract voters, connect with the voters, get feedback from voters, discuss political information more continuously, and engage voters (Enli & Skogerbø, 2013). Given that traditional political campaigning has always involved personal encounters with voters such as coffees or the door-to-door canvass, social media are recognized as appropriate to the political campaign setting because they add a personal angle to the public spheres (2013).

The use of social media that have characteristics of mass and interpersonal media in the political campaign context still raises a question about whether social media are effective campaign tools that elicit cognitive (e.g., voters’ learning about politics), emotional (e.g., higher ratings of a political candidate), and behavioral responses (e.g., voting behaviors), as indicated by prior research on political campaigns though mass media (i.e., print, radio, and television) and
interpersonal communication (i.e., coffees and the door-to-door canvass). In response to this, this study examines whether and/or how the use of social media in the political campaign context affect the audience’s cognitive, emotional, and behavioral responses.

**Reexamination of McLuhan’s Concept of Medium**

Political candidates use different communication channels such as newspapers, magazines, radio, television, websites, blogs, and social media to provide their messages and communicate with their interested publics. Drawing on McLuhan’s notion, the media channel used in a society is still important to deliver messages to the target audience in the digital age (Sevin, Kimball, & Khalil, 2011).

McLuhan (1964) first popularized the concept of medium as a key ingredient in interpreting communication meaning with his famous notion that “the medium is the message” (Kaid, 2003; Sundar, Narayan, Obregon, & Uppal, 1998). This statement indicates that the medium of communication facilitates the viewer’s interpretation of messages, and any communicative technologies transmitting messages shape and control the scale and form of human association and action. Although many scholars have criticized this perspective as being too simple and ignoring individual differences, McLuhan’s idea is still recognized as the foundation for the fundamental role of the medium in our cognition and social practices (Nardi & O’Day, 1999; Williams & Edge, 1996).

According to McLuhan, different characteristics of each medium represent different content of another medium. To illustrate, “the content of writing is speech, just as the written work is the content of print, and print is the content of the telegraph” (McLuhan, 2011, p. 19). Content is the important characteristic that distinguishes between a medium such as radio, telegraph, telephone, and television and a non-medium such as electric light and power.
Further, McLuhan (1964) describes the evolution of media in a thermostatic manner such as “hot” and “cold” media. His conceptualization of “hot” and “cold” media leads to the widespread popular belief that each medium has different effects on the audience. He distinguished a hot medium like a photograph, print media, radio, and movie from a cool one like the telephone, speech, and television based on the state of information in the medium and users’ participation. With a hot medium, the audience extends a single sense in high definition to reach “the state of being well filled with data” (McLuhan, 2011, p. 39). Since the hot medium provides large amounts of information, it does not require high participation by the audience. In contrast, a cool medium has low definition, which is the state of little information, and the medium has to be completed by participation of the audience (2011).

McLuhan (2011) also considered effects that the medium engenders. In terms of personal and social effects of the medium, McLuhan (2011) contended that the evolution of the medium engendered an extension of our physical bodies including not only our private senses but also interaction among the senses. For example, radio changed the news story into the form of voice, while television changed radio programming into the form of an image. McLuhan (2011) regarded print media as an extension of the sense of sight, radio as of the sense of hearing, and television images as of the sense of touch, involving “maximal interplay of all the senses” (p. 441). Further, any medium—that is, of any extension of ourselves, or any new technology—results in personal and social consequences because the content or use of the medium “shapes and controls the scale and form of human association and action” (McLuhan, 1964, p. 9). For example, the television image does not bring detailed information about objects based on its low definition so that the viewer is involved in extremely intimate TV acting and the fascinating role of the TV star. McLuhan (2011) additionally suggested that hot and cool media result in different
effects on group, social, or cultural structure. The hot medium based on high definition brings about specialism and fragmentation in these structures, while the cool medium based on low definition serves to restore the pattern of the structures. However, McLuhan (2011) indicated that the effects depend on the culture where the medium is being used and each medium has different implications in each country, culture, and society. For example, “the hot radio medium used in cool or nonliterate cultures has a violent effect, quite unlike its effects, say in England or America, where radio is felt as entertainment” (p. 48).

Scholars have opposing views applying McLuhan’s concept of hot and cool media to the digital environment. The computer used to access the Internet is composed of an icon and windows like television, but the screen is filled with large amounts of information like print media (Havick, 2000). Some scholars believe that McLuhan’s concept of hot and cool media is no longer applicable because the computer has the characteristics of both (Logan, 2010; van Koten, 2009). However, most scholars regard the Internet as a hot medium in that the Internet does not leave much to the audience’s imagination because of the flood of information it provides (Havick, 2000; Levinson, 2003). Specifically, Havick (2000) contended that the Internet in television-dominated cultures will engender specialization, fragmentation, individualism, decentralization, isolation, and feelings of alienation that threaten the vitality of government, as McLuhan pointed out that the hot medium used in cool cultures evokes detrimental effects. Levinson (2003) also claimed that the Internet is more similar to print media than to telephone or television because Internet users communicate with others using written words although the personal computer has elements of three media such as books, telephone, and television with the capability for instant interactivity.
The center of the controversy lies in different conceptualizations of the medium itself. No single consistent definition of the medium exists. Indeed, the medium has been regarded as a crucial channel, vehicle, or device in the communication process for message transmission between a source and a receiver in classical models of communication (e.g., Berlo, 1960; Lasswell, 1948; Shannon & Weaver, 1949). Lasswell (1948) described an act of communication by asking questions such as “Who says what in which channel to whom with what effect?” (p. 37), defining the medium as channel such as “radio, press, film, and other channels of communication” (p. 37). Similarly, Shannon and Weaver (1949) suggested a schematic diagram of a general communication system which is composed of five parts: an information source, a transmitter, the channel, the receiver, and the destination. In particular, they argued that the medium is the similar concept of the channel, defining the channel as “merely the medium used to transmit the signal from transmitter to receiver” including a pair of wires, a coaxial cable, a band of radio frequencies, and a beam of light (p. 5).

Later, Berlo (1960) suggested that “channel” includes three major meanings such as the message vehicle, the mode of encoding and decoding messages, and the vehicle-carrier. Berlo (1960) used the metaphor of getting a package to the other side of a lake to explain the concept of channel. As a person needs a boat to carry the package, a boat dock to connect with the boat, and some water. Communication channels contain all three things: message-vehicles (boats), modes of encoding and decoding messages (boat docks), and vehicle-carriers (water). Further, Berlo (1960) articulated the message vehicles as media (e.g. radio, telephone, telegraph, newspapers, films, magazines, direct mail, the stage, or the public platform) and the modes of encoding and decoding messages as the mechanism of communication that allows the receiver to decode the messages, including the five senses of seeing, hearing, touching, tasting, and smelling.
(e.g. oral, physical, or visual communication). In line with McLuhan’s conceptualization of the medium as a creator of different contents and an extension of our physical bodies, Berlo (1960) claimed that the message vehicles and the modes of encoding and decoding messages are interrelated in that one particular message vehicle can use certain kinds of modes. Although Berlo (1960) did not pay much attention to the vehicle-carriers that the engineer, the physicist, the biologist, and the chemist mainly concern, he regarded them as supporters of the message vehicles. Berlo’s (1960) description of the three meanings of the channel suggests that “all messages must be transmitted through a channel” (p. 68).

Applying the notion of the medium (or the message vehicle) to the online environment, the desktop computer, mobile phone, and laptop have been regarded as a medium because each carries different contents such as information and services. Jokinen and Raike (2003) defined the medium as the physical channel (including computer input/output devices) for presenting or saving information, while modality (or modes of encoding and decoding messages) is the particular mechanism of perception, senses of encoding information in some medium such as vision, audition, olfaction, touch, and taste. The Internet plays a role in as part of the vehicle-carrier in that it supports the media to transmit messages to the audience. In communicating online, hence, the source has to choose a medium—the desktop computer, mobile phone, or laptop—to orally, visually, and/or physically transmit messages to the receiver through the Internet (Jokinen & Raike, 2003).

However, scholars’ conceptualization of the medium still raises a question about how we define other Internet services such as websites and social media. In particular, social media are one of the channels but it is neither the message vehicles (media), the modality, nor the vehicle-carriers. Social media such as Facebook and Twitter can be used across different media (e.g.,
desktop computer, laptop, smart phone, etc.) in various modes (i.e., text, graphic, audio, and/or visual). Chong (2012) applied an appropriate emerging term, “media platform,” to represent social media. According to Chong (2012), the concept of a media platform combines a “hard” platform with “soft” programming in new media so that identical contents can be shifted to different media platforms. Such interaction between the medium and content evokes a reexamination of McLuhan’s (1964) concept of medium in the social media environment.

Although McLuhan (1964) noted that a different medium represents different content, a different medium shifts the same contents in the social media context. In the same vein, according to McLuhan (1964), the choice of the medium is important in determining the effectiveness of communication. However, the effects of the social media may be attributed to the interaction between media and contents based on its characteristics of media platform.

Based upon prior studies of the communication channels (Berlo, 1960; Chong, 2012; Lasswell, 1948; McLuhan, 1964; Shannon & Weaver, 1949), hence, this study conceptualizes the communication channel as an umbrella term including medium, modality, vehicle-carriers, and media platform. Consistent with Chong’s (2012) notion of media platform, the present study regards social media as media platforms that combine hard platforms (i.e., media: desktop computer, laptop, smart phone, etc.) with soft programming (i.e., contents used as various modalities such as text, graphics, audio, and/or visual) through the Internet networks. In terms of the effects of social media, further, although some scholars argued that social media, which focuses mainly on “interactivity, access to information and two-way communication,” are extensions of our senses of sight, hearing, and touch with the increased power and speed of information (Logan, 2010, p. 40), it has not been fully addressed whether and how social media result in different users’ responses, considering the unique characteristics of social media.
In this sense, this study looks at the cognitive, emotional, and behavioral responses to different channels, recognizing social media as media platforms. To examine the effects of the media platform in social media, the study focuses on the interactivity of the medium and modality (the mode of presentation) of the medium. As social media are designed for social interaction between users and political campaigns increasingly take advantage of social media with a variety of forms of communication ranging from text to pictures to audiovisuals, it is important to examine the effects of the interactivity and the modality via social media in contemporary political campaign advertisements. As such, literature on the characteristics of communication channels including interactivity and modality is reviewed.

**Interactivity**

Scholars have argued that social media have built a new generation of Internet technologies, the so-called “Web 2.0” (Dadashzadeh, 2010; Meijer & Thaens, 2010, 2013). O’Reilly (2007) defined the term “Web 2.0” as:

The network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an “architecture of participation,” and going beyond the page metaphor of Web 1.0 to deliver rich user experiences (p. 17).

Dadashzadeh (2010) argued that “Web 2.0 has transformed the Internet by allowing previously passive web surfers to become active content creators who want to share” (p. 81). Compared to traditional websites, in fact, social media such as Facebook and Twitter require “less technical expertise, time, and financial resources” to design and manage, providing “free accounts and including some dialogic features by default” such as “message posting, receiving direct responses to a post through comments and ‘likes,’ text/video chat, e-mail, and sharing
multimedia files such as photos and videos” (Kim et al., 2014, pp. 593-594). Meijer and Thanes (2013) also argued that social media are different from information websites in that information websites provide information from one to many users, while social media provide information from many to many. Unlike organization-operated information websites, which are based on general information, social media rely on user-generated content which is more personalized rather than social or organizational (Meijer & Thanes, 2013).

Many scholars explain that the characteristics of social media that facilitate user’s active participation and reciprocal, direct, and two-way communication between users as the concept of interactivity. As an interactive medium that provides non-linear or two-way communication, social media attract some users to express and post their opinion and to comment on messages (Lee & Cho, 2011; Meijer & Thanes, 2013; Rowley, 2004; Shultz, Utz, & Göritz, 2011). Lee and Cho (2011) suggested three phases of interactivity on Twitter and Facebook; 1) facilitating two-way communication among users, 2) giving more opportunity to talk with other users, and 3) being effective in gathering feedback from others. Kietzmann et al. (2011) stated that social media use “mobile and web-based technologies to create highly interactive platforms via which individuals and communities share, co-create, discuss, and modify user-generated content” (p. 241), while Bertot and his colleagues declared that social media are designed for social interaction (Bertot, Jaeger, & Grimes, 2012; Bertot, Jaeger, & Hansen, 2012). Meijer and Thanes (2013) also claimed that social media allow users to engage in social interactions and to obtain information based on the variety of interactions.

Kim, Chun, Kwak, and Nam (2014) suggested that social media expanded “the interactive potentials of the Internet” (p. 593). Social media, as a simple personal Web service, are “where individuals can post their personal information on profiles, ideas, and activities in
variety of formats, such as text, audio, and video, and share the information within their individual networks” (p. 593). Schultz, Utz and Göritz (2011) see social media as “more interactive, dialogic, authentic, and credible” than traditional media or simple websites because of their capacity of two-way communication (p. 22). Lee (2013) also pointed out that interactivity is a key characteristic to differentiate television from social media such as Twitter.

According to Lee (2013), although both television and Twitter play a role in a candidate’s personality-driven and soft campaign media in the political campaign context, unlike print media, Twitter is a more interactive medium between a candidate and the audience than television because candidate and audience can follow each other and engage in reciprocal message exchange. On the other hand, television has a higher level of vividness than Twitter because it presents more expressive images without text-chat modes (Lee, 2013).

Likewise, although many studies have paid attention to the interactive characteristics of social media, “the standard for what makes one medium more interactive than another” is still vaguely defined (Kiousis, 2002, p. 356). Although interactivity has been recognized as the integral advantage of the Internet in computer-mediated communications, including the active participation of users and social interactions among users, the concept of interactivity has been defined differently from different perspectives (Ha & James, 1998; Morris & Ogan, 1996; Pavlik, 1996; Rafaeli & Sudweeks, 1997).

Specifically, a mechanical perspective (or user-machine interaction) focuses on the time and duration of interaction among users, defining interactivity as “the extent to which users can participate in modifying the form and content of a mediated environment in real time” (Steuer, 1992, p. 84). However, this perspective alone does reflect the Internet environment that requires user's interaction (Liu & Shrum, 2002). From an interpersonal communication perspective (or
user-user interaction), interactivity occurs in the context of the relationship between users (similar to face-to-face communication) and is defined as “the extent to which messages in a sequence relate to each other, and especially the extent to which later messages recount the relatedness of earlier messages” (Rafaeli & Sudweeks, 1997, p. 3). Focusing on reciprocal and two-way communication between the communicator and the audience, interactivity can also be defined as “the degree to which participants in a communication process can exchange roles and have control over their mutual discourse” (Rogers, 1995, p. 314) or “a condition of communication in which simultaneous and continuous exchange occur, and these exchanges carry a social, binding force” (Rafaeli & Sudweeks, 1997, p. 4). However, these definitions of interactivity are limited because the definition from the interpersonal communication perspective ignores the characteristics of computer-mediated communication, and the definition from the mechanical perspective fails to consider Internet users’ individual differences in their communication goals online (Ha & James, 1998).

McMillan (2002) noted that literature on conceptualizations and operationalizations for interactivity can be classified into three main categories: structure, users, and process. According to McMillan, early work on interactivity focused on the interactive structure of a communication channel. With the advent of the Internet, however, researchers paid attention to the characteristics of users, especially how interactive computer-mediated communication affects the user’s cognition and emotion. Some scholars including McMillan further regard interactivity as “a process-related construct about communication” that is associated with the concept of cognition, motivation, emotion, and sociability (Rafaeli & Sudweeks, 1997, p. 175). From this perspective, interactivity is not a condition but a continuum that acts as a bridge between the psychological and the sociological, between mass and interpersonal communication, between
direct and mediated communication, between one-way (e.g., radio and television) and two-way communication, and the text-based versus verbal-based communication (Rafaeli & Sudweeks, 1997).

Sundar, Kalyanaraman, and Brown (2003) conceptualized interactivity from two points of view: functional and contingency. The functional view regards interactivity as “an interface’s capacity for conducting a dialogue or information exchange between users and the interface” including “e-mail links, feedback forms, chat rooms, and audio or video downloads” (Sundar et al., 2003, p. 33). In the contingency view, interactivity refers to “a process involving users, media, and messages, with an emphasis on how messages relate to one another” including the levels of two-way/noninteractive, reactive, and responsive/interactive communication (2003, pp. 33-34). Both the functional and contingency views suggest that interactivity promotes the user’s participation in information content (Kim & Sundar, 2010).

Wu (2005) provided the concepts of actual interactivity and perceived interactivity. The actual interactivity consists of “the features of a medium, or capabilities of creating interactive content or messages, or potential for interaction in general,” while the perceived interactivity refers to “user’s psychological state experienced by a site-visitor during the interaction process” (p. 30).

Instead of classifying the concept of interactivity from a different view, some scholars defined the concept based on the characteristics of interactivity. Ha and James (1998) suggested five dimensions of interactivity to satisfy different communication needs: playfulness, choice, connectedness, information collection, and reciprocal communication. Playfulness is related to entertainment experience through Internet use, while choice is seen as unrestrained navigation online. Internet users also feel connectedness by interacting with web contents based on
hyperlinks and images. *Information collection* refers to the communicator’s data gathering about the audience to tailor messages to meet audience needs, while *reciprocal communication* is related to a reciprocal communication loop to encourage feedback between the communicator and the audience. Ha and James (1998) further noted that information collection and reciprocal communication, as higher levels of interactivity, involve direct and two-way communication between the communicator and the audience.

Liu and Shrum (2002) classified three dimensions of interactivity: active control, two-way communication, and synchronicity. *Active control* refers to voluntary and instrumental actions of users. *Two-way communication* includes not only “reciprocal communication between companies and users and users and users” but also “the ability to make transactions directly online,” while *synchronicity* is concerned with “the degree to which users’ input into a communication and the response they receive from the communication are simultaneous” (p. 55). Incorporating all three dimensions of interactivity, Liu and Shrum defined the concept of interactivity as “the degree to which two or more communication parties can act on each other, on the communication medium, and on the messages and the degree to which such influences are synchronized” (p. 54). Jiang, Chan, Tan, and Chua (2010) also regarded the 'user’s active control over the medium' as interactivity because this control represents “the ability to choose information and guide an interaction” (p. 37).

Likewise, although no single standard for interactivity exists, it can be assumed that the concept of interactivity is a multidimensional construct including the structure of a communication channel, users, and communication process between the structure and users. A communication channel includes a variety of interactive structures that facilitate active control, two-way, reciprocal, direct communication between users. As Rafaeli (1988) noted that
“interactivity is potential adequacy, but it is up to the communicators to realize it” (p. 117), users tend to perceive interactivity based on the communication channel that provides interactive features and different communication needs. Thus, this study defines the concept of interactivity as an interactive communication process between the structure of a communication channel and user’s perception.

With regard to interactivity in social media, Lim, Hwang, Kim, and Biocca (2015) suggested three dimensions of social media engagement: functional, emotional, and communal engagement. First, functional engagement is relevant to “the online users’ real-time participation in the social media platform to create, modify, and share the format and content” (p. 159). As the concept of interactivity emphasizes relational phases between the organization and the public beyond mere interface-based interactivity, functional engagement in the social media environment refers to “social media user’s interactions with other users in the process of co-creating, conversing and sharing the content” through interfaces such as hashtags, retweets, and replies that encourage users’ engagement in conversation (Lim et al., 2015, p. 159). Second, emotional engagement occurs when users feel emotions such as joy, excitement, amity, frustration, disappointment, or animosity toward messages in the form of posts, opinions, or comments on social media. Third, communal engagement is “online users’ involvement with brand, cause, and programs of an organization and their feelings of belonging and social connection” (Lim et al., 2015, p. 160). Interactive interfaces of social media such as hashtags allow users to feel like part of a community and to be involved in interaction among users.

Although most social media platforms provide similar ways of communicating in personalized ways with their interactive potential, the interactive nature of each communication channel is distinct (Hughes et al., 2011). For example, direct and synchronized communication is
more highlighted on Twitter than on Facebook, while two-way, interpersonal, and reciprocal social interaction among “friends” is more highlighted on Facebook than on Twitter. Davenport et al. (2014) noted that Facebook, “the prototypical SNS,” includes a variety of services such as “friend requests, tagging others, posting comments, posting pictures, and creating status updates” that facilitate reciprocal social interaction between users and their friends (pp. 212-212). Specifically, Facebook offers a profile on which users post information, web links, pictures, and videos and a real-time instant messenger to send private and public messages to their “friends” (Hughes et al., 2011). The size of the user’s friend network is “somewhat under the control of a user” because it depends on whether the user accepts or denies friend requests from other users (Davenport et al., 2014, p. 213). Facebook distributes users’ messages to their friends, who have the chance to comment on the post (Murthy, 2011). In this way, users use Facebook as a relational communication tool to create and maintain social capital based on their known social connections such as friends, family, and co-workers (Bevan, Pfyl, & Barclay, 2012; Quercia et al., 2011). Unlike Facebook, which is based on reciprocal social interaction among “friends,” Twitter focuses on the sharing of opinion and information rather than on social pressure because it is not required for users to make a profile or to send and accept friend requests in order to communicate with each other (Huberman et al., 2009). Further, since Twitter allows users to communicate short messages through “tweets” with a maximum length of 140 characters, it is regarded as being designed for direct and speedy communication between users (Davenport et al., 2014; Murthy, 2011; Shultz, Utz, & Göritz, 2011). For this reason, some scholars argue that Twitter provides an opportunity to publicize information and therefore plays a role as a mass communication channel (Kim et al., 2014).
Taken together, each social media platform has distinct interactive features that may differently engender users’ cognitive, emotional, and behavioral responses. Hence, this study looks at how certain interactive aspects of the social media platform as a tool in political campaign affect users’ cognitive, emotional, and behavioral responses. Although the prior literature suggests that not only the interactive nature of a communication channel but individual's perceived interactivity engender the cognitive, emotional, and behavioral effects of interactivity, this study focuses on the effects of interactive as the term referring to ‘an interactive communication process between the structure of a communication channel and user’s perception’ as noted earlier.

**Modality**

Social media are media platforms consisting of hard platforms such as message vehicles with soft programming of contents in different modes. Politicians use social media to present their messages orally, visually, and/or physically to potential voters. To compare the effects of different modes of communication channels used in political campaign advertisements in social media context, the present study focuses on modality.

The concept of modality refers to “the mode of presentation such as text, audio, picture, video that corresponds to human senses used for processing the presented material” (Sundar et al., 1998, p. 823). According to Conway (1967), the difference between the print channel and the audio channel lies in whether it involves the visual or auditory modality. Unnava, Burnkrant and Erevelles (1994) argued that people tend to encode modality-specific content such as text, audio, and picture while processing information. In particular, modality has been recognized as a perceptual variable related to particular associated memory retrieval processes (Russell, 2002; Unnava, Agarwal, & Haugtvedt, 1996). Dijkstra et al. (2005) claimed that each communication
channel has not only different content but also different numbers of sensory modes. For example, print has only text and visuals, television has moving visuals and audio, and Internet contains digitalized textual information of print and/or audiovisuals of television (Dijkstra et al., 2005; Snyder, 1996). Furthermore, although print media and the Internet are regarded as retrieval channels, their mechanisms of information transfer to the audience are different (Sundar et al., 1998). Sundar et al. (1998) noted that readers process print ads entirely, but they process Internet ads through scrolling, and thus readers had a better memory for print ads than Internet ads. Scholars also indicated that print media such as newspapers provide a variety of visual cues in accordance with the relevance of topics, while Internet sources such as online newspapers offer a smaller number of cues (Bucher & Schumacher, 2006; Schönbach, de Waal, & Lauf, 2005). This is because online newspaper users are more likely to select news stories consistent with their own interests and less likely to “follow the cues of news editors and producers” (Tewksbury, 2003, p. 694). The sensory modes influence the direct processing of cognitive and affective reactions, or the indirect processing of reactions through other sensory modes (Dijkstra et al., 2005).

Research on modality has explored how receivers processed information differently when they were exposed to stimuli with different modes of presentation and how receivers change their behaviors according to an interaction of more than two stimuli with different modalities (Sundar et al., 1998). However, past studies on modality have provided inconsistent results. Some scholars found that a larger number of sensory modes results in more effective processing of information, while others have the opposite view because of the selective information processing that occurs in accordance with the limited human perceptual system (Dijkstra et al., 2005). Specifically, some researchers have demonstrated that a larger number of sensory modes (i.e.,
more visual elements, more pictorial elements, or multiple sensory modes) facilitate cognitive responses such as learning, memory (recall), elaboration, support, attention, and interpretation of meaning (Bagui, 1998; Craik & Lockhart, 1972; Deutsch & Deutsch, 1963; Jones & Kalyanaraman, 2000; Kiousis, 2006; Kisielius & Sternthal, 1984; Paivio & Okovita, 1971; Triesman, 1964). On the other hand, a larger number of sensory modes of the medium can also interfere with cognitive elaboration and critical thinking because it requires more effort to process information (Edell & Keller, 1989).

While numerous researchers have spent a great deal of time in studying the cognitive processing of a communication channel with different sensory modes, past studies paid little attention to emotional processing. However, some scholars suggest that difference in the modality of the channel engenders individuals’ different emotional reactions. For example, McClure and Patterson (1976) considered television news to be fascinating and highly entertaining but not informative. Brader (2006) noted the general sentiment of political practitioners that the audiovisual characteristics of television are associated with emotional reactions. Daignault, Soroka, and Giasson (2013) also argued that the goal of an emotional cue from audiovisual properties is to increase the effectiveness of advertising. Prior studies also confirmed the interaction of source and media factors, showing that source characteristics create different persuasive effects across media. Some findings demonstrated that a medium with audiovisual modalities, such as television, is more persuasive for a likable or trustworthy source than for an unlikable source, while print medium is more persuasive for an unlikable source (Andreoli & Worchel, 1978).

Taken together, prior studies suggest that different modality of the communication channel results in different cognitive, emotional, and persuasive effects, focusing mainly on
differences between print media and television. However, it is still unknown whether and how different modality such as visuals and audiovisuals differently affect users’ cognitive, emotional, and behavioral responses to political advertisement in the social media context. Although social media transmit the visual and audiovisual ads that are used in newspapers and television, the interactive natures of social media platforms containing the visual and audiovisual ads may affect individual’s cognitive, emotional, and behavioral responses. To fill this gap, this study reviews theories related to individual’s cognitive, emotional, and behavioral responses to modality and interactivity of the channel.

**Cognition, Emotion, and Behavior**

**Cognitive, Emotional, and Behavioral Effects of Interactivity**

Prior findings suggested that the interactivity engenders users’ cognitive, emotional, behavioral responses. In the political context, evidence demonstrated that interactivity stimulate information-seeking behaviors, positive attitude toward the advertisement and the political campaign website, issue learning, candidate responsiveness, positive candidate perceptions, voting intention, and political engagement (Auter & Davis, 1991; Althaus & Tewksbury, 2000; Corrado & Firestone, 1996; Cutbirth & Coombs, 1997; Jacque & Ratzan, 1997; Kaid, 2002, 2003; Lee & Shin, 2012; McKinney & Gaddie, 2000; Milbank, 1999; Sundar et al., 1998; Sundar, Kalyanaraman, & Brown, 2003; Sundar & Kim, 2005; Warnick et al., 2005).

In light of the effects of the interactivity of a communication channel on the user’s information processing, some scholars have argued that a more interactive channel requires higher cognitive and emotional processing of information. Liu and Shrum (2002) noted that the interactive communication channel demands higher cognitive involvement such as attention and cognitive processing due to its qualities of active control and two-way communication, which
further leads to better user understanding and learning. Sicilia, Ruiz and Munuera (2005) also argued that an interactive channel results in users’ high control and high involvement that lead to more intensive information processing because users can select and organize the information they want while using the interactive channel. Several theories explain why the interactivity of the channel affects individuals’ cognition, emotion, and behaviors.

Since no single conceptualization of interactivity exists, the theories focused on certain interactive features such as user control, hypertextuality, real-time interaction, and direct, two-way, interpersonal, and reciprocal relationships. Specifically, the theory of user control, the theory of structural isomorphism, the media richness theory and the social presence theory suggest that the channel with certain interactive features engenders more cognitive, emotional, and potential behavioral responses, while cognitive load and disorientation lead to less information learning.

**Theory of user control.** Compared to information websites, social media such as Facebook and Twitter provide an environment that facilitates the user’s voluntary and active participation based on Web 2.0 applications. The theory of user control suggests that the communication channel that provides more user control increases users’ motivation to learn. Specifically, when user controllability is high, users are able to engage more with the content and have an increased interest in learning because they tend to keep away from irrelevant, too complex, and too simple information (Eveland & Dunwoody, 2001). This theory assumes that “since an individual’s knowledge structure is unique, based upon his or her own set of experiences and abilities, the ways that individuals prefer to access, interact with, and interrelate information is also distinct” (Jonassen, 1988, p. 14). The theory is based on two assumptions: (1) Individuals learn in idiosyncratic ways, and to force learning to take place in a single style will
reduce the learning of some individuals to less than their true potential; and (2) Providing control over the learning process can increase the motivation of the learner (Eveland & Dunwoody, 2001, p. 54). User control ranges from complete user control to complete program control (Eveland & Dunwoody, 2001; Milheim & Martin, 1991). Hypermedia systems provide a more user-friendly learning environment because users can learn information by navigating freely through the various links embedded in a text based on their “personal interests, abilities, background knowledge, and learning style” (Eveland & Dunwoody, 2002, p. 37).

However, empirical studies about the influence of user control provide inconsistent findings. For example, some studies found that more user control is better for learning than program control, whereas others demonstrated opposite findings (Eveland & Dunwoody, 2002). In a similar vein, in contrast to findings that the user’s selective scanning of content encouraged by user control increases learning, some researchers found that selective scanning reduces learning because the user’s ability to monitor his or her own learning is limited (Eveland & Dunwoody, 2002). Some users often deselect the information that is most necessary for understanding the content (Eveland & Dunwoody, 2002).

**Theory of structural isomorphism.** Social media has been regarded as interactive media based on its hypertextual structures that provide information from many to many and two-way communication between users (Lee & Cho, 2011; Liu & Shrum, 2002; Meijer & Thanes, 2013; Rowley, 2004; Shultz, Utz, & Göritz, 2011). The theory of structural isomorphism in psychology posits that the process of human learning creates and maintains meaningful links among concepts (Eveland & Dunwoody, 2001). This definition of the process of learning is consistent with the process of using hypermedia such as the Internet in that both human memory and hypermedia consist of nodes of information linked to related concepts (Eveland & Dunwoody, 2001).
Specifically, hypermedia has the benefits of “mirroring the organization of human memory” and “facilitating the processing of information through associative links as does human memory” (Eveland et al., 2004, p. 213). Since the Internet is designed to mimic a human being’s knowledge structure based on hyperlinks, users can learn more from the Internet than from traditional print media (Eveland & Dunwoody, 2001). For example, hyperlinks facilitate learning by indicating how the information is related to each other (Eveland & Dunwoody, 2002). Eveland et al. (2004) found that being exposed to nonlinear Web presentations engenders less factual learning of information, but more dense learning (e.g., learning the interconnectedness of the information) than being exposed to traditional, print-like, linear Web presentations. In relation to the blogosphere, the findings of Vraga et al. (2011) supported the theory of structural isomorphism, demonstrating that unfamiliar story format reduces the user’s motivation to learn the information.

**Cognitive load and disorientation.** By contrast, some scholars have argued that the hypermedia structure and more user control reduce learning because it increases cognitive load and disorientation in comparison with less interactive counterparts. Cognitive load can be conceptualized as “the amount of mental effort required to locate specific information and understand how this information is oriented within a larger information source” (Eveland & Dunwoody, 2001, p. 56). The channel with a high degree of user control requires more cognitive load from users than the channel with a low degree of user control. Disorientation can be described as a “user’s feelings of being lost” caused by “inexperience with the medium or content and site design” (Eveland & Dunwoody, 2001, p. 56). Users navigate unfamiliar spaces using the medium, and the resulting feelings of disorientation increase cognitive load. In this
sense, the hypermedia structure and amount of user control in the Internet require more cognitive demand than print media, which impedes information learning (Eveland & Dunwoody, 2001).

**Media richness theory.** Media richness theory (or information richness theory) holds that “communication media vary in their richness” (Lu et al., 2014, p. 14), or the capacity to convey messages and cues and enable users to communicate effectively (Daft & Lengel, 1984; Ledford, 2012). Based upon the work of Bodensteiner (1970) and Lengel (1983), Lengel and Daft (1984) first proposed the concept of information richness “to explain how organizations meet the need for information amount and to reduce equivocality” (p. 5). Lengel and Daft argued that communication medium varies by (1) feedback capability, (2) communication channels utilized, (3) source, and (4) language.

Dennis and Kinney (1998) suggested two types of feedback: concurrent and sequential. Concurrent feedback provides simultaneous interaction between the sender and the receiver, while sequential feedback has pauses in interaction. A rich medium offers quicker feedback between the sender and the receiver for interaction (Ledford, 2012).

The concept of communication channels utilized refers to the number of cues provided by a medium. A rich medium has multiple cues representing “the number of ways in which information can be communicated, such as text (e.g., the spoken or written words themselves), verbal cues (e.g., tone of voice), or nonverbal cues (e.g., physical gestures)” (Dennis & Kinney, 1998, p. 333). Dennis and Kinney suggested four ways that multiple cues affect information processing: (1) Verbal and nonverbal cues provide faster and more accurate information processing than text cues. (2) Computer-mediated communication is less effective to transmit a message than verbal or face-to-face interaction because typing is a longer process than speaking the message. (3) Computer-mediated communication features immediate sequential feedback,
while media with verbal and nonverbal cues facilitate concurrent feedback. (4) The lack of verbal and nonverbal cues reduces social presence, leading to a more self-centered perception, more antisocial behavior, and more fact-based decision making (or less personality-based decision making). In terms of the first and second elements of media richness, Simon and Peppas (2004) explained that rich media provide not only greater feedback but “more social, non-verbal and complex cues (e.g., gestures, vocal inflection, touch, stance)” (p. 272).

Source is related to “the infusion of personal feelings and emotions, as well as the tailoring of messages to the needs and current situation of the receiver” (Lee, Kozar, & Larsen, 2009, p. 453). Ledford (2012) stated that a rich medium is tailored to “the receiver’s frame of reference and needs” to communicate (p. 177). Language variety is the final factor. A rich medium uses a wide variety of language and natural language to transmit a variety of meanings.

A medium with more attributes among these four aspects is considered a rich medium, while a medium with fewer of the attributes is considered a lean medium (Sheer, 2011). Daft and Lengel (1986) argued that a rich medium enables users to communicate more quickly and understand ambiguous messages, whereas a lean medium is more appropriate for unambiguous communications. They considered face-to-face communication including both verbal and non-verbal cues with greater feedback to be the richest medium and email to be a relatively lean medium. However, empirical findings about perceptions of richness and leanness in various media have been inconsistent, especially in the digital age. For example, Internet media which feature more modalities of text, picture, audio, and video are considered to be richer media than print newspapers because of their textual modality (Lu et al., 2014). In this sense, it can be inferred that television, with its modalities of audio and video, may be classified as a richer medium than print, but a leaner medium than the Internet.
Evidence has shown that the extent of richness of media is associated with the receiver’s emotional and behavioral effects. For example, Sundar (2000) found that people exposed to online news with text and picture evaluated the news more favorably than those exposed to online news with text only. Coyle and Thorson (2001) explained that increased vividness including rich media tools such as audio, video, and animation results in more positive and enduring attitudes toward websites. Simon and Peppas (2004) also found positive effects of rich media on consumers’ evaluations toward products, and Lu et al. (2014) found that people who viewed Websites with higher media richness had higher behavioral intentions than those who viewed Websites with lower media richness.

**Social presence theory.** Originating from Goffman’s (1963) concept of co-presence, which is defined as a sense of being together in a space, social presence theory has been widely used to explain an individual’s perception and behaviors in computer-mediated communications (Park & Lee, 2013). The social presence theory posits that people are social beings who want to “perceive other people to be physically present when they interact with others” (Lee, Kozar, & Larsen, 2009, p. 453). Social presence is “the degree to which a medium is perceived as conveying the actual physical presence of the communicating participants” (Rice, 1992, p. 476). Each medium has a different capacity to “convey differing degrees of social cues that lead interacts to feel more or less psychologically present with one another” (Lyons, Reysen, & Pierce, 2012, p. 182). Short, Williams and Christie (1976) argued that some media are more appropriate for personal interaction because different technologies provide different presence such as salience or a state of “being there.”

The degree of social presence of a medium depends on the user’s “personal connection with the other users” (Kuma & Benbasat, 2002, p. 9). Thus, a more interpersonal medium
increases social presence (Kruikemeier et al., 2013). A higher presence medium is more personal, more sociable, more sensitive, and warmer than a lower presence medium (Kuma & Benbasat, 2002; Park & Lee, 2013). In this regard, a higher presence medium allows people to “be present in communication,” “be personal in their communication,” and “engage more frequently in socio-emotional communication,” while a lower presence medium results in a reverse effect on communication performance (Lee, Kozar, & Larsen, 2009, p. 453). Although the definition of social presence is somewhat difficult to apply to media platforms, Park and Lee (2013) noted that different media platforms can be classified based on the extent of social presence; thus, blogs and Wikipedia are regarded as relatively lower presence media than social networking sites.

Lim et al. (2015) suggested that increased interaction with social media results in greater feelings of social presence. Specifically, they found that active participation in a channel of social media yields a user’s collective consciousness with friends. Kruikemeier et al. (2013) found that online political communication, which is similar to interpersonal communication due to its two-way and personalized interaction, yields a strong perception of social presence of the politician. Lee and Jang (2013) noted that social presence facilitates parasocial interaction with the target which results in positive thoughts about the target. Other findings further demonstrated that greater feelings of social presence increase perceived learning, perceived trustworthiness, satisfaction, favorable attitudes toward the agent, and purchase intention (Cyr et al., 2007; Gefen & Straub, 2004; Gunawardena & Zittle, 1997; Kaplan & Haenlein, 2010; Kelleher & Miller, 2006; Richardson & Swan, 2003; Skalski & Tamborini, 2007).

Cognitive, Emotional, and Behavioral Effects of Modality

Research on modality has frequently made use of the information processing approach. Information processing theory explains how individuals deal with all sensory information (e.g.,
symbols, images, and sounds) including “information selection, attention, encoding, schema activation, information retrieval, and information storage in memory” (Wicks, 2006, p. 85). Scholars have investigated individuals’ information processing to explain how and to what extent features of media capture individuals’ attention to and processing of media messages (Lang, Borse, Wise, & David, 2002). The Internet incorporates multimedia functions such as “speech, music, text, graphics, still, animation and video, used in an integrated manner” and generates a more complex processing of information than traditional media (Eveland & Dunwoody, 1999; Hoogeveen, 1997, p. 151; Jo & Kim, 2003). Social media also convey contents in different modes.

Among theories of information processing, Kiousis (2006) noted that dual coding and cue summation theories explain the positive effects of increased modality on audience cognitive and emotional reactions by stimulating multiple senses in response to multiple cues. This is in contrast to the limited-capacity information processing and multiple resource theories, which explain that increased modality elicits difficulty in information processing by generating greater cognitive overload. Specific information about how each theory is relevant to explain the cognitive and emotional effects of modality of the medium are described below.

**Dual coding theory.** Paivio’s (1990) dual coding theory explains multimedia information processing. The dual coding theory proposes two ways of information processing: verbal processing of auditory information and non-verbal processing of imagery, visual, and spatial information. According to the dual coding theory, audiovisual information through television is stored in memory in one verbal code and one visual code, separately, while text information through newspapers is stored in one verbal code only (Walma van der Molen & van der Voort, 2000). The theory posits that multimedia representations with both visual and auditory
information have more powerful effects on learning and recall than a single representation with verbal information (Mayer, Heiser, & Lonn, 2001; Yadav et al., 2011). Gunter, Furnham and Griffiths (2000) explained this is because the multimedia representations provide retrieval cues during recall which mediate learning. However, dual coding of information increases recall only when text information corresponds to visual information (Walma van der Molen & van der Voort, 2000). When verbal information does not convey the same meaning as visual information, it draws attention away from the information due to the individual’s limited attentional capacity (Walma van der Molen & van der Voort, 2000). Relying upon this reasoning, the theory further claims that people remember more from television than from the same stories presented in newspapers because the television presentation adds relevant visual to verbal information (Walma van der Molen & van der Voort, 2000).

In terms of emotional processing of modality, the theory notes that non-verbal systems elicit affective and emotional reactions so that visual information with pictures and video lead to stronger emotional reactions than written words (Clark & Paivio, 1991; Sadoski, Goetz, & Rodriguez, 2000). In particular, video of emotional interactions led to higher emotional engagement in the object such as ratings of personal, warm, sensitive, and emotional (Koehler et al., 2005). However, this emotional engagement is aroused only for human-interest narrative, not for artistic or informational content (Koehler et al., 2005). Yadav and his colleagues (2011) also found that video or video with text elicits more powerful emotional feelings towards the focal person represented in the video than text only and that video promotes participants’ pro-social behaviors because it is more realistic than text. However, they did not find a difference in cognitive processing (e.g., recall) between video and text.
**Cue summation theory.** In reviewing past research on learning and retention, Severin (1967) found the cue summation principle, which predicts that learning would be enhanced by an increased number of cues or stimuli available in the communication. However, Severin also noted that learning is increased only if the cues from different modalities are relevant to one another. Miller (1957) supported this notion:

When cues from different modalities (or different cues within the same modality) are used simultaneously, they may either facilitate or interfere with each other. When the cues elicit the same responses simultaneously, or different responses in the proper succession, they should summate to yield increased effectiveness. When the cues elicit incompatible responses, they should produce conflict and interference. (p. 78)

Severin (1967) further suggested four predictions based on the cue summation theory to compare the effects of multichannel communications with those of single-channel communications (p. 243): (1) Multichannel communications which combine words with related or relevant illustrations will provide the greatest gain because of the summation of cues between the channels; (2) Multichannel communications which combine words in two channels (words aurally and visually in print) will not result in significantly greater gain than single-channel communications since the added channel does not provide additional cues; (3) Multichannel communications which contain unrelated cues in two channels will cause interference between channels and result in less information gain than if one channel were presented alone; (4) Single-channel communications will be superior to condition (3) (above), equal to condition (2), and inferior to condition (1). The efficiency of single-channel communications when comparing various channels will depend upon the complexity of the material presented for a given audience, as already discussed.

Likewise, Severin (1967) argued that multiple channel communications are more effective than single channel communications under the condition that relevant cues are
combined across different channels. Relying upon the cue summation theory, prior findings
demonstrated that pictures with audio cues produced greater learning than audio only (Day &
Beach, 1950; Hoban & Van Ormer, 1951). Findings also indicated that audio with visual cues
such as television are more effective for learning and recognition than audio only cues such as
radio or visual only cues such as pictures (Severin, 1967; Westley & Barrow, 1959). More
recently, Brashears, Fraze, Lawver and Baker (2005) found that multichannel communications
(e.g., text with audio or video or multiple cues) increased user’s knowledge, information
retention, and satisfaction more than single-channel communication (e.g., text only or a single
cue), but the knowledge decreased at the point of over-abundance of cues.

**Limited capacity information-processing model.** Drawing upon the information-
processing tradition of cognitive psychology (Lachman, Lachman, & Butterfield, 1979) and the
literature on mass communication effects (Berger & Chafee, 1989), Lang (2000) suggested a
limited capacity information-processing model of mediated message processing (LC3MP). Lang
et al. (2002) argued that the limited capacity information processing model is necessary to
examine “how viewers process computer presented information” and “how the computer as a
medium may be processed differently from other electronic media” (p. 243). This model explains
how people process messages and how messages cause intended and unintended effects. Lang
(2000) offered two main assumptions in this model. The first is that people are information
processors, and the second is that a person’s ability to process information is limited. These
assumptions include the idea that people tend to be involved in information processing by
perceiving stimuli, performing mental representation of stimuli, and reactivating mental
representations. This information processing of messages requires mental resources, but the
mental resources people have are limited. Hence, people may allocate fewer resources to process a message than it requires, and the message will not be thoroughly processed.

Lang (2000) noted the application of the limited capacity information-processing model to television viewing, in which the content, the medium, and the viewer all affect the information processing of the message. As a psychological stimulus, television contains not only content (e.g., news, sports, and violence) but also audio and visual structural information (e.g., luminance levels, cuts, slow motion, animation, zooms, pans, video graphics, frequency levels, sound effects, music, rate of presentation, and narrative structure). The television viewer is an information processor. The information processing of the message contains three subprocesses (encoding, storage, and retrieval) as a result of automatic (unintentional) and controlled (intentional) processes.

In a television viewing situation, Lang (2000) argued that recall increases depending on the viewer’s goals and needs to remember the messages or on the arousing or emotional content of the message. Specifically, because the television viewer has limited capacity to encode and store all messages provided by television, the viewer is more likely to control “the allocation of processing resources by making decisions about whether to watch, how carefully to watch, and how hard to concentrate during viewing” (Grabe, Lang, & Zhao, 2003, p. 390). Based on prior findings about recall through television viewing (Davidson et al., 1979; Dimmond, Farrington, & Johnson, 1976; Gantz, 1978; Katz, Adoni, & Parness, 1977; Lang, Dhillon, & Dong, 1995; Lang, 1990; Lang & Friestad, 1993; Lang, Newhagen, & Reeves, 1996; Reeves et al., 1988; Thorson & Friestad, 1989), Lang (2000) pointed out that an individual’s need to watch television news for informational purposes increases recall more than for entertainment purposes. Further, Lang
(2000) argued that emotion-eliciting messages on television result in the viewer’s better recall than less emotional counterparts.

Regarding structural features of computers, Lang et al. (2002) found that warnings and animated banner advertisements elicit orienting responses in viewers, while text-based and simple computer stimuli (e.g., plain-text, boxed text, and nonanimated banner advertisements) do not. Therefore, they suggested that a computer is different from other electronic media in terms of its interaction with the automatic attention system to elicit orienting responses.

Later, Lang (2006) presented the limited capacity model of motivated mediated message processing (LC4MP) to create effective communication messages. This model explores how messages are processed according to different media, contents, and goals. Based on the two main assumptions in the LC3MP, Lang suggested five assumptions in the LC4MP: the nature of cognition, the nature of motivation, the nature of media, the nature of time, and the nature of communication. Similar to the assumptions of the LC3MP, first, the nature of cognition refers to the fact that people are limited information processors. In other words, a person’s cognitive resources to perceive, encode, understand, and remember are limited. Second, people have two motivational systems, the appetitive (approach) and the aversive (avoidance) systems, that activate automatically “in response to motivationally relevant stimuli in the environment and influence ongoing cognitive processing” (p. 59). The appetitive motivational system evolved to help the individual to ensure survival, while the aversive motivational system evolved to protect the individual from dangerous situations. Third, media consist of “multiple sensory channels (e.g., eyes, ears, and touch) and formats (e.g., words, text, pictures, and moving pictures)” (p. 59). Fourth, human cognition and behaviors are constantly, continuously, and simultaneously
changing over time. Fifth, communication is interaction between communication messages and its cognitive and motivational information processing.

Further, Lang (2006) pointed out that four questions should be asked to create effective messages (p. 62): (1) What is the message goal?; (2) Who is in the target market?; (3) What medium will carry the message?; and (4) What is the motivational and personal relevance of the main information in the message for the majority of people in the target audience? Of these questions, the third asking about the medium implies that different structural features from different media result in automatic allocation of resources. As noted by Lang, numerous researchers (e.g., Bolls, Muehling, & Yoon, 2003; Hitchon, Thorson, & Duckler, 1994) have shown that different structural features are associated with the amount of information encoded and stored as well as “evaluation of the message arguments, overall attitude toward the message, and intent to engage in the behavior being advocated regardless of the informational content of the message” (p. 63).

**Multiple resource theory.** The multiple resource theory originated from the concept of a “single channel bottleneck” that forms because human beings cannot effectively deal with two high-speed tasks together because of their limited capacity to process (Wickens, 2002). The multiple resource theory has been used to explain the notion that “performing two tasks simultaneously impedes task performance” because cognitive capacity to process information is limited (Van Cauwenberge, Schaap, & Roy, 2014, pp. 101-102). The multiple resource theory posits that people are able to pay attention to resources as far as their mental capacity is available (Wickens, 1980). Hence, when people encounter tasks that exceed their processing capacities (i.e., cognitive overload), their task performance tends to decrease.
The multiple resource theory premises that “processing resources are defined by processing stages at two levels (perceptual/central processing versus response processes), processing codes (verbal versus spatial), and processing modalities (auditory versus visual input, vocal versus manual response)” (Wickens, 1981, p. 32). Buchholz and Smith (1991) suggested four relationships (p. 1): (1) To the extent that two tasks require separate attentional resources they will be time shared efficiently (i.e., without significant crosstask interference); (2) To the extent that two tasks require common attentional resources the performance on the tasks will depend on how resources are allocated to the tasks; (3) The difficulty of a task is increased when additional resources are needed for its performance. If two tasks fully use available common resources, increasing the difficulty of one task will hamper performance on a concurrent task. If two tasks use separate resources, increasing the difficulty of one task will not affect performance on a concurrent task; and (4) Task priority determines how attentional resources are allocated, and plays the biggest role when tasks are difficult and share resources.

Leigh (1991) suggested that message congruence across modalities, stimulus information factors, and motivation to process information are key predictors that influence different responses to the modalities of different channels. In terms of message congruence among modalities, TV ads with congruent audiovisual stimuli produce more cognitive processing than those with incongruent audiovisual stimuli. Further, TV ads which contain audiovisual messages stimulate better memory and recognition than radio ads that contain audio-only messages, irrespective of the level of message congruence (Buchholz & Smith, 1991; Leigh, 1991). Low-involvement consumers are unlikely to engage in cognitive processing, while high-involvement consumers are more likely to do so.
Effects of Political Advertising

Channel Differences in Political Advertising

Political advertising refers to “the communication process by which a source (usually a political candidate or party) purchases the opportunity to expose receivers through mass channels to political messages with the intended effect of influencing their political attitudes, beliefs, and/or behaviors” (Kaid, 1981, p. 250). However, this definition is based on the traditional communication models of Lasswell (1948) and Berlo (1960) which consist of source, message, channel, receiver, and effects. This model has limited application to all forms of political advertising in various contexts (Kaid, 2004). Kaid (1999, 2004) suggested a much broader definition of modern political advertising featuring two characteristics: control of the message and use of mass communication channels where the message appears. Kaid (2004, p. 156) broadly defined political advertising as “any message primarily under the control of a source” used to advocate political candidates, parties, propositions, policy issues, and/or stances on political ideas through some type of mass channels. Notably, Kaid (2004) noted that the type of political advertising provided by mass communication channels such as print media (e.g., posters, pamphlets, brochures, direct mail, newspaper, and magazine), broadcast media (e.g., television and cable television), and electronic media (e.g., Internet or other electronic systems) should be distinguished from that provided through interpersonal and general public communication (e.g., political speeches or rallies).

The 1960 Kennedy-Nixon debates ignited the channel comparison argument in political advertising (Kaid, 2002). The presidential debates were broadcast on both television and radio, and Katz and Feldman (1962) found that television viewers thought Kennedy was the winner of the debate, while radio listeners believed Nixon was the winner. McKinnon, Tedesco, and Kaid
(1993) investigated the channel difference in the 1992 presidential debate between Clinton and Bush. They found that Clinton received a significantly higher score from people who listened to the debate on the radio than from people who watched it on television, while no significant change for Bush was found in either group. McKinnon and Tedesco (1999) found similar results for Clinton and Dole in the 1996 presidential debate.

According to Kaid (2002, 2003), however, media research on political advertising has never been very successful in providing strong evidence for channel difference. This is because interactions between source (candidate) and channel variables complicate the discernible effects of different channels (Andreoli & Worchel, 1978; Cohen, 1976; Kaid, 2002). For example, some candidates do well in one medium while others excel at using another medium (Kaid, 2002). Recognizing this issue, Kaid (2002) compared exposure to presidential ads via the Internet versus traditional channels in the 2000 presidential campaign. To avoid interactions between the source and channel variables, Kaid exposed participants to the same set of political advertisements on a television monitor (traditional media group) and on a computer monitor (Internet group). The findings showed that undecided voters exposed to Internet ads changed their vote choice to Al Gore, while those exposed to television ads changed their vote choice to George W. Bush. In addition, although there was no significant effect of political ads on political cynicism, there were significant differences in the types of information seeking and political activity intentions between the Internet and television groups.

Cognitive, Emotional, and Behavioral Responses to Political Advertising

In the 1970s, social scientists began to question the tradition of believing in minimal and limited effects of communication channels, especially with the advent of political television advertising (Kaid, 2004). Perloff (1998) argued that political advertising can influence “voters’
evaluations of candidates and their interpretations of political events” (p. 374). Kaid (2004) noted three dimensions of the effects of political advertising: 1) cognitive effects on voter knowledge levels, 2) affective effects on voter perceptions of candidates, and 3) behavioral effects including effects on voting preferences and information-seeking behaviors. Later, Kaid and Holtz-Bacha (2006) suggested that such cognitive, affective, and behavioral effects of political advertisements are related to different characteristics of the advertising content, different receiver’s characteristics, and different formats and channels of the political advertising.

The cognitive effects of political advertising are related to voter’s knowledge levels (Kaid, 2004). Early studies of voting decision-making have not upheld the expectation of an informed electorate about politics and politicians in the United States (Delli Carpini & Keeter, 1996; Klapper, 1960; Lazarsfeld, Berelson, & Gaudet, 1948). Unlike advertising in newspapers, televised advertising was free of partisan selectivity of the channel; empirical studies indicated that televised political advertising will be more helpful for voter’s learning about issues and candidates than advertising in newspapers (Kaid & Holtz-Bacha, 2006). Evidence has demonstrated that exposure to political advertising can influence voter recall about specific campaign issues and candidate issue positions (Atkin et al., 1973; Atkin & Heald, 1976; Faber & Storey, 1984; Freedman, Franz, & Goldstein, 2004; Hofstetter & Strand, 1983; Holbert, et al., 2002; Kaid, 1982; Martinelli & Chaffee, 1995; Pfau, et al., 2002; Ridout, Shaw, Goldstein, & Franz, 2004; Sulfaro, 2001; Valentino, Hutchings, & Williams, 2004; West, 1994). In particular, televised political advertising often produces greater effects on voters’ recall of the candidate’s information when the candidate is unfamiliar to the voters (Kaid, 1982; Schleuder, 1990; West, 1994).
In addition, scholars examined whether the type of ad content (e.g., issue ads vs. image ads and negative ads vs. positive ads), receiver characteristics (e.g., levels of campaign involvement, voting decision status, and information seeking tendency), and the structure and design of the political ads can affect voter’s recall level or overall information acquisition in political campaigns. For example, image advertising results in greater recall of information than issue advertising (Kaid & Sanders, 1978). Receiver characteristics are another factor that affects recall of information from advertising exposure. People with lower feelings of involvement tend to gain more knowledge from advertising exposure than those with higher feelings of involvement (Rothschild & Ray, 1974). In regard to the structure of political ads, the effects on recall and recognition are maximized when the audio and the video carry well-matched information (Gunter, 1987; Lang & Lanfear, 1990; Reese, 1984). Television advertising was found to be superior in terms of knowledge gain compared to other formats such as television news or debates, but few studies have examined different channel effects of political advertising on voter’s information gain (Kaid & Holtz-Bacha, 2006).

The affective effects of political advertising are relevant to candidate image evaluations (Kaid, 2004). Researchers found that political knowledge and information did not necessarily substitute for voter evaluations about a candidate or party (Kaid & Holtz-Bacha, 2006). Instead, viewing political advertising had a significant influence on candidate image evaluation and information learning on candidate issues and traits (Atkin & Heald, 1976; Cundy, 1986; Kaid & Noggle, 1998, Kaid & Johnston, 2001; Kaid & Chanslor, 1995; Kaid & Sanders, 1978; Kaid & Tedesco, 1999; West, 1993). Specifically, issue advertising was found to elicit more positive evaluations toward a candidate than image advertising (Geiger & Reeves, 1991; Kaid, Chanslor, & Hovind, 1992; Kaid & Sanders, 1978; Thorson, Christ, & Caywood, 1991). Findings also
demonstrated that positive advertising results in more positive candidate evaluations than negative or comparative advertising (Hill, 1989; Kahn & Geer, 1994; Shen & Wu, 2002). In regard to receiver characteristics, low-involvement viewers (e.g., the least aware viewers) in the campaign tend to be more persuaded by the advertisements than high-involvement viewers (Valentino, Hutchings, & Williams, 2004). Effects of channel difference on voter’s candidate evaluation have been more of interest than before with the spread of the Internet in the political advertising context (Kaid & Holtz-Bacha, 2006). In particular, researchers have found that the Internet is a superior medium to generate higher candidate evaluations than television (Kaid, 2003).

The behavioral effects of political advertising include political behaviors such as voting for or against particular candidates and information seeking behaviors. Although the direct effects of political ads on receiver behavior are somewhat difficult to substantiate, significant effects of televised political advertising on viewer’s political behaviors have been found. There have been two streams of research explaining these direct effects on candidate voting decisions. The first is to investigate a relationship between voting outcomes and amount of expenditures in political advertising. The second is to examine a relationship between the exposure to political ads and voting decisions. Findings showed that medium (e.g., television and the Internet) for political advertising influences voting behaviors, although specific advertising effects differ by channel difference (Kaid, 2002). As with the cognitive and affective effects of political ads, further, receiver variables such as levels of involvement are related to advertising effects on voting behavior. Research suggests that low-involvement voters are more susceptible to persuasion from political advertising than high-involvement voters (Rothschild & Ray, 1974).
Taken together, the literature on the effects of political advertising has suggested three types of effects: cognitive effects on voter knowledge levels, affective effects on voter perceptions of candidates, and behavioral effects on voting preferences. The formats and channels of the political advertising as well as the advertising content and receiver’s characteristics are factors to influence the three dimensions. Although advertising scholars use the term “affect” rather than “emotion,” emotional effects are more appropriate to explain candidate evaluation for the purpose of this study. Positive or negative evaluation toward a candidate can be better explained as “emotion,” referring to valenced (positive or negative) orientations toward the objects, than “affect,” which represents overall feelings toward the object including emotion, mood, and attitude.

**Covariates**

**Cognitive and Emotional Involvement with Communication Channel**

In social psychology, advertising, and marketing research, scholars have paid attention to the concept of involvement as a predictor or a mediator of consumer behaviors (Huang, Chou, & Lin, 2010; Sood, 2002). Sood considered involvement as a mediator between predictors such as individual needs, sources of communication, and environmental factors and responses to advertisements. Zaichkowsky (1985) proposed three antecedents of involvement that affect consumers’ behavioral decisions: the characteristics of the person, the physical characteristics of the stimulus, and the situation. Personal variables include individual needs, importance, interest, and values that may determine a person’s involvement with a particular object. The stimulus variables include differentiation of alternatives in the product being advertised, source of communication (e.g., print, television, or radio), and content of communication. The situational variable includes the specific situation for purchase or use of the product. Zaichkowsky argued
that all three antecedents influence the level of involvement, which affects the individual’s responses to advertisements, products being advertised, and purchase decisions. Te’eni-Harari, Lehman-Wilzig and Lampert (2009) also stated that “involvement is created by the personal significance that the individual ascribes to the features of the object (message, situation, and product) because involvement is a matter of interpretation, rather than the stimulus itself” (p. 204).

Although numerous researchers have investigated the effects of involvement on the individual’s reactions to advertisements, the results for the relationships between involvement and the effectiveness of advertising have been mixed (Lee & Thorson, 2009). Some scholars have found that a lower involvement condition results in more attention, better recall for messages, and more favorable attitudes toward the brand than a higher involvement condition (Anand & Sternthal, 1992; Soldow & Principe, 1981), while others found the reverse (Kennedy, 1971). Lee and Thorson (2009) pointed out that these mixed results are due to the fact that there is no consistent definition of involvement. Although communication researchers commonly and broadly define involvement as “an internal state activated by a stimulus” which is relevant to “personal relevance or importance of the product to the consumer” (Gotlieb, Schlacter, & Louis, 1992, p. 193), involvement has been measured in several ways such as “engaging in fewer distracting activities while watching television,” “attention to program content,” “thinking and talking about program content,” “looking forward to programs,” “feeling part of program action,” “a characteristic of issues, objects, or events that is associated with greater willingness to attend to and process information,” “a characteristic of the medium,” and “a personality trait” (Perse, 1990b, p. 18).
In the particular context of channel difference research, Perse (1990a) regarded media involvement as audience participation during information processing of messages they are exposed to via media. Perse’s conceptualization of involvement focused on its participatory or interactive nature. Specifically, the concept of involvement as a dimension of audience activity in media use is in line with Levy and Windahl’s (1985) notion of involvement as “first, the degree to which an audience member perceives a connection between him or herself and mass media content” and “second, the degree to which the individual interacts psychologically with a medium or its messages” (p. 112). Perse (1990b) further argued that involvement is a key element that influences media uses and effects based on prior findings showing that “first, involvement influences the gratifications that people receive from media use,” “second, involvement influences subsequent planned media exposure,” and “third, involvement has been linked to higher levels of soap opera satisfaction” (p. 18). These findings are also aligned with research findings showing the persuasive, political, advertising, and interpersonal effects of involvement (Perse, 1990a).

This study also focused on involvement as one of the constructs describing audience activity, adopting Rubin and Perse’s (1987) definition of media involvement as “cognitive, affective, and behavioral participation during and because of exposure” (p. 247). Media involvement stresses media users’ interaction with media or messages represented by media (Sun, Rubin, & Haridakis, 2008). For example, Sun et al. found that audience activity is manifest in several dimensions such as individual’s media motives and selectivity, psychological involvement, and media use and effects across different time periods of media exposure. Furthermore, involvement arises during media exposure, while motives and selectivity for using
media are elicited before exposure and media use and effects are elicited after exposure (Levy & Windhal, 1984; Sun et al., 2008).

Involvement during media exposure takes the form of cognitive information processing and emotional reaction (Perse, 1990c). Cognitive processing generally emphasizes the reason or logic of information, while emotional processing emphasizes feelings or emotions (Sojka & Giese, 1997). Cognitive involvement induces thought-related reactions including attention, recognition, elaboration, memory, knowledge, and comprehension of the media content, and emotional involvement induces feelings such as humor, amusement, happiness, sadness, disgust, applause, cheers, sighs, and fright or image related-aspects of objects which are linked to purchase intention (Mittal, 1987; Park & Young, 1986; Perse, 1990c). For example, high cognitive involvement with segments of a television program decreases memory of embedded advertisements because cognitive activity is more focused on the program than on the advertisements (Bryant & Comisky, 1978; Perse, 1990c). On the other hand, positive emotional involvement with a television program induces more positive emotions toward embedded advertisements (Goldberg & Gorn, 1987).

As such, prior research on individual’s involvement suggests that being engaged in different media channels at different levels of cognitive and emotional involvement with the channels influences expected audience’s responses. This study examines the cognitive, emotional, and behavioral effects of different communication channels in political advertising in the social media context. If people are engaged in social media platforms such as Facebook and Twitter at different levels of cognitive and emotional involvement, it would influence their expected cognitive, emotional, and behavioral responses. Hence, the present study used cognitive and emotional involvement with social media platform as covariates to further examine the
cognitive, emotional, and behavioral effects of different communication channels including interactivity, social media platform, and modality in political advertising in the social media context.

**Political Involvement**

While involvement with communication channel may affect the user’s cognitive, emotional, and behavioral responses to the channel, involvement with messages can influence cognitive, emotional, and behavioral responses to the political advertising. Since this study is conducted in the political advertising context, an individual’s involvement with the message may also be a covariate that affects the cognitive, emotional, and behavioral responses to communication channels in political campaign advertisements.

Scholars have shown that high-involvement messages have a greater influence on personal relevance and personal connections than low-involvement counterparts (Petty & Cacioppo, 1979; Petty, Cacioppo, & Schumann, 1983; Schiffman & Kanuk, 1997; Zaichkowsky, 1985). According to this view, the greater the perception of relevance, the higher the individual’s involvement, which results in more effortful processing or systematic information processing (i.e., investing a considerable amount of time and effort in searching for information they want (Shao, Baker, & Wagner, 2004). In particular, the effects of involvement on an individual’s responses to advertisements have been investigated in dual-processing models such as the Elaboration Likelihood Model (ELM) of attitude change and the heuristic-systematic information processing model (HSM; Chaiken, 1980; Eagly & Chaiken, 1993; Petty, Cacioppo, & Schumann, 1983).

The ELM holds that people are persuaded by the “elaboration likelihood of the communication situation (i.e., the probability of message- or issue-relevant thought occurring)”
(Petty et al., 1983, p. 137). Specifically, the central route to persuasion is effective in a high elaboration likelihood situation, while the peripheral route to persuasion is effective in a low elaboration likelihood situation (Petty et al., 1983). The central route to persuasion occurs “under the conditions where a message receiver is both motivated to process message content (e.g., due to the personal relevance of the issue) and has the ability to process the content” (Andrews & Shimp, 1990, p. 196). On the other hand, the peripheral route to persuasion occurs when these conditions are not satisfied, so that the message receiver focuses more on background cues such as music, source characteristics, scenery, and the number of message arguments than the quality of message arguments (Andrews & Shimp, 1990). Thus, people decide whether to accept or reject the message after thinking rationally under the central route or based on extrinsic product cues in the peripheral route (Petty & Cacioppo, 1981). Taken together, the ELM contends that attitude formed through the central route (high-involvement condition) has a significant influence on a receiver’s behaviors, while attitude formation through the peripheral route (low-involvement condition) does not (Kokkinaki & Lunt, 1999).

Alternatively, the HSM assumes that the extent of one’s issue involvement or response involvement affects persuasion (Chaiken, 1980). Specifically, high involvement (e.g., personally important topics or judgments) leads to message-based cognitions that influence persuasion, while low involvement (e.g., personally unimportant topics or judgments) is concerned with simple decision cues that influence persuasion (Chaiken, 1980). The HSM provides two routes to persuasion: systematic and heuristic processing of information. Systematic processing occurs when people actively exert cognitive effort to process the information by comprehending and evaluating the message’s arguments, while heuristic processing occurs when people put forth little cognitive effort to evaluate the message and rely on non-content inferences or source
characteristics (Chaiken, 1980). Thus, in systematic processing, easily accessible information such as source factors indirectly influences the acceptance of a message’s conclusion, while in heuristic processing, this information directly influences reception of the conclusion (Chaiken, 1980).

Both dual-processing models suggest that people with high involvement tend to put forth more cognitive effort to evaluate an issue or product than those with low involvement (Chaiken, 1980; Petty et al., 1983). In line with this, there is evidence that when involvement is high, central cues such as the quality of the arguments (i.e., strong vs. weak arguments) have a greater influence on persuasion. However, when involvement is low, peripheral cues such as the attractiveness, credibility, or prestige of a message source have a greater influence on persuasion (Chaiken, 1980; Petty & Cacioppo, 1979; Petty, Cacioppo, & Goldman, 1981; Petty, Cacioppo, & Heesacker, 1981; Petty et al., 1983). This is because people with high involvement tend to be motivated to engage in issue-relevant thought and so exert the cognitive effort to evaluate the issue-relevant arguments, while those with low involvement do not (Petty et al., 1983).

Applying the influence of an individual’s involvement with messages to the political context, the extent of an individual’s political involvement may influence persuasion. For example, people who are exposed to more politically related topics or judgments may be more susceptible to being persuaded by the quality of message arguments than those who are exposed to less politically related topics or judgments. In contrast, people who are exposed to fewer politically related topics or judgments may be more susceptible to being persuaded by the background cues of the message than those who are exposed to more politically related topics or judgments. In this regard, people with higher political involvement may be less susceptible to being persuaded by the contents of political campaign advertisements than those with lower
political involvement. Given that political involvement can be a key variable that influences the persuasive process of political advertisements, this study used an individual’s political involvement variables such as political orientation and political participation as covariates.

**Overall Summary, Experimental Hypotheses and Research Questions**

To date, the literature on advertising has investigated the relationship between advertising effectiveness and advertising channels such as print media, broadcast media, and the Internet. However, theories and evidence explaining cognitive and emotional responses to advertisements have been somewhat mixed and inconsistent. Further, there has been little empirical research on the social media context, despite the explosive growth of social media in political campaign advertisements. As such, this study will look at how different channels in political campaign advertisements influence users’ cognitive, emotional, and behavioral reactions in the social media context. Specifically, this study focuses mainly on the interactivity and modality of the channel to compare the effects of Facebook and Twitter as well as the effects of print and audiovisual advertising in the social media context.

The effects of interactivity were explained by the theory of user control, the theory of structural isomorphism, media richness theory, social presence theory, and the concepts of cognitive load and disorientation. The theory of user control, the theory of structural isomorphism, and the concepts of cognitive load and disorientation suggest that a more interactive communication channel increases users’ learning, while too much user control or inexperience in a hypertextual environment yield cognitive overload that impedes learning. Specifically, the theory of user control explains that higher user control of the communication channel increases learning by encouraging motivation to learn. Structural isomorphism provides the notion that hypermedia facilitate information processing by creating and maintaining
meaningful links among related concepts. The media richness theory and the social presence theory further provide that a higher interactive communication channel increases the user’s emotional and behavioral responses in addition to cognitive responses. The media richness theory holds that a richer medium which has multiple cues facilitating faster and more accurate communications engenders more favorable evaluations and behavioral intentions toward the product the medium provides than a leaner medium. Similarly, the social presence theory posits that a medium with stronger social presence (e.g., interpersonal medium) increases trust, satisfaction, and favorable attitudes toward the product or service than a lower social presence medium.

Taken together, these theories of interactivity suggest that a more interactive communication channel enhances users’ cognitive (e.g., learning), emotional (e.g., favorable attitude toward the object), and behavioral responses (e.g., behavioral intentions) better than a lower counterpart when the context of the communication channel does not exceed the user’s cognitive load and the user experiences the communication environment through the channel. In the political advertising context, the literature on the effects of political advertising suggests how cognitive, emotional, and behavioral responses should be measured. Previous researchers have measured cognitive responses as voter knowledge levels (i.e., voter learning about campaign issues and the candidate’s information), affective responses as voter perceptions of candidates (i.e., voter evaluations toward the candidate, candidate’s issues, and the party), and behavioral responses as voting preferences (i.e., voting decisions and information seeking behaviors). Reflecting the expected cognitive, emotional, and behavioral responses from the literature of political advertising, the following hypotheses were proposed:
H1: People who are exposed to campaign ads on a higher interactive channel will learn more about the campaign than those who are exposed to campaign ads on a lower counterpart.

H2: People who are exposed to campaign ads on a higher interactive channel will evaluate the candidate-related information more favorably than those who are exposed to campaign ads on a lower counterpart.

H3: People who are exposed to campaign ads on a higher interactive channel will be more likely to engage in political behaviors for the candidate than those who are exposed to campaign ads on a lower counterpart.

Consistent with the theories of interactivity, social media such as Facebook and Twitter are unique in that they provide a user-friendly environment, facilitate the search for information based on hypertextuality, encourage immediate feedback between users as in face-to-face interaction, and offer messages tailored to the user’s needs and interpersonal communication. Compared to Twitter, Facebook requires higher user control of the channel in that the social network of Facebook is under the control of users who can accept or reject friend requests. Although both Facebook and Twitter are based on hypertext features, the extent of the number of links in a hypertext is different between Facebook and Twitter. Facebook relies on links among more related or pre-existing social networks, such as friends, family, and co-workers, while Twitter focuses less on it based on lack of interpersonal relationship between users. Furthermore, Facebook’s relational and reciprocal social interaction between users makes it more similar to face-to-face communications than Twitter. However, based on its short and text-based messages, Twitter is more appropriate for real-time interaction in comparison with Facebook. Applying the theories of interactivity, Facebook and Twitter may trigger different cognitive (i.e., increasing learning), emotional (i.e., favorable evaluations), and behavioral effects (e.g., behavioral intentions) based on their different interactive natures. Given that Facebook has more interactive
elements than Twitter, Facebook may increase cognitive, emotional, and behavioral responses as
compared with Twitter. Based on this reasoning, the following hypotheses are posited:

H4: People who are exposed to campaign ads on Facebook will learn more about the
campaign than those who are exposed to campaign ads on Twitter.

H5: People who are exposed to campaign ads on Facebook will evaluate the candidate-
related information more favorably than those who are exposed to campaign ads on
Twitter.

H6: People who are exposed to campaign ads on Facebook will be more likely to engage
in political behaviors for the candidate than those who are exposed to campaign ads on
Twitter.

On the other hand, theories of modality including the dual coding theory, the cue
summation theory, the limited capacity information-processing model, and the multiple resource
theory suggest that increased modality (e.g., multiple cues) of the communication channel causes
more cognitive effects, but the effect size is limited according to users’ cognitive ability to
process information and consistency of the modality. For example, the dual coding theory
explains that multimedia representations increase the user’s learning and recall more than a
single representation, but inconsistency of information between multiple cues decreases the
user’s attention because of the individual’s limited cognitive processing capacity. The cue
summation theory indicates that an increased number of cues enhances learning only if the cues
from different modalities are relevant to each other, but impedes learning at the point of over-
abundance of cues. The limited capacity information-processing model suggests that cognitive
information processing differs by individual goals and needs and the characteristics of
information because a person’s cognitive resources are limited. The multiple resource theory
similarly proposes that people are more likely to engage in cognitive information processing
when the modality is composed of congruent multiple cues and the information is consistent with
the individual’s goals due to the individual’s limited capacity for information processing.
Although most theories do not focus on emotional and behavioral responses to the modality of different communication channels, it can be inferred that increased modality elicits more emotional and behavioral reactions. The dual coding theory indicates that audiovisual information arouses stronger emotional (e.g., affection toward the object) and behavioral reactions (e.g., pro-social behaviors) than visual only information. Although the cue summation theory focuses primarily on the user’s cognitive reactions (i.e., learning) to the modality of the communication channel, it also represents the possibility of emotional reactions to the modality such as satisfaction with the object. Given that all four theories of modality assume the individual’s limited capacity for information, it can be also assumed that increased modality increases emotional reactions as far as the individual has the capacity to process the cues.

Likewise, information processing theories of modality suggest that increased modality of the communication channel evokes more cognitive, emotional, and (potential) behavioral responses. Unlike traditional media that features a single modality, social media can include a number of modalities. Based on this characteristic, social media can be used as a political campaign advertising tool with different modalities such as visual or audiovisual. Although the theories of modality have examined the effects of different modality in traditional media such as newspapers and television, how the modality of political advertising embedded in the social media context plays a role in engendering users’ cognitive, emotional, and behavioral responses is unexplored. Accordingly, this study investigates how the modality of political advertising embedded in social media differently evokes users’ cognitive, emotional, and behavioral responses. Given that prior studies of modality suggest that audiovisual advertising may be more effective than visual advertising, this study assumes that audiovisual ads will increase more
cognitive, emotional, and behavioral responses than visual ads. In relation to the effects of political advertising, the following hypotheses are developed:

H7: People who are exposed to audiovisual campaign ads will learn more about the campaign than those who are exposed to visual campaign ads.

H8: People who are exposed to audiovisual campaign ads will evaluate the candidate-related information more favorably than those who are exposed to visual campaign ads.

H9: People who are exposed to audiovisual campaign ads will be more likely to engage in political behaviors for the candidate than those who are exposed to visual campaign ads.

Despite a number of empirical studies to explain the effects of interactivity and modality of traditional communication channels, findings provide unexpected results in the social media context not only because the definition of interactivity is blurred but because prior research overlooks the unique characteristics of social media as interactive communication channels with a number of modalities. Although prior theories of interactivity and modality suggest that a relatively more interactive communication channel and a communication channel with more modalities may arouse more cognitive, emotional, and behavioral responses than a less interactive channel and a channel with fewer modalities, the cognitive, emotional, and behavioral responses when modality is combined with interactivity of the channel in social media environment remain unknown. Specifically, there is little research on the cognitive, emotional, and behavioral effects when televised political advertising in a less interactive channel competes with print-based political advertising in a more interactive channel. To investigate the combined effects of different social media platform, interactivity, and modality, the following research questions are raised:

RQ1. Under what combined conditions are ads most effective in increasing individual’s learning about campaign information?
RQ2. Under what combined conditions are ads most effective in increasing individual’s favorable evaluation toward the candidate-related information?

RQ3. Under what combined conditions are ads most effective in increasing individual’s political behaviors for the candidate?
CHAPTER THREE

RESEARCH METHOD

Participants and Design

The purpose of this study is to investigate whether and/or how different channels of political advertisements affect the audience’s cognitive, emotional, and behavioral responses in the social media context. The study is designed to investigate the effects of different social media with different levels of interactivity on users’ processing of embedded visual and audiovisual ads in terms of cognition (i.e., learning about campaign information), emotion (i.e., favorable evaluation toward the candidate-related information), and behavioral responses (i.e., political behaviors). To answer a series of research questions and hypotheses, this study utilized a 2 (social media platform: Facebook, Twitter) X 2 (interactivity: high, low) X 2 (modality: visual, audiovisual) between-subjects experimental design. Social media platforms, interactivity, and modality are the manipulated variables, while learning about campaign information, favorable evaluation toward the candidate-related information, and political behaviors are measured as dependent variables. This study also measured other covariates that may influence these effects, including an individual’s cognitive and emotional involvement with social media platform and political involvement.

The theoretical population of this study is eligible voters who use Facebook and Twitter. A total of 527 voters were recruited to complete the online experiment, using a convenience sampling procedure. Invitations distributed via Amazon Mechanical Turk were employed to recruit the participants. As compensation, about $1 was given to the participants recruited via
After removing incomplete responses, 396 responses were extracted. To control for the effects of participant’s prior knowledge about the campaign, participants ($n = 79$) who were familiar with the political campaign and the candidate used in the stimuli in this study were excluded. As a result, data from a total of 317 participants were used for analysis in this study.

**Stimuli**

For this study, political advertisements of a candidate were manipulated through the creation of eight different political ads, varying in a 2 (social media platform: Facebook, Twitter) X 2 (interactivity: high, low) X 2 (modality: visual, audiovisual) design. In 2015, general elections in the United States were scheduled to be held on November 3. This is an off-year election for filling vacant seats if incumbents resigned or died. Of three gubernatorial races that will be held in Kentucky, Louisiana, and Mississippi, the Kentucky gubernatorial election was selected. Among five candidates who ran for the election, Hal Heiner was selected because he uses Facebook and Twitter as a tool of the campaign.

An actual 30-second political advertisement with audiovisuals was obtained from Heiner’s Facebook and Twitter postings. To compare the visual and audiovisual advertisements under the same condition except for elements such as music, voice, and moving pictures, the visual advertisement was manipulated to show eight main frames that the audiovisual advertisement provides. The time of exposure was also controlled in the visual ad condition to be equal to the time of the audiovisual presentation condition. Under the visual ad condition, participants were exposed to the eight frames (3 seconds per frame) of the visual ads one by one as a slide show.
Further, the visual and audiovisual advertisements without interactive features (low interactivity condition) and with interactive features such as “reply,” “retweet,” and “favorite” for Twitter and “reply,” “share,” and “like” for Facebook (high interactivity condition) served as the stimuli to manipulate interactivity. To compare the effects of Facebook and Twitter, other conditions such as the advertisements and the number of interactive features were equally manipulated in addition to the media platform. As a result, eight experimental treatments were created: (1) a visual ad with low interactivity on Facebook, (2) an audiovisual ad with low interactivity on Facebook, (3) a visual ad with high interactivity on Facebook, (4) an audiovisual ad with high interactivity on Facebook, (5) a visual ad with low interactivity on Twitter, (6) an audiovisual ad with low interactivity on Twitter, (7) a visual ad with high interactivity on Twitter, and (8) an audiovisual ad with high interactivity on Twitter.

**Procedure**

After completing the participant information sheet, the participants were asked about whether they are familiar with the Kentucky gubernatorial election and Hal Heiner to control the effect of participants’ prior knowledge about the campaign. Only participants who agree with the informed consent form and those who are not familiar with the election and the candidate completed the survey. Familiarity with the election and the candidate was measured by asking participants, “How familiar are you with the Kentucky gubernatorial election?” and “How familiar are you with the candidate, Hal Heiner?” The answer to each of the statements was ranked on a 5-point scale, with 1 = very unfamiliar and 5 = very familiar. Of the 396 respondents who completed the survey, 216 respondents (54.5%) answered they are very unfamiliar with the Kentucky gubernatorial election, 107 (27.0%) answered they are unfamiliar, 53 (13.4%) are somewhat familiar, 11 (2.8%) are familiar, and 9 (2.3%) are very familiar. In terms of the
familiarity with the candidate, Hal Heiner, 242 respondents (61.1%) answered they are very unfamiliar with the candidate, 102 (25.8%) answered they are unfamiliar, 32 (8.1%) are somewhat familiar, 16 (4.0%) are familiar, and 4 (1.0%) are very familiar. Only responses of participants who are very unfamiliar or unfamiliar with the campaign and the candidate ($n = 317$) were included in the analysis of the study, so their familiarity with the Kentucky gubernatorial election and the candidate, Hal Heiner, was assumed to be low.

Before exposing participants to a stimulus, participants’ involvement variables (e.g., cognitive and emotional involvement with social media platform and political involvement) were measured. Participants then read the statement, “Now, you will see a political advertisement related to the current gubernatorial election. Please watch this advertising carefully.” They were then randomly exposed to one of eight political advertisements by different modality, interactivity, and social media platform. After being exposed to the stimulus, participants were asked questions for the manipulation check, the dependent measures of learning about the campaign, candidate evaluation, voting intention, and other sociodemographic variables.

**Dependent Variables**

**Campaign Learning**

The scale of campaign learning, adapted and modified from Feldman and Price (2008), was administered to assess participants’ learning about the issues and image of the candidate. The scale was measured by asking participants, “Please mark whether each of the statements is correct, incorrect, or “do not know”. Correct responses were coded as 1, and incorrect or “do not know” responses were coded as 0. Four items about issue knowledge were used to ask about whether the candidate 1) favors Obama’s policy, 2) supports drug testing for welfare recipients, 3) has a plan to increase Kentucky jobs, and 4) suggests making e-verify immigration screening. In
a similar vein, four items about knowledge of the candidate’s personal and political background were used to ask about whether the candidate 1) is the “Frankfort outsider,” 2) is a candidate for Governor of Kentucky, 3) is liberal, and 4) was not a successful businessman. Responses to these eight items were averaged to create a composite campaign learning scale ($M = .80$, $SD = .22$, $\alpha = .694$).

**Candidate Evaluation**

The candidate evaluation scale was adapted from a “feeling thermometer” scale that has been used to measure perceptions of candidate image in several studies (e.g., Kaid, 2003; Kaid, Fernandes, & Painter, 2011; Kaid & Postelnicu, 2005; McKinney, Houston, & Hawthorne, 2014; Weber, Dunaway, & Johnson, 2011). Participants were asked to rank three statements “How do you rate your feelings toward Hal Heiner?”, “How do you rate your feelings toward the campaign issues of Hal Heiner?”, and “How do you rate your feelings toward the party to which Hal Heiner belongs?” The answer to each of the statements was ranked on a 5-point scale, with 1 = unfavorable-cold and 5 = favorable-warm. Responses to these three items were averaged to create a composite candidate evaluation scale ($M = 2.40$, $SD = 1.15$, $\alpha = .935$).

**Political Behavior**

The political behavior scale includes voting intention and information-seeking behaviors. Voting intention was measured by asking participants, “If the election were held tomorrow, how likely or unlikely would you be to vote for the candidate in the advertising you just watched?” on a 5-point scale, with 1 = very unlikely and 5 = very likely. The scale of information-seeking behaviors, adapted and modified from Kaid (2002), featured 12 items about which participants were asked, “How likely or unlikely would you be engage in each of the following activities?” on a 5-point scale, with 1 = very unlikely and 5 = very likely. Responses to the voting intention
and information-seeking behaviors (13 items) were averaged to create a composite information-seeking behavior scale ($M = 2.02$, $SD = .81$, $\alpha = .909$).

**Covariates**

Individual variables may affect cognitive, emotional, and behavioral responses to different channels in political campaign advertisements. In particular, individual’s involvement variables have been recognized as mediators and predictors of behavioral responses (Huang, Chou, & Lin, 2010; Sood, 2002). In this regard, individual’s involvement variables were measured as covariates for cognitive, emotional, and behavioral responses for additional analysis in this study. These covariates were treated as exogenous to explain the effects of different channels in political advertisements. Involvement variables include cognitive and emotional involvement with social media platform, political orientation, and political participation.

**Cognitive Involvement with Social Media Platform**

The cognitive involvement with social media platform scale, adapted and modified from Perse (1990a & 1990b), was asked participants “How much do you agree or disagree with each of the following statements?” on a five-point scale, with 1 = strongly disagree and 5 = strongly agree. A total of 15 items was used to measure three dimensions of cognitive involvement with channel such as attention, recognition, and elaboration. First, attention was measured with five items to assess an individual’s attention to Facebook and Twitter. After recoding some negatively worded items, responses to these five items were averaged to create a composite attention scale ($M = 3.15$, $SD = 1.09$, $\alpha = .897$ for Facebook, $M = 2.64$, $SD = 1.05$, $\alpha = .858$ for Twitter, and $M = 2.89$, $SD = 1.10$ for social media). Second, recognition was measured with five items to assess an individual’s understanding about new information on Facebook and Twitter. After recoding some negatively worded items, responses to these five items were averaged to
create a composite recognition scale ($M = 4.21, SD = .72, \alpha = .832$ for Facebook, $M = 3.64, SD = 1.02, \alpha = .889$ for Twitter, and $M = 3.91, SD = .93$ for social media). Third, elaboration was measured with five items to assess how an individual relates new information on Facebook and Twitter to previous knowledge. Responses to these five items were averaged to create a composite elaboration scale ($M = 2.54, SD = 1.10, \alpha = .939$ for Facebook, $M = 1.96, SD = 1.00, \alpha = .930$ for Twitter, and $M = 2.24, SD = 1.08$ for social media). Response to these three items were averaged to create a composite cognitive involvement with Facebook scale ($M = 3.30, SD = .82, \alpha = .924$), a composite cognitive involvement with Twitter scale ($M = 2.75, SD = .85, \alpha = .928$), and a composite cognitive involvement with social media scale ($M = 3.01, SD = .88$).

**Emotional Involvement with Social Media Platform**

The emotional involvement with social media platform scale, adapted from Perse (1990b), uses 15 items to measure the intensity of emotions while using Facebook and Twitter, respectively. Along with the factor analysis employed by Perse (1990b), a principal factor analysis with oblique rotation with a three-factor solution was employed. As a result, three distinct emotions such as happiness, anger, and sadness were extracted. Five items were included in each emotion. In terms of Facebook use, Factor 1, *Happiness* (eigenvalue = 5.63), accounted for 37.52% of the total variance. Factor 2, *Anger* (eigenvalue = 4.01), accounted for 26.76% of the total variance. Factor 3, *Sadness* (eigenvalue = 1.64), accounted for 10.95% of the total variance. Similarly, regarding Twitter use, Factor 1, *Happiness* (eigenvalue = 5.98), accounted for 39.89% of the total variance. Factor 2, *Anger* (eigenvalue = 4.06), accounted for 27.07% of the total variance. Factor 3, *Sadness* (eigenvalue = 1.73), accounted for 11.53% of the total variance. Responses to the items from each emotion were averaged to create composite happiness scores ($M = 2.15, SD = 1.02, \alpha = .950$ for Facebook, $M = 1.83, SD = .93, \alpha = .937$ for
Twitter, and $M = 1.98, SD = .99$ for social media), anger scores ($M = 1.37, SD = .61, \alpha = .895$ for Facebook, $M = 1.36, SD = .72, \alpha = .935$ for Twitter, and $M = 1.37, SD = .67$ for social media), and sadness scores ($M = 1.23, SD = .42, \alpha = .858$ for Facebook, $M = 1.13, SD = .37, \alpha = .888$ for Twitter, and $M = 1.18, SD = .40$ for social media). Response to these 15 items were averaged to create a composite emotional involvement with Facebook scale ($M = 1.58, SD = .48, \alpha = .861$), a composite emotional involvement with Twitter scale ($M = 1.44, SD = .47, \alpha = .862$), and a composite emotional involvement with social media scale ($M = 1.51, SD = .48$).

**Political Orientation**

The political orientation scale asked participants “Please mark which best identifies your political views” on a five-point scale, with 1 = very liberal and 5 = very conservative ($M = 2.59, SD = 1.05$).

**Political Participation**

The political participation scale, adapted from Valenzuela, Park and Kee (2009), has nine items asking participants, “Have you ever done any of the following activities within the last 12 months?” with 0 = never, 0.5 = yes, but not within the last 12 months, and 1 = yes, within the last 12 months. Responses to these nine items were summed to create a composite civic and political participation scale ($M = 1.67, SD = 1.86, \alpha = .89$).
CHAPTER FOUR

RESULTS

Study Participants

Of the 317 participants used in the study, 153 (48.3%) were men and 164 (51.75) were women. The mean ($M$) age of the participants was 37.03 ($SD = 11.72$), ranging from 18 ($n = 1$, 0.3%), the youngest age of U.S. voters, to 69 ($n = 1$, 0.3%). Other demographic characteristics of the participants are provided in Table 1.

Table 1. Demographics of Study Participants

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>$N$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>3</td>
<td>0.9</td>
</tr>
<tr>
<td>High school/GED</td>
<td>44</td>
<td>13.9</td>
</tr>
<tr>
<td>Some college</td>
<td>116</td>
<td>36.6</td>
</tr>
<tr>
<td>College degree</td>
<td>115</td>
<td>36.3</td>
</tr>
<tr>
<td>Some graduate work</td>
<td>12</td>
<td>3.8</td>
</tr>
<tr>
<td>Master’s degree</td>
<td>21</td>
<td>6.6</td>
</tr>
<tr>
<td>PhD / Professor</td>
<td>6</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White-Non Hispanic</td>
<td>245</td>
<td>77.3</td>
</tr>
<tr>
<td>Asian or Asian American</td>
<td>25</td>
<td>7.9</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------</td>
<td>------</td>
</tr>
<tr>
<td>Latino or Hispanic</td>
<td>22</td>
<td>6.9</td>
</tr>
<tr>
<td>African American or Black</td>
<td>16</td>
<td>5.0</td>
</tr>
<tr>
<td>Biracial (any combination or the above)</td>
<td>5</td>
<td>1.6</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Income</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than $20,000</td>
<td>67</td>
<td>21.1</td>
</tr>
<tr>
<td>$20,000 to $39,999</td>
<td>77</td>
<td>24.3</td>
</tr>
<tr>
<td>$40,000 to $59,999</td>
<td>79</td>
<td>24.9</td>
</tr>
<tr>
<td>$60,000 to $79,999</td>
<td>50</td>
<td>15.8</td>
</tr>
<tr>
<td>$80,000 to $99,999</td>
<td>25</td>
<td>7.9</td>
</tr>
<tr>
<td>$100,000+</td>
<td>19</td>
<td>6.0</td>
</tr>
<tr>
<td><strong>Region</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>81</td>
<td>25.6</td>
</tr>
<tr>
<td>Midwest</td>
<td>77</td>
<td>24.3</td>
</tr>
<tr>
<td>Northeast</td>
<td>74</td>
<td>23.3</td>
</tr>
<tr>
<td>West</td>
<td>63</td>
<td>19.9</td>
</tr>
<tr>
<td>Mid-Atlantic</td>
<td>16</td>
<td>5.0</td>
</tr>
<tr>
<td>I do not live in the U.S.</td>
<td>6</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>Partisan</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Democrat</td>
<td>146</td>
<td>46.1</td>
</tr>
<tr>
<td>Republican</td>
<td>52</td>
<td>16.4</td>
</tr>
<tr>
<td>Independent</td>
<td>99</td>
<td>31.2</td>
</tr>
</tbody>
</table>
In addition to demographic characteristics of the participants, the study tested whether political orientation and political participation were distributed evenly into eight groups that were exposed to each of eight different stimuli. Results of univariate analysis of variance (ANOVA) with a post-hoc Bonferroni test showed that there were no significant differences between any of the groups regarding political orientation ($F_{(7, 309)} = 1.578, \eta^2 = .035, p > .05$) and political participation ($F_{(7, 309)} = .829, \eta^2 = .018, p > .05$).

**Manipulation Check**

The study manipulated social media platform (i.e., Facebook and Twitter), interactivity (high and low), and modality (visual and audiovisual ads) to examine the cognitive, emotional, and behavioral responses to different versions of a political ad. While different types of social media platform and modality are noticeable and recognizable to the general user, there is no easily identifiable manipulation of interactivity. For this reason, a manipulation check of interactivity was included to determine whether participants perceived the different interactive nature of advertisements via social media platform as they were intended. Nine items revised and adapted from Thorson and Rogers’ (2010) scale of perceived interactivity were used on the post-questionnaire.\(^2\) The scale asked participants to rank how much they agreed or disagreed with items including: 1) Interacting with Facebook (or Twitter) was like having a personal conversation with a representative of the campaign; 2) I felt as if the candidate’s Facebook (or Twitter) talked back to me while I was navigating; 3) I perceive the candidate’s Facebook (or

\[\begin{array}{|c|c|c|}
\hline
\text{Other} & 14 & 4.4 \\
\hline
\text{Do not know} & 6 & 1.9 \\
\hline
\end{array}\]
Twitter) to be sensitive to my needs for information; 4) The candidate’s Facebook (or Twitter) is interpersonal; 5) I could communicate directly to the candidate if I wanted to using the candidate’s Facebook (or Twitter); 6) I could communicate in real time with other users who shared my interest in the campaign through the candidate’s Facebook (or Twitter); 7) The candidate’s Facebook (or Twitter) had the ability to respond to my specific questions quickly and efficiently; 8) It is easy to find my way through the candidate’s Facebook page (or Twitter); and 9) The candidate’s Facebook (or Twitter) has a variety of information I want to see. Answers were given on a 5-point scale anchored by 1 = strongly disagree and 5 = strongly agree. Responses to these nine items were averaged to create a composite interactivity of Facebook scale (\(M = 2.28, SD = .82, \alpha = .892\)), a composite interactivity of Twitter scale (\(M = 2.27, SD = .83, \alpha = .888\)), and composite interactivity of social media scale (\(M = 2.27, SD = .82, \alpha = .885\)). The findings indicate a successful manipulation (\(M_{\text{high}} = 2.42, SD_{\text{high}} = .83\) vs. \(M_{\text{low}} = 2.14, SD_{\text{low}} = .80; t[315] = 3.11, p < .01\)). Despite the successful manipulation, the mean values of both high and low interactivity are still low, which indicates that participants did not pay attention to the stimuli they were exposed to or they perceived the stimuli as less interactive regardless of whether they were exposed to the manipulated high or low interactive channels.

**Data Analysis**

To test the nine research hypotheses, a series of two-tailed Mann-Whitney \(U\) tests and a series of independent samples \(t\)-tests were employed. The campaign learning variable is highly skewed due to a large number of participants having higher scores of campaign learning after being exposed to one of eight political advertisements. The mean score of a composite campaign learning scale was .80 of 1.00. For that reason, the campaign learning variable cannot be normalized by data formation (Skewness = -1.427 and Kurtosis = 2.051). Because use of
independent samples $t$-tests is not recommended for data that are not normalized, nonparametric tests that do not require normality, such as two-tailed Mann-Whitney $U$ tests, were used to test effects on campaign learning. A series of two-tailed Mann-Whitney $U$ tests were thus carried out to find out different effects of interactivity, modality, and social media platform on campaign learning. A series of independent samples $t$-tests were used to test different effects of interactivity, modality, and social media platform on candidate evaluation and political behavior.

H1, H2, and H3 predicted different effects of interactivity on campaign learning, candidate evaluation, and political behavior. H1 predicted that people who were exposed to campaign ads on a higher interactive channel learned more about the campaign than those who were exposed to lower interactive campaign ads. The results of the two-tailed Mann-Whitney $U$ test revealed that there was no significant difference between high and low interactive channels in relation to campaign learning, $U = 12108.500, p > .05$ (see Table 2). Therefore, H1 was not supported.

Table 2. Mann-Whitney $U$ Test of High and Low Interactive Channels on Campaign Learning

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>$M$</th>
<th>$SD$</th>
<th>Mean Ranks</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>High interactivity</td>
<td>154</td>
<td>.80</td>
<td>.22</td>
<td>161.87</td>
<td>24928.50</td>
</tr>
<tr>
<td>Low interactivity</td>
<td>163</td>
<td>.79</td>
<td>.22</td>
<td>156.29</td>
<td>25474.50</td>
</tr>
</tbody>
</table>

Note: Mean Difference = .00; Mann-Whitney $U = 12108.500; Z = -.559; p > .05$

H2 predicted that people who were exposed to campaign ads on a higher interactive channel evaluated the candidate-related information more favorably than those who were exposed to campaign ads on a lower counterpart. The independent samples $t$-tests showed that
candidate evaluation was not significantly different when participants were exposed to campaign ads on a higher interactive channel ($M = 2.44, SD = 1.17$) compared to a lower counterpart ($M = 2.37, SD = 1.14$), $t(315) = .599, p > .05$ (see Table 3). Hence, H2 was not supported.

H3 predicted that people who are exposed to campaign ads on a higher interactive channel were more likely to intend to engage in political behaviors for the candidate than those who are exposed to campaign ads on a lower counterpart. According to the results of the independent samples $t$-tests, political behavior was not significantly different when participants were exposed to campaign ads on a higher interactive channel ($M = 2.08, SD = .79$) compared to a lower counterpart ($M = 1.97, SD = .82$), $t(315) = 1.162, p > .05$ (see Table 3). Thus, H3 was not supported.

**Table 3. Comparing Candidate Evaluation and Political Behavior between High and Low Interactive Channels**

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>$M$</th>
<th>$SD$</th>
<th>$t$</th>
<th>$d.f.$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate Evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High interactivity</td>
<td>154</td>
<td>2.44</td>
<td>1.17</td>
<td>.599</td>
<td>315</td>
<td>.549</td>
</tr>
<tr>
<td>Low interactivity</td>
<td>163</td>
<td>2.36</td>
<td>1.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High interactivity</td>
<td>154</td>
<td>2.08</td>
<td>.79</td>
<td>1.162</td>
<td>315</td>
<td>.246</td>
</tr>
<tr>
<td>Low interactivity</td>
<td>163</td>
<td>1.97</td>
<td>.82</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H4, H5, and H6 predicted different effects of social media platform on campaign learning, candidate evaluation, and political behavior. H4 predicted that people who were exposed to campaign ads on Facebook learned more about the campaign than those who were exposed to campaign ads on Twitter. A two-tailed Mann-Whitney $U$ test was used for the analysis. The
result revealed that campaign learning was significantly different when participants were exposed to campaign ads on Facebook compared to Twitter. Specifically, participants who were exposed to campaign ads on Facebook ($M = .83, SD = .20$) obtained significantly higher scores of campaign learning than those who were exposed to campaign ads on Twitter ($M = .77, SD = .23$), $U = 10721.500, p < .05$ (see Table 4). Therefore, H4 was supported.

Table 4. Mann-Whitney U Test of Facebook and Twitter on Campaign Learning

<table>
<thead>
<tr>
<th></th>
<th>$N$</th>
<th>$M$</th>
<th>$SD$</th>
<th>Mean Ranks</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facebook</td>
<td>152</td>
<td>.83</td>
<td>.20</td>
<td>170.96</td>
<td>25986.50</td>
</tr>
<tr>
<td>Twitter</td>
<td>165</td>
<td>.77</td>
<td>.23</td>
<td>147.98</td>
<td>24416.50</td>
</tr>
</tbody>
</table>

Note: Mean Difference = .06; Mann-Whitney $U = 10721.500; Z = -2.298; p < .05$

H5 predicted that people who were exposed to campaign ads on Facebook evaluated the candidate-related information more favorably than those who were exposed to campaign ads on Twitter. Independent samples $t$-tests were employed. The results revealed that candidate evaluation was not significantly different when participants were exposed to campaign ads on Facebook ($M = 2.38, SD = 1.15$) compared to Twitter ($M = 2.43, SD = 1.16$), $t (315) = -.426, p > .05$ (see Table 5). Hence, H5 was not supported.

H6 predicted that people who were exposed to campaign ads on Facebook were more likely to engage in political behaviors for the candidate than those who were exposed to campaign ads on Twitter. The analysis of independent samples $t$-tests revealed that political behavior was not significantly different when participants were exposed to campaign ads on
Facebook ($M = 1.97, SD = .79$) compared to Twitter ($M = 2.07, SD = .82$), $t(315) = -1.08, p > .05$ (see Table 5). Thus, H6 was not supported.

**Table 5.** Comparing Candidate Evaluation and Political Behavior between Facebook and Twitter

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>d.f.</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate Evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facebook</td>
<td>152</td>
<td>2.38</td>
<td>1.15</td>
<td>-.426</td>
<td>315</td>
<td>.670</td>
</tr>
<tr>
<td>Twitter</td>
<td>165</td>
<td>2.43</td>
<td>1.16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Facebook</td>
<td>152</td>
<td>1.97</td>
<td>.79</td>
<td>-1.076</td>
<td>315</td>
<td>.283</td>
</tr>
<tr>
<td>Twitter</td>
<td>165</td>
<td>2.07</td>
<td>.82</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

H7, H8 and H9 predicted different effects of modality on campaign learning, candidate evaluation, and political behavior. H7 predicted that people who were exposed to audiovisual campaign ads learned more about the campaign than those who were exposed to visual campaign ads. The results of a two-tailed Mann-Whitney $U$ test demonstrated that campaign learning was significantly different when participants were exposed to audiovisual campaign ads compared to visual campaign ads. Participants who were exposed to audiovisual campaign ads ($M = .87, SD = .16$) obtained significantly higher scores of campaign learning than those who were exposed to visual campaign ads ($M = .73, SD = .24$), $U = 8096.000, p < .001$ (see Table 6). This result supported H7.
**Table 6. Mann-Whitney Test of Visual and Audiovisual Advertisements on Campaign Learning**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Mean Ranks</th>
<th>Sum of Ranks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual Ads</td>
<td>160</td>
<td>.73</td>
<td>.24</td>
<td>131.10</td>
<td>20976.00</td>
</tr>
<tr>
<td>Audiovisual Ads</td>
<td>157</td>
<td>.87</td>
<td>.16</td>
<td>187.43</td>
<td>29427.00</td>
</tr>
</tbody>
</table>

Note: Mean Difference = .14; Mann-Whitney \( U = 8096.000; Z = -5.638; p < .001 \)

H8 predicted that people who were exposed to audiovisual campaign ads evaluated the candidate-related information more favorably than those who were exposed to visual campaign ads. Results from independent samples \( t \)-tests confirmed this prediction. Findings showed that candidate evaluation was significantly higher when participants were exposed to audiovisual campaign ads (\( M = 2.55, SD = 1.25 \)) than visual campaign ads (\( M = 2.26, SD = 1.03 \)), \( t \) (315) = -2.318, \( p < .05 \) (see Table 7). Thus, H8 was supported.

H9 predicted that people who were exposed to audiovisual campaign ads were more likely to engage in political behaviors for the candidate than those who were exposed to visual campaign ads. However, the results of the independent samples \( t \)-tests revealed that political behavior was not significantly different when participants were exposed to audiovisual campaign ads (\( M = 2.03, SD = .83 \)) compared to visual campaign ads (\( M = 2.02, SD = .78 \)), \( t \) (315) = -.091, \( p > .05 \) (see Table 7). This result means that H9 was not supported.
Table 7. Comparing Candidate Evaluation and Political Behavior between Visual and Audiovisual Advertisements

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>t</th>
<th>d.f.</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidate Evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual Ads</td>
<td>160</td>
<td>2.26</td>
<td>1.03</td>
<td>-2.318</td>
<td>315</td>
<td>.021</td>
</tr>
<tr>
<td>Audiovisual Ads</td>
<td>157</td>
<td>2.55</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political Behavior</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Visual Ads</td>
<td>160</td>
<td>2.02</td>
<td>.78</td>
<td>-.091</td>
<td>315</td>
<td>.928</td>
</tr>
<tr>
<td>Audiovisual Ads</td>
<td>157</td>
<td>2.03</td>
<td>.83</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

RQ1, RQ2, and RQ3 asked about the effects of interactivity, modality, and social media platform on campaign learning, candidate evaluation, and political behavior. RQ1 asked under what combined conditions ads are most effective in increasing an individual’s learning about campaign information. Univariate analysis of covariance (ANCOVA) with post-hoc Bonferroni test was conducted with interactivity (high vs. low), modality (audiovisual vs. visual), and social media platform (Facebook vs. Twitter) as fixed factors predicting campaign learning, controlling for political orientation, political participation, cognitive involvement with social media platform, and emotional involvement with social media platform as covariates.

The result showed that covariates of political orientation, political participation, cognitive involvement with social media platform, and emotional involvement with social media platform were not significantly related to increased political learning. Controlling for four covariates, the result indicated a significant two-way interaction between modality and social media platform, $F(1, 305) = 11.163$, $\eta^2 = .035$, $p < .001$, explaining about 3.5% of variance. Participants who are exposed to audiovisual campaign ads on Twitter ($M = .88$, $SE = .02$) learned more about the campaign than those who are exposed to audiovisual campaign ads on Facebook.
In contrast, participants who are exposed to visual campaign ads on Facebook ($M = .80, SE = .02$) learned more about the campaign than those who are exposed to visual campaign ads on Twitter ($M = .67, SE = .02$).

Table 8. Tests of Between-Subjects Main and Interaction Effects: Interactivity, Modality and Social media as Predictors of Campaign Learning

<table>
<thead>
<tr>
<th></th>
<th>Campaign Learning</th>
<th>d.f.</th>
<th>F</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected model</td>
<td></td>
<td>11</td>
<td>6.077***</td>
<td>.180</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Political orientation</td>
<td></td>
<td>1</td>
<td>.879</td>
<td>.003</td>
</tr>
<tr>
<td>Political participation</td>
<td></td>
<td>1</td>
<td>3.654</td>
<td>.012</td>
</tr>
<tr>
<td>Cognitive involvement</td>
<td></td>
<td>1</td>
<td>2.236</td>
<td>.007</td>
</tr>
<tr>
<td>Emotional involvement</td>
<td></td>
<td>1</td>
<td>3.155</td>
<td>.010</td>
</tr>
<tr>
<td>Main effects</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactivity</td>
<td></td>
<td>1</td>
<td>.363</td>
<td>.001</td>
</tr>
<tr>
<td>Modality</td>
<td></td>
<td>1</td>
<td>33.592***</td>
<td>.099</td>
</tr>
<tr>
<td>Social media platform</td>
<td></td>
<td>1</td>
<td>4.963*</td>
<td>.016</td>
</tr>
<tr>
<td>Interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interactivity * Modality</td>
<td></td>
<td>1</td>
<td>.005</td>
<td>.000</td>
</tr>
<tr>
<td>Interactivity * Social media platform</td>
<td>1</td>
<td>.015</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>Modality * Social media platform</td>
<td>1</td>
<td>11.163***</td>
<td>.035</td>
<td></td>
</tr>
</tbody>
</table>
Figure 1. Interaction of Modality and Social Media Platform on Campaign Learning

RQ2 asked under what combined conditions ads are most effective in increasing individual’s favorable evaluation toward candidate-related information. Univariate analysis of covariance (ANCOVA) with post-hoc Bonferroni test was conducted with interactivity (high vs. low), modality (audiovisual vs. visual), and social media platform (Facebook vs. Twitter) as fixed factors predicting candidate evaluation, controlling for political orientation, political participation, cognitive involvement with social media platform, and emotional involvement with social media platform as covariates.

The result showed that the covariates of political orientation and cognitive involvement with social media platform were positively related to increased candidate evaluation. Participants
who perceived themselves as conservative reported a more favorable evaluation toward the
candidate than those who perceived themselves as liberal, $F(1, 305) = 327.969, \eta^2 = .518, p < .001$, explaining about 51.8% of variance. Participants with higher levels of cognitive
involvement with the social media platform reported a more favorable evaluation toward the
candidate than those with lower cognitive involvement, $F(1, 305) = 5.900, \eta^2 = .019, p < .05$, explaining about 1.9% of variance.

Controlling for four covariates, the result indicated a significant two-way interaction
between modality and social media platform, $F(1, 305) = 4.731, \eta^2 = .015, p = .030$, explaining about 1.5% of variance. In the Facebook condition, participants who were exposed to audiovisual
campaign ads ($M = 2.47, SE = .09$) reported a more favorable evaluation toward the candidate
than those who are exposed to visual campaign ads ($M = 2.13, SE = .09$). In the Twitter condition,
however, participants who were exposed to visual campaign ads ($M = 2.52, SE = .09$) reported a
more favorable evaluation toward the candidate than those who are exposed to audiovisual
campaign ads ($M = 2.48, SE = .09$). These results are presented in Table 9 and Figure 2.
Table 9. Tests of Between-Subjects Main and Interaction Effects: Interactivity, Modality and Social media as Predictors of Candidate Evaluation

<table>
<thead>
<tr>
<th>Table 9. Tests of Between-Subjects Main and Interaction Effects: Interactivity, Modality and Social media as Predictors of Candidate Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Candidate Evaluation</strong></td>
</tr>
<tr>
<td>Corrected model</td>
</tr>
<tr>
<td><strong>Covariates</strong></td>
</tr>
<tr>
<td>Political orientation</td>
</tr>
<tr>
<td>Political participation</td>
</tr>
<tr>
<td>Cognitive involvement with social media platform</td>
</tr>
<tr>
<td>Emotional involvement with social media platform</td>
</tr>
<tr>
<td><strong>Main effects</strong></td>
</tr>
<tr>
<td>Interactivity</td>
</tr>
<tr>
<td>Modality</td>
</tr>
<tr>
<td>Social media platform</td>
</tr>
<tr>
<td><strong>Interactions</strong></td>
</tr>
<tr>
<td>Interactivity * Modality</td>
</tr>
<tr>
<td>Interactivity * Social media platform</td>
</tr>
<tr>
<td>Modality * Social media platform</td>
</tr>
<tr>
<td>Interactivity * Modality * Social media platform</td>
</tr>
<tr>
<td>Error</td>
</tr>
</tbody>
</table>

*p < .05; **p < .01; ***p < .001
RQ3 asked under what combined conditions ads are most effective in increasing an individual’s political behaviors on behalf of the candidate. Univariate analysis of covariance (ANCOVA) with post-hoc Bonferroni test was conducted with interactivity (high vs. low), modality (audiovisual vs. visual), and social media platform (Facebook vs. Twitter) as fixed factors predicting political behavior. Political orientation, political participation, cognitive involvement with social media platform, and emotional involvement with social media platform were entered as covariates to control for these factors.

As expected, the covariates of political orientation, political participation, cognitive involvement with social media platform, and emotional involvement with social media platform were positively related to increased political behavior. Specifically, participants who perceived themselves as liberal engaged more in political behaviors (i.e. voting behavior or political information seeking behaviors) than those who perceived themselves as conservative. $F(1, 305) = 96.898, \eta^2 = .241, p < .001$, explaining about 24.1% of variance. Participants who have more
actively participated in politics in the past engaged more in political behaviors than those who less actively participated in politics, $F(1, 305) = 27.298, \eta^2 = .082, p < .001$, explaining about 8.2% of variance. Participants with higher levels of cognitive involvement with the social media platform engaged more in political behaviors than those with lower cognitive involvement, $F(1, 305) = 12.337, \eta^2 = .039, p < .001$, explaining about 3.9% of variance. Participants with higher levels of emotional involvement with the social media platform engaged more in political behaviors than those with lower emotional involvement, $F(1, 305) = 6.306, \eta^2 = .020, p < .05$, explaining about 2.0% of variance.

Controlling for the four covariates, although no interactive effects were found for interactivity, modality, and social media, there was a significant main effect of social media platform on political behavior, $F(1, 305) = 11.374, \eta^2 = .036, p < .001$, explaining about 3.6% of variance. Post-hoc pairwise comparison tests showed that social media platform positively affected political behavior, indicating that participants who are exposed to campaign ads on Twitter ($M = 2.14, SE = .05$) engaged more in political behaviors than those who were exposed to campaign ads on Facebook ($M = 1.89, SE = .06$). See Table 10.
Table 10. Tests of Between-Subjects Main and Interaction Effects: Interactivity, Modality and Social Media as Predictors of Political Behavior

<table>
<thead>
<tr>
<th></th>
<th>Political Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>d.f.</td>
</tr>
<tr>
<td>Corrected model</td>
<td>11</td>
</tr>
<tr>
<td>Covariates</td>
<td></td>
</tr>
<tr>
<td>Political orientation</td>
<td>1</td>
</tr>
<tr>
<td>Political participation</td>
<td>1</td>
</tr>
<tr>
<td>Cognitive involvement with social media platform</td>
<td>1</td>
</tr>
<tr>
<td>Emotional involvement with social media platform</td>
<td>1</td>
</tr>
<tr>
<td>Main effects</td>
<td></td>
</tr>
<tr>
<td>Interactivity</td>
<td>1</td>
</tr>
<tr>
<td>Modality</td>
<td>1</td>
</tr>
<tr>
<td>Social media platform</td>
<td>1</td>
</tr>
<tr>
<td>Interactions</td>
<td></td>
</tr>
<tr>
<td>Interactivity * Modality</td>
<td>1</td>
</tr>
<tr>
<td>Interactivity * Social media platform</td>
<td>1</td>
</tr>
<tr>
<td>Modality * Social media platform</td>
<td>1</td>
</tr>
<tr>
<td>Interactivity * Modality * Social media platform</td>
<td>1</td>
</tr>
<tr>
<td>Error</td>
<td>305</td>
</tr>
</tbody>
</table>

*p < .05; **p < .01; ***p < .001
Table 11 summarizes the findings of this study.

Table 11. Results of Hypotheses and Research Questions

<table>
<thead>
<tr>
<th>Hypotheses and Research Questions</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1: People who are exposed to campaign ads on a more interactive channel will learn more about the campaign than those who are exposed to campaign ads on a less counterpart.</td>
<td>Not supported. No significant difference between high and low interactive channels in campaign learning.</td>
</tr>
<tr>
<td>H2: People who are exposed to campaign ads on a higher interactive channel will evaluate the candidate-related information more favorably than those who are exposed to campaign ads on a lower counterpart.</td>
<td>Not supported. No significant difference between high and low interactive channels in candidate evaluation.</td>
</tr>
<tr>
<td>H3: People who are exposed to campaign ads on a higher interactive channel will be more likely to engage in political behaviors for the candidate than those who are exposed to campaign ads on a lower counterpart.</td>
<td>Not supported. No significant difference between high and low interactive channels in political behavior.</td>
</tr>
<tr>
<td>H4: People who are exposed to campaign ads on Facebook will learn more about the campaign than those who are exposed to campaign ads on Twitter.</td>
<td>Supported. Participants who were exposed to campaign ads on Facebook $(M = .83, SD = .20)$ obtained significantly higher scores of campaign learning than those who</td>
</tr>
<tr>
<td>Hypothesis</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-------------</td>
</tr>
<tr>
<td>H5:</td>
<td>People who are exposed to campaign ads on Facebook will evaluate the candidate-related information more favorably than those who are exposed to campaign ads on Twitter.</td>
</tr>
<tr>
<td>H6:</td>
<td>People who are exposed to campaign ads on Facebook will be more likely to engage in political behaviors for the candidate than those who are exposed to campaign ads on Twitter.</td>
</tr>
<tr>
<td>H7:</td>
<td>People who are exposed to audiovisual campaign ads will learn more about the campaign than those who are exposed to visual campaign ads.</td>
</tr>
<tr>
<td>H8:</td>
<td>People who are exposed to audiovisual campaign ads will evaluate the candidate-related information more favorably than those who are exposed to visual campaign ads.</td>
</tr>
<tr>
<td>RQ1. Under what combined conditions are ads most effective in increasing individual’s learning about campaign information?</td>
<td>There is a significant two-way interaction between modality and social media platform ($F(1, 305) = 11.163, \eta^2 = .035, p &lt; .001$). Audiovisual campaign ads on Twitter were most effective and visual campaign ads on Twitter were least effective.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>RQ2. Under what combined conditions are ads most effective in increasing individual’s favorable evaluation toward the candidate-related information?</td>
<td>There is a significant two-way interaction between modality and social media platform ($F(1, 305) = 4.731, \eta^2 = .015, p &lt; .05$). Visual campaign ads on Twitter were most effective and visual campaign ads on Facebook were least effective.</td>
</tr>
<tr>
<td>RQ3. Under what combined conditions are ads most effective in increasing individual’s political behaviors</td>
<td>There was a significant effect of social media platform on political behavior</td>
</tr>
</tbody>
</table>
for the candidate? | $(F(1, 305) = 11.374, \eta^2 = .036, p < .001)$. Campaign ads on Twitter were more effective than campaign ads on Facebook.
CHAPTER FIVE

DISCUSSION

Since McLuhan (1964, p. 7) made the claim that “the medium is the message,” studies on channels of communication have proliferated. Researchers have been especially curious about the role channels can play in the receiver’s interpretation of a message (Kaid & Postelnicu, 2005). In relation to political campaigns, candidates employ a new communication channel when it appears to be able to help them spread their messages. Before the emergence of the Internet, scholars regarded massive campaign coverage by media as a type of political campaign that is different from interpersonal campaigning such as coffees or door-to-door canvassing. Further, scholars have investigated the power of each medium in political campaigns, focusing on modalities that correspond to human senses (i.e., print media for seeing, radio for hearing, and television for both seeing and hearing). Scholars are currently investigating the different effects of the Internet compared to other traditional media based on its massive and interpersonal campaigning characteristics in different modes such as oral and/or visual presentation. Since the successful use of Facebook and Twitter in the 2008 presidential election, many studies have paid attention to the role of social media in individual’s political responses as a more personalized and dialogical campaigning tool compared to websites and online communities.

However, studies on the influence of social media have produced mixed results, with some demonstrating that political cognition, emotion, and behaviors were enhanced by exposure to social media in political campaigns and others finding no significant effect. Further, few studies have looked at the different characteristics of social media in consideration of its
dialogical and interactive features nor investigated the different uses of each of social media platform with the same contents in different modes of presentation. Hence, the present study examines the effects of social media on political outcomes (i.e. campaign learning, candidate evaluation and political behavior) while considering different characteristics of social media, including social media platform (i.e., Facebook vs. Twitter), interactivity (i.e., high vs. low) and modality (i.e. visual vs. audiovisual).

The overall findings supported the proposed hypotheses about different effects of social media platform on campaign learning and different effects of modality on campaign learning and candidate evaluation. Specifically, Facebook and Twitter differently influence campaign learning (H4), and visual and audiovisual advertisements differently influence campaign learning (H7) and candidate evaluation (H8). However, no significant effects of interactivity on political outcomes were found. Further, the findings did not support the hypotheses about different effects of interactivity, social media platform, and modality on political behaviors. Interestingly, however, under combined conditions of social media platform and modality when involvement variables were used as covariates, a significant interaction was found in campaign learning and candidate evaluation. An effect of social media platform on political behavior was also found, controlling for involvement variables. The specific findings are discussed below.

**No Significant Effects of Interactivity on Political Outcomes**

The results for the first three hypotheses and the three research questions indicated no significant effect of interactivity on campaign learning, candidate evaluation, and political behavior. Several factors may influence this insignificant effect. In this study, interactivity is manipulated by varying the interface’s capacity for communication between users and the interface including “reply,” “retweet,” “favorite,” “share,” and “like”. However, it still remains
unknown which technological elements of social media platforms contribute to interactivity. According to Sundar et al. (2003), not only the interface’s interactive features but the user’s involvement in interactive communication should be included in the categorization of interactivity. In order to fill the gap between the interface’s and user’s side of interactivity, the present study measured perceived interactivity and found that the manipulation was successful. However, the scores of participants’ self-reported answers were still low even for high interactive channels so that it is still unclear whether participants really paid attention to the interactive nature of social media or engaged in interactive use of the social media platform. Unfortunately, the experiment and survey method used in this study do not examine the relationship between the features of interactivity and the user’s participation in interactive communication. Additional in-depth interview methods or a simulated online experiment may be able to cover this topic more thoroughly in future studies.

Theories related to interactivity such as the theory of user control, the theory of structural isomorphism, the media richness theory, and the social presence theory note that channels with certain interactive features (e.g., user controllability, hypertextual structures, feedback capability, and social presence) enhance cognitive, emotional, and potential behavioral responses under the condition that individual’s cognitive demand and disorientation are low. According to this notion, individual’s cognitive demand and disorientation may influence the results. Further, as suggested in the theory of user control, some variables such as users’ personal interests, abilities, background knowledge, and learning style may influence the expected outcome, especially in relation to campaign learning (Eveland & Dunwoody, 2002). However, it is impossible to consider all confounding variables in an experimental setting. To systematically examine interactivity effects on political outcomes, future researchers should include covariate measures
such as cognitive demand, disorientation, personal interests, abilities, background knowledge, and learning style.

**Interaction Effects of Modality and Social Media on Campaign Learning**

As expected, the results for H4 and H7 revealed different effects of social media platform (Facebook vs. Twitter) and modality (visual vs. audiovisual advertisements). Specifically, the results for H4 revealed that Facebook viewers had greater learning about the campaign than did Twitter viewers, while the results for H7 also showed that viewers of audiovisual ads had greater campaign learning than viewers of visual ads. These findings are hardly surprising, given that each social media platform has distinct interactive features such as more direct and synchronized communication on Twitter and more two-way, interpersonal, and reciprocal communication on Facebook (Davenport et al., 2014; Hughes et al., 2011), and the result of the manipulation check of the perceived interactivity scale of the social media platform showed that participants perceived Facebook as more interactive than Twitter. This is consistent with the theory of user control and the theory of structural isomorphism, which focus on the influence of interactivity on user’s cognitive outcomes such as learning.

However, it is interesting to find a significant effect of the interaction of modality and social media platform on campaign learning shown in the result of the analysis for RQ1. The findings indicate that while audiovisual ads serve to increase campaign learning for the Twitter condition, visual ads tend to increase the level of campaign learning for the Facebook condition. These findings reveal that while audiovisual ads uniformly positively influence individual’s learning about the campaign, the effects of social media platform are not so uniform. The two-way interactions between modality and social media platform render additive consequences of
the main effects of modality and social media platform, with audiovisual ads on Twitter being most effective in contributing to campaign learning and visual ads doing the same for Facebook.

The findings confirmed that social media play an important role in providing political information based on its interactive nature, as noted in prior studies (see Delacourt, 2014; Gottfried, 2014; Rutledge, 2013). However, the findings additionally demonstrated that different use of the social media platforms with different cues may result in different effects on political learning. For example, prior research has shown that Facebook use is more linked to involving users in various social and informational activities, while Twitter use is more linked to engaging politically interested users in gaining political information (Delacourt, 2014; Gottfried, 2014; Rutledge, 2013). According to the theories of interactivity (e.g., the theory of user control, the theory of structural isomorphism, the media richness theory, the social presence theory, cognitive load, and disorientation), a more interactive communication channel increases users’ learning, but cognitive overload impedes learning. The theories of modality (e.g., dual coding and cue summation theories, the limited capacity information-processing model, and the multiple resource theory) also suggest that stimuli with more cues (e.g., visual and audio information) evoke more powerful effects on learning and emotional reactions than those with a single cue (e.g. visual information), but only as far as the individual has the capacity to process the cues. Based on these suggestions, these findings may also be due to individual differences in the usability, structure, and design of Facebook and Twitter, as noted in prior studies (see Kaid, 2004; Kaid & Holtz-Bacha, 2006; Sundar, 2004). However, this assumption is beyond the topical and methodological areas of this study, and thus future research into the effects of modality, individual’s mental capacity, and message congruency will be needed to provide more theoretical elaboration.
Interaction Effects of Modality and Social Media on Candidate Evaluation

Inconsistent with expectations, the results for H5 demonstrated no significant difference in candidate evaluation between Facebook and Twitter users. However, as expected, the results for H8 showed that viewers of audiovisual ads had more favorable candidate evaluation than viewers of visual ads. The results of the analysis for RQ2 indicated a significant effect of the interaction between modality and social media platform on candidate evaluation. Specifically, audiovisual ads on Facebook tend to increase favorable candidate evaluation more than visual ads on Facebook, while visual ads on Twitter had more favorable candidate evaluation than audiovisual ads on Twitter.

These inconsistencies in the results between H5 and RQ2 may be due to the powerful influence of a covariate such as political orientation on candidate evaluation. Findings demonstrated that an individual’s political orientation explains 51.8% of variance, while interaction between modality and social media platform explains only 1.5% of variance on the effects on candidate evaluation. These findings are hardly surprising, given that dual-processing models such as the Elaboration Likelihood Model (ELM) and the heuristic-systematic information processing model (HSM) suggest that people who have higher involvement with the messages tend to be more susceptible to being persuaded by the content of advertisements than those who have lower involvement with the messages. Since this study used advertisement stimuli of a Republican candidate, people who perceived themselves as conservative (higher involved condition) are likely to be more persuaded by the contents of the advertisements than those who perceived themselves as liberal (lower involved condition).

Given that social media are based on interactivity, the interaction effects of modality and social media platform on candidate evaluation can be explained by Sundar’s (2004) argument
about the combined effects of interactivity and modality on users’ attitudinal responses to the interface. Sundar noted that interactivity may additively combine with a technological variable such as modality to increase favorable attitudes, but a plethora of such cues may evoke negative attitudes. Sundar provided several propositions to explain the reason for this argument. First, the abundance of cues through combination impedes gaining information that requires users’ evaluation. Second, the appearance of such cues alters the way users perceive interactivity. Third, more cues lead to more distraction because the process of perception is attentional.

The media richness theory and the social presence theory also provide possible reasons for the combined effects of modality and social media platform on candidate evaluation based on the effects of the number of cues provided by a medium. According to the media richness theory, a richer medium which provides more attributes (e.g., quicker feedback between users and more social, non-verbal, and complex cues) and satisfies the user’s need to communicate, leading to more favorable evaluations toward the products the medium advertises than a lean medium (Coyle & Thorson, 2001; Dennis & Kinney, 1998; Ledford, 2012; Sheer, 2011; Simon & Peppas, 2004; Sundar, 2000). The social presence theory posits that a higher-presence medium perceived by users as more personal, more sociable, more sensitive, and warmer facilitates more favorable attitudes toward the agent than a lower presence medium (Kuma & Benbasat, 2002; Park & Lee, 2013; Skalski & Tamborini, 2007).

However, although these theories suggest an association between the extent of richness or social presence of a medium and users’ emotional responses, the particular attributes the medium holds that create the individual’s perception of the cues of the richness or social presence of a medium are unclear. Future research on individuals’ perceptions of the richness and social presence of a medium should consider the degree of complex cues in accordance with
interactivity, modality, and social media platform. This detailed investigation should give more insight into the emotional responses to the combination of interactivity, modality, and social media platform.

**Effect of Social Media on Political Behavior**

The results for H3, H6, and H9 represent insignificant effects of interactivity, modality, and social media platform on political behavior. This insignificant effect is not shocking, given that research on political advertising has hardly substantiated the direct effects of political ads on receiver behavior (Kaid, 2004; Kaid & Holtz-Bacha, 2006).

However, the result of the analysis for RQ3 revealed a significant effect of social media on political behavior when an individual’s political involvement variables such as political orientation and prior participatory behaviors and an individual’s cognitive and emotional involvement with social media platform were used as covariates. Prior findings related to the effects of social media on political outcomes have been mixed (Bollen, Mao, & Pepe, 2010; Hesseldahl, MacMillan, & Kharif, 2008; Marchese, 2008; Owen, 2008; Ancu & Cozma, 2009; Gil de Zúñiga, Puig, & Rojas, 2009). The findings of this study support the idea that involvement affects the relationship between exposure to social media use and political behavior. Specifically, the findings indicated that Twitter tends to be more effective for increasing political behavior than Facebook under the condition that involvement variables were used as covariates. In particular, an individual’s political orientation explains 24.1% of variance, prior participatory behaviors explains 8.2% of variance, cognitive involvement with social media platform explains 3.9% of variance, and emotional involvement with social media platform explains 2.0% of variance, while the effect of social media platform explains 3.6% of variance on political behavior. These findings suggest that an individual’s political involvement variables such as
political orientation and prior participatory behaviors and the individual’s cognitive and emotional involvement with social media platform are significant variables that influence political behaviors. These findings are in line with prior research demonstrating significant effects of political advertising on political behaviors, especially focusing on channel difference and receiver variables such as involvement (Kaid, 2002; Rothschild & Ray, 1974).

However, questions about how political involvement and cognitive and emotional involvement with Facebook and Twitter interactively and/or differently influence the relationship between the exposure of each social media and political behavior are still unsolved and beyond the scope of this study. Future research focusing on the effects of individuals’ cognitive and emotional involvement with channels on political outcomes in various situations will provide more solid theoretical explication of the effects of individual involvement.
CHAPTER SIX
CONCLUSION

The aim of the present study is to examine whether and/or how different channels of political advertisements affect the audience’s cognitive, emotional, and behavioral responses in the social media context. In order to investigate the effects of different channels of political advertisements, different channels such as social media platform (Facebook vs. Twitter), the level of interactivity (high vs. low) and modality (visual vs. audiovisual advertisements) were used as predictors.

Previous studies of the relationship between media use and political outcomes have often used the terms “medium,” “channel,” and “modality” interchangeably or have not clearly differentiated between them. With the emergence of the Internet, the boundaries of these terms are more blurred. In order to resolve the mixed use of concept, the present study started by reexamining different conceptualizations of medium, channel, mode of presentation, and media platform (e.g., Berlo, 1960; Chong, 2012; Lasswell, 1948; McLuhan, 1964; Shannon & Weaver, 1949) and conceptualized each of the medium, channel, modality, and media platform. Further, by reviewing unique characteristics of social media, the study included interactivity and modality in addition to different social media platforms such as Facebook and Twitter. These aspects of this study provide a better understanding of the validity of traditional theories about medium and communication channel, especially in the social media context.

In terms of cognitive, emotional, and behavioral effects of interactivity and modality, prior studies have provided mixed results based on different theoretical frameworks. Since a
single conceptualization of interactivity does not exist, the study further investigated the theories related to certain interactive features of social media such as user control, hypertexuality, real-time interaction, and direct, two-way, interpersonal, and reciprocal relationships. Regarding the effects of interactivity, for example, the theory of user control, the theory of structural isomorphism, the media richness theory and the social presence theory suggest that interactive channels provoke more cognitive, emotional, and potential behavioral responses, but cognitive load and disorientation impede cognitive responses. Similarly, in terms of the effects of modality, dual coding and cue summation theories suggest that channels with multiple cues increase cognitive, emotional, and potential behavioral responses in contrast to the limited-capacity information processing and multiple resource theories. Given that lack of explanation of the effects of interactivity and modality in relation to social media, especially in the political campaign context, this study attempts to theorize the cognitive, emotional, and behavioral effects of interactivity, modality, and social media platform based on theories of interactivity and modality in addition to empirical studies on the effects of political advertising. Therefore, this study will provide theoretical contributions to the understanding of individuals’ cognitive, emotional, and behavioral reactions to different channels in the political campaign context.

The findings of this study suggest that interactivity, modality, and social media platform differently influence campaign learning, candidate evaluation, and political behavior. Specifically, Facebook generated greater campaign learning than Twitter without consideration of other factors such as interactivity and modality, and audiovisual advertisements generated greater campaign learning than visual counterparts. However, there were interactive effects on campaign learning and candidate evaluation when social media are combined with modality. In terms of responses to political behavior, significant effects of social media platform were found
when political orientation, political participation, and cognitive and emotional involvement with social media were added as covariates, showing that Twitter generated more political behaviors than Facebook.

Practically, the findings of this study may help politicians and political campaign practitioners build appropriate strategies for political campaigns through social media platforms to encourage their target publics to engage in their expected political activities including political learning, candidate evaluation, and political behaviors. For example, campaign strategies should be designed differently according to the public they wish to target, the social media they wish to use, and the goal they wish to meet.

**Study Limitations**

The findings of this study should be interpreted with caution. First, this study obtained participants from the subject pool of Amazon.com’s Mechanical Turk (MTurk). Regarding the quality of data using MTurk, Buhrmester, Kwang and Gosling (2011, p. 3) found that 1) MTurk participants are slightly more demographically diverse than are standard Internet samples and are significantly more diverse than typical American college samples; 2) participation is affected by compensation rate and task length, but participants can still be recruited rapidly and inexpensively; 3) realistic compensation rates do not affect data quality; and 4) the data obtained are at least as reliable as those obtained via traditional methods. Although the MTurk has the potential to recruit a diverse subject pool rapidly and inexpensively, this population has different levels of gender, age, education, political knowledge, political ideology, political interest, and use of social media compared with the general public; these may influence the outcomes of this study (Berinsky, Huber, & Lenz, 2012). However, unlike a survey method, an experiment does not require the generalizability of the findings but focuses on testing causal effects of two
variables in certain theoretical condition. Nevertheless, replication of the findings in various settings will provide broader knowledge of the effects of political advertisements.

Second, the measurement of key variables such as interactivity and cognitive, emotional, and behavioral responses may also pose a limitation. With regard to the measure of interactivity, the study manipulated high and low interactivity conditions based on the number of interactive features such as “reply,” “retweet,” and “favorite” for Twitter and “reply,” “share,” and “like” for Facebook. Given that the concept of interactivity is defined in this study as an interactive communication process between the structure of a communication channel and user’s perception, the best way to measure high and low interactivity condition would be to measure the interactive communication process between the structure of a communication channel and the user’s perception in real time. The measurement used in this study focused on the structure of a communication channel rather than the user’s perception of interactivity. To overcome this drawback, the study used participants’ self-reported answers about the different interactive nature of the advertisements they watched via social media platform. However, the scores of participants’ self-reported answers were still low for both high and low interactive channels. Thus, it is still unclear whether participants are really engaged in the interactive use of the social media platform. Future researchers should replicate the findings of this study using in-depth interview or a simulated online experiment to validate the measurement of interactivity. In a similar vein, this study measured cognitive response as “campaign learning,” emotional response as “candidate evaluation,” and behavioral response as “political behavior” based on Kaid’s (2004) conceptualization of the effects of political advertising. However, cognitive, emotional, and behavioral responses can be measured as more than the three variables used in this study. For example, some cognitive responses such as attention, recognition, awareness, and thoughts are
still untested. Future investigation of the instruments to measure untested variables of cognitive, emotional, and behavioral responses is needed to ensure the validity of the measurement.

The lack of other variables related to cognitive, emotional, and behavioral outcomes in the political campaign context is the third limitation of this study. In addition to involvement with media channels, prior studies suggested that sociodemographic variables (e.g., gender, age, race, income, years of education, and region), media engagement variables (e.g., news media use and interactive media use), political variables (e.g., political interest, political efficacy, political trust, strength of party identification, and interpersonal political discussion) can be expected to be mediators between exposure to political advertising and expected political outcomes, especially voting behaviors (Cho et al., 2009; Jung, Kim, & Gil de Zúñiga, 2011; Lee, Shah, & McLeod, 2012; Shah, Cho, Eveland, & Kwak, 2005; Shah et al., 2007). In this sense, future researchers that are considering the effects of demographic, personality, political, and media use variables should review and replicate the findings of this study.

Finally, this study used political campaign advertisements of one of the candidates in the 2015 Kentucky gubernatorial election as the stimuli. The time frame and campaign stimuli may have been beneficial to the study in that this study intends to control the effects of participant’s prior knowledge about the campaign by removing data from participants who are familiar with the political campaign and the candidate. However, future studies in other election settings or the non-election setting would broaden the knowledge of expected cognitive, emotional, and behavioral responses to channel differences in political campaign advertisements.
REFERENCES


107


Bodensteiner, W. D. (1970). *Information channel utilization under varying research and development project conditions: an aspect of inter-organizational communication channel usage*. The University of Texas at Austin


112


118


123


APPENDIX A

Institutional Review Board (IRB) Approval Form

June 5, 2015

Yeejin Kim
College of Communication and Information Sciences
The University of Alabama
Box 870152

Re: IRB # 15-OR-185, “Channel Differences in political campaign advertisements and their effects on individuals' cognitive, emotional, and behavioral responses in social media context”

Dear Ms. Kim:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. You have also been granted the requested waiver of informed consent. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on June 2, 2016. If your research will continue beyond this date, please complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, please complete the Modification of an Approved Protocol form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure form.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Stuart Udall, Ph.D.
Chair, Non-Medical IRB
The University of Alabama
Participant Information Sheet

Julie Kim, Principal Investigator from the University of Alabama, is conducting a study called “a political campaign study.” She wishes to find out your views on political issues.

Taking part in this study involves completing a web survey that will take about 15 minutes. This survey contains questions about a potential voter’s perspective on the current U.S. election.

No individual information or identifying information that could trace your answers back to you will ever be reported, and your answers will be kept strictly confidential. Only the researchers have access to the data collected from this research. The surveys themselves do not ask for your name or any clearly identifiable information. Data such as age, sex, and race are used only to provide general descriptions of the data and never to provide the answers of any particular participant. Only summarized data will be presented at meetings or in publications.

Although benefits cannot be promised in research, it is possible/likely that you will find a few moments to reflect on your views on a political campaign. This may provide you with an opportunity to assess your political attitude and behaviors.

As researchers, we do not foresee any risks. Remember, though, it is perfectly within your rights to stop taking the survey if you do not feel comfortable with the content.

When you finish this survey, Amazon Mechanical Turk System will offer you $1 for your participation. If you choose not to participate in this study, however, you can stop at any time.

If you have questions regarding this study, please email the investigator: Ms. Julie Kim at ykim77@crimson.ua.edu. If you have questions about your rights as a person taking part in a research study, or you wish to make suggestions or file complaints and concerns, you may call Ms. Tanta Myles, the Research Compliance Officer of the University at (205)-348-8461 or toll-free at 1-877-820-3066. You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach Website at http://osp.ua.edu/site/PRCO_Welcome.html. You may email us at participantoutreach@bsma.ua.edu. This helps UA improve its protection of human research participants.

YOUR PARTICIPATION IS COMPLETELY VOLUNTARY. You are free not to participate or stop participating any time before you submit your answers.

*I understand the information sheet and wish to continue
Debriefing Statement

Thank you for participating in this research. Your responses may be used to understand potential voters’ perspective on the current U.S. election.

The political advertising you watched during the survey was used to examine how voters respond to different communication channels in political advertisements in social media context. The advertising was edited to remind you of campaign information for the Kentucky Gubernatorial Election. This study is designed to investigate under what conditions (print-based ad on Facebook, audiovisual ad on Facebook, print-based ad on Twitter, and audiovisual ad on Twitter), issue ads are most effective in 1) individuals’ learning campaign information, 2) positive candidate evaluation, and 3) voting intention. For this purpose, you were randomly assigned to watch one of four conditions to answer the questions. Results from this research will be useful to academic development in social science and your responses will be protected.

You can withdraw your answers if you do not want to participate in this study by checking the box saying “please withdraw my data from this study.” Researchers must destroy your answers as soon as possible and it must not be included in the final research analysis.

If you have any questions or concerns about any aspect of this research, please contact the research director, Ms. Julie Kim, a PhD candidate, ykim77@crimson.ua.edu, (205) 765-3519.

Thank you for your participation.

UA IRB Approved Document
Approval date: 6-3-15
Expiration date: 6-2-16
APPENDIX B

Survey Questionnaire

[Study Information]

Julie Kim, Principal Investigator from the University of Alabama, is conducting a study called “a political campaign study.” She wishes to find out your views on political issues.

Taking part in this study involves completing a web survey that will take about 15 minutes. This survey contains questions about a potential voter's perspective on the current U.S. election.

No individual information or identifying information that could trace your answers back to you will ever be reported, and your answers will be kept strictly confidential. Only the researchers have access to the data collected from this research. The surveys themselves do not ask for your name or any clearly identifiable information. Data such as age, sex, and race are used only to provide general descriptions of the data and never to provide the answers of any particular participant. Only summarized data will be presented at meetings or in publications.

Although benefits cannot be promised in research, it is possible/likely that you will find a few moments to reflect on your views on a political campaign. This may provide you with an opportunity to assess your political attitude and behaviors.

As researchers, we do not foresee any risks. Remember, though, it is perfectly within your rights to stop taking the survey if you do not feel comfortable with the content.

When you finish this survey, Amazon Mechanical Turk System will offer you $1 for your participation. If you choose not to participate in this study, however, you can stop at any time.

If you have questions regarding this study, please email the investigator Ms. Julie Kim at ykim77@crimson.ua.edu. If you have questions about your rights as a person taking part in a research study, or you wish to make suggestions or file complaints and concerns, you may call Ms. Tanta Myles, the Research Compliance Officer of the University at (205)-348-8461 or toll-free at 1-877-820-3066. You may also ask questions, make suggestions, or file complaints and concerns through the IRB Outreach Website at http://osp.ua.edu/site/PRCO_Welcome.html. You may email us at participantoutreach@bama.ua.edu. This helps UA improve its protection of human research participants.

YOUR PARTICIPATION IS COMPLETELY VOLUNTARY. You are free not to participate or stop participating any time before you submit your answers.

*I understand the information sheet and wish to continue
YES, I AGREE TO PARTICIPATE.
NO, I DECIDED NOT TO PARTICIPATE.

[Familiarity with the Kentucky Gubernatorial Election]
Q. How familiar are you with the Kentucky gubernatorial election?

Very unfamiliar
Unfamiliar
Somewhat familiar
Familiar
Very familiar

[Familiarity with the Candidate]
Q. How familiar are you with the candidate, Hal Heiner?

Very unfamiliar
Unfamiliar
Somewhat familiar
Familiar
Very familiar

[Political Orientation]
Q. Please mark which best identifies your political views.

Very Liberal
Liberal
Moderate
Conservative
Very Conservative

[Partisanship]
Q. Generally speaking, do you usually think of yourself as a Republican, a Democrat, an Independent, or what?

Democrat
Independent
Republican
Other
Do not know

[Political Participation]

Q. Have you ever done any of the following activities within the last 12 months?

(I have ......................)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Never</th>
<th>Yes, but not within the last 12 months</th>
<th>Yes, within the last 12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worked or volunteered for political groups or candidates</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Called or sent a letter to an elected public official</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contacted a public official in person</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attended a political rally or political meetings (e.g., board or council)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participated in any demonstrations, protests, or marches on some national or local issue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voted in the 2012 presidential election</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participated in organizations or groups that took any local action for social or political reform</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Been involved in political groups or candidates in person</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Donated money to political groups or candidates</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Cognitive Involvement with Facebook**

Q. How much do you agree or disagree with each of the following statements?

<table>
<thead>
<tr>
<th></th>
<th>1 Strongly disagree</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I pay close attention when I use Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I carefully read the content when I use Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I pay close attention to the content when I use Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I miss parts of the content when I use Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I put a lot of mental effort into using Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think about what the content means to me and my family when I use Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think about how the content is related to other things I know when I use Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think about what the content means to other people when I use Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think about the content over and over again when I use Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think about what should be done when I use Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I understand Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I recognize the places of content on Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I recognize the names of content on</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Facebook.

I get confused by the content on Facebook.

The content seems too complicated to understand on Facebook.

**[Cognitive Involvement with Twitter]**

Q. How much do you agree or disagree with each of the following statements?

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I pay close attention when I use Twitter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I carefully read the content when I use Twitter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I pay close attention to the content when I use Twitter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I miss parts of the content when I use Twitter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I put a lot of mental effort into using Twitter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think about what the content means to me and my family when I use Twitter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think about how the content is related to other things I know when I use Twitter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think about what the content means to other people when I use Twitter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think about the content over and over again when I use Twitter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I think about what should be done when I use Twitter.

I understand Twitter.

I recognize the places of content on Twitter.

I recognize the names of content on Twitter.

I get confused by the content on Twitter.

The content seems too complicated to understand on Twitter.

[Emotional Involvement with Facebook]

Q. While using Facebook, how much do you agree or disagree with each of the following statements?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Strongly disagree</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5 Strongly agree</td>
</tr>
</tbody>
</table>

I feel a warm inner glow.

I feel like smiling.

I feel a warm excitement.

I feel happy.

I feel like laughing.

I feel my blood pressure go up.

I feel like clenching my fists.

I feel like clenching my teeth.

I feel my face get tight, tense, and hard.
I get angry.
I feel a lump in my throat.
I feel myself getting choked up.
My heart seems to ache.
Tears come to my eyes.
I feel sad.

**[Emotional Involvement with Twitter]**

Q. While using Twitter, how much do you agree or disagree with each of the following statements?

<table>
<thead>
<tr>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel a warm inner glow.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. I feel like smiling.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. I feel a warm excitement.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. I feel happy.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. I feel like laughing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. I feel my blood pressure go up.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. I feel like clenching my fists.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. I feel like clenching my teeth.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. I feel my face get tight, tense, and hard.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I get angry.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. I feel a lump in my throat.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
I feel myself getting choked up.

My heart seems to ache.

Tears come to my eyes.

I feel sad.

[Stimuli for Visual Advertisements]

Q. Now, you will see a political advertisement related to the current gubernatorial election. Please watch this advertising carefully.

[Stimuli for Audiovisual Advertisements]

Q. Now, you will see a political advertisement related to the current gubernatorial election. Please adjust the speaker volume, then click the following link and watch this advertising carefully.

[Visual Ad with High Interactivity on Facebook]
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.

00
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.

00
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.

00
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.

00
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.

00
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.

00
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.

00
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.
This question lets you record and manage how long a participant spends on this page. This question will not be displayed to the participant.

00
[Audio-visual Ad with High Interactivity on Facebook]

http://fille222.wix.com/halheiner1
[Audio-visual Ad with Low Interactivity on Facebook]

http://fille222.wix.com/halheiner2
[Audio-visual Ad with High Interactivity on Twitter]

http://fille222.wix.com/halheiner4
[Audio-visual Ad with Low Interactivity on Twitter]

http://fille222.wix.com/halheiner3
**Perceived Interactivity of Facebook**

Q. How much do you agree or disagree with each of the following statements?

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interacting with Facebook was like having a conversation with a representative of the campaign.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt as if the candidate's Facebook talked back to me while I was navigating.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I perceive the candidate's Facebook to be sensitive to my needs for information.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate's Facebook is interpersonal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I could communicate directly to the candidate if I wanted to using the candidate's Facebook.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate's Facebook is interactive.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate's Facebook had the ability to respond to my specific questions quickly and efficiently.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is easy to find my way through the candidate’s Facebook page.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate's Facebook has a variety of information.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Perceived Interactivity of Twitter

Q. How much do you agree or disagree with each of the following statements?

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Neither Agree nor Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interacting with Twitter was like having a conversation with a representative of the campaign.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I felt as if the candidate's Twitter talked back to me while I was navigating.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I perceive the candidate's Twitter to be sensitive to my needs for information.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate's Twitter is interpersonal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I could communicate directly to the candidate if I wanted to using the candidate's Twitter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate's Twitter is interactive.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate's Twitter had the ability to respond to my specific questions quickly and efficiently.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is easy to find my way through the candidate’s Twitter page.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate’s Twitter has a variety of information.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
[Campaign Learning]

Q. Please mark whether each of the statements is correct, incorrect, or "do not know".

<table>
<thead>
<tr>
<th>Statement</th>
<th>Incorrect</th>
<th>Correct</th>
<th>“Do not know”</th>
</tr>
</thead>
<tbody>
<tr>
<td>The candidate favors Obama's policy.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate supports drug testing for welfare recipients.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate has a plan to increase Kentucky jobs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate suggests making verify immigration screening.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate is the &quot;Frankfort outsider.&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate is a candidate for Governor of Kentucky.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate is liberal.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The candidate was not a successful businessman.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Candidate Evaluation toward the Candidate]

Q. How do you rate your feelings toward Hal Heiner?

<table>
<thead>
<tr>
<th>1= Unfavorable (Cold), 5 = Favorable (Warm)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>
[Candidate Evaluation toward the Campaign Issues]

Q. How do you rate your feelings toward the campaign issues endorsed by Hal Heiner?

1 = Unfavorable (Cold),
5 = Favorable (Warm)

[Candidate Evaluation toward the Party]

Q. How do you rate your feelings toward the party to which Hal Heiner belongs?

1 = Unfavorable (Cold),
5 = Favorable (Warm)

[Voting Intention]

Q. Assuming you were a resident of Kentucky, if the election were held tomorrow, how likely would you be to vote for the candidate in the advertising you just watched?

Very unlikely
Unlikely
Undecided
Likely
Very likely
[Information Seeking Behaviors]

Q. How likely or unlikely would you be engage in each of the following activities?

<table>
<thead>
<tr>
<th>Activity</th>
<th>1 Very unlikely</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 Very likely</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watch more ads</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Watch news about the candidate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volunteer to work in the candidate's campaign</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participate in online chat about the candidate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Talk with friends about the candidate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read newspaper articles about the candidate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact the candidate directly</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use the Internet for general campaign information about the candidate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vote in the next election</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contribute money to the candidate's campaign</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use the internet to get more information on issues of the candidate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Go to the candidate's Web page</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Gender]

Q. What is your gender?
Male

Female

[Age]

Q. How old are you?

[Education]

Q. What is the highest grade of regular school that you have completed and gotten credit for?

Grammar and Less

Some HS

HS Grad/GED

Some College

College Grad

Some Grad Work

Master's

PhD/Prof

[Race and/or Ethnicity]

Q. Please identify your race and/or ethnicity.

African American or Black

Asian or Asian American

Latino or Hispanic

Pacific Islander or Native Hawaiian

White-Non Hispanic
Biracial (any combination or the above)

Other

[Income]

Q. What is your household's level of income?

Less than $20,000

$20,000 to $39,999

$40,000 to $59,999

$60,000 to $79,999

$80,000 to $99,999

$100,000+

[Region]

Which region of the country do you live in?

Northeast

Mid-Atlantic

North

South

Midwest

West

I do not live in the U.S.

[Debriefing Statement]

Thank you for participating in this research. Your responses may be used to understand potential voters' perspective on the current U.S. election.

The political advertising you watched during the survey was used to examine how voters respond to different communication channels in political advertisements in social media context. The advertising was edited to remind you of campaign information for the Kentucky Gubernatorial
Election. This study is designed to investigate under what conditions (print-based ad on Facebook, audiovisual ad on Facebook, print-based ad on Twitter, and audiovisual ad on Twitter), issue ads are most effective in 1) individuals' learning campaign information, 2) positive candidate evaluation, and 3) voting intention. For this purpose, you were randomly assigned to watch one of four conditions to answer the questions. Results from this research will be useful to academic development in social science and your responses will be protected.

You can withdraw your answers if you do not want to participate in this study by checking the box saying “please withdraw my data from this study.” Researchers must destroy your answers as soon as possible and it must not be included in the final research analysis.

If you have any questions or concerns about any aspect of this research, please contact the research director, Ms. Julie Kim, a PhD candidate, ykim77@crimson.ua.edu, (205) 765-3519.

Thank you for your participation.

Comment:

[Withdrawal of Data]

Q. Please withdraw my data from this study

Yes

No