NATIONAL TELEVISION NEWS AND NEWSPAPERS AS MEDIA SALIENCE,

TWITTER AS PUBLIC SALIENCE: AN AGENDA-SETTING EFFECTS ANALYSIS

by

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ABSTRACT

The new social medium Twitter provides a unique opportunity for agenda setting scholars as a new source of public opinion. This thesis argued that this new measurement could be used as an indirect measurement of public salience. Twitter stores information posted by users of its service in a searchable and quantifiable mode. Freeing information that was private on other social networking sites, such as Facebook, issues can be tracked on Twitter much like that of a news archive, such as Google News or The Vanderbilt Television News Archive.

Three popular public issues were tracked for a total of 92 days. The issues chosen were Immigration, BP Oil and the Mortgage and Housing Crisis. First and second-level agenda-setting variables were coded for national television newscasts and newspapers. These variables were interpreted as measurements of media salience and assigned as independent variables. In addition, Tweets were tracked and labeled as public salience. They were inversely named as dependent variables. Correlations were assessed, and a time series analysis was conducted to determine whether the independent variables were sufficient predictors of the dependent variables.

Alternative explanations and conjecture not withstanding, this thesis found a mild relationship between media salience and public salience as it defined it. For the issues of BP Oil and the Mortgage and Housing Crisis, two independent variables were predictors of the dependent variables. For the issue of Immigration, only one independent variable was a
predictor. The lack of predictors for the Immigration issue was attributed to an error between dependent and independent variables. Media salience was determined to consist of national news stories while public salience was determined to contain global stories. For all cases, the agenda-setting effect occurred on the same day.

Ultimately, this thesis was an extension of agenda setting into a new digital medium. The mild support found echoes the agenda-setting research of the past that states traditional mass media outlets affect and set the agenda of the publics that listen to them.
**LIST OF ABBREVIATIONS AND SYMBOLS**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AR</td>
<td>Autoregressive</td>
</tr>
<tr>
<td>ARIMA</td>
<td>Autoregressive integrated moving average</td>
</tr>
<tr>
<td>DV</td>
<td>Dependent Variable</td>
</tr>
<tr>
<td>df</td>
<td>Degrees of freedom</td>
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<tr>
<td>IV</td>
<td>Independent Variable</td>
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<tr>
<td>MA</td>
<td>Moving average</td>
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<tr>
<td>OLS</td>
<td>Ordinary Least Squares test</td>
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<tr>
<td>p</td>
<td>Probability value</td>
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<tr>
<td>r</td>
<td>Pearson correlation</td>
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<tr>
<td>R²</td>
<td>Coefficient of determination</td>
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<tr>
<td>SE</td>
<td>Standard error of estimate</td>
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<tr>
<td>Sig.</td>
<td>Significance value</td>
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<tr>
<td>t</td>
<td>t-test statistic</td>
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ACKNOWLEDGEMENTS

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INTRODUCTION

Agenda setting scholars have long looked at the cross-lagged relationship between mainstream media and how it sets the agenda of the public (Servin & Tankard, 2001). Agenda setting has linked the public salience of select issues and the frequency in which those issues are mentioned in mainstream media. In agenda setting, the measurement of issue salience gauges the significance of real-world issues, stories or events. The two most common measurements of issue salience are measurements of the public’s agenda and the media’s agenda. These two types of issue salience can be referred to as public salience and media salience (Weeks et al., 2010). Media salience has been pegged as the key independent variable of agenda-setting research (Spiro, 2004). The relationship between dependent variable, issue salience and media salience is a staple analysis of agenda setting and is the core analysis of this thesis.

In the past, public salience was measured through public opinion surveys. It was difficult to retrieve accurate and representative samples of the public salience of issues in the media. Surveys concerning politics were generally conducted through both the telephone and the mail. To this day, a large investment in time and cost is still required to establish significant and representative samples. In addition, if these surveys are not treated with the utmost care, they can be subject to various biases by respondents. Agenda
setting scholars have long called for a farther-reaching and less obtrusive way to poll for public salience (Shaw, Stevenson and Hamm, 2001). Social networking and microblogging might provide alternative methods. Usage of social networking is now widespread. One out of every four and a half minutes of Internet usage in the United States is spent on blogs and social networking sites (Social Networks, 2010). Users now spend more time than ever sharing their thoughts in a public arena.

Social networking sites allow users to share their own discourses. Anything from opinions, news, thoughts and musings are now shared on three of the Internet’s most trafficked websites: Twitter, Facebook and MySpace. The newest and fastest growing of the three, Twitter, now has 17 million users and counting (Edison Research, 2010). Growing at a rate of 370,000 users per day, Twitter puts a new emphasis on social networking and openness (Miller, 2010). Twitter, by default, shares, indexes and search optimizes all of the content users post to their accounts. The result is a mass amount of publically available discourse. Fifty million Tweets are broadcasted daily. As Twitter begins to attract wider demographics, these Tweets can be thought of as a representation of what the public is saying. Many companies and politicians have begun to use Twitter as a search engine of public opinion. Some political consultants argue that the most accurate way to measure public sentiment is to evaluate the issue in question on Twitter (Brustein, 2010). This thesis argues along those lines and view Twitter as a source of public opinion that can be used as an indirect measurement of public salience. Support for this idea came after analysis when mild correlations between national mainstream media and Twitter were found.
This thesis has contended that Twitter does indeed act as a measurement of public salience and that it plays a role similar to public opinion polls. Mild support was found to support mainstream media as the predictors of Tweets, and an agenda-setting effect was shown. Like similar studies on newer technology and agenda setting, a same-day lag was evident.
BACKGROUND/LITERATURE REVIEW

Agenda Setting: A Brief Overview

This thesis relies heavily on the mass communication theory of agenda setting. Developed in the early 1970s, agenda setting came at a time when most accepted mass communication theories said the media generally had little to no effect in regard to persuasion and the general public (Severin & Tankard, 2001). Agenda setting went against this central idea and shifted the way scholars think about mainstream media today. Agenda setting is not based on persuasion in the ways that the Limited Effects Theory had conceived it. Instead of looking at the media and trying to determine whether the stories reported affect how people think about certain topics, agenda setting looks to see if the media control what topics the general public holds salient. This key conceptual difference of looking at salience has afforded almost 40 years of the continuing study of agenda setting (McCombs & Shaw, 1972).

The first study of this hypothesis came in 1972 when McCombs and Shaw looked at the presidential campaign of 1968 and the issues voters perceived as important. They hypothesized that the media would influence the importance of people’s top issues in the campaign. McCombs and Shaw did not think the media would control what viewers thought about the top issues, but instead, they hypothesized that the coverage would
influence the perceived importance of those issues to the viewers. With a high correlation, the study found that there was a relationship between what the news was reporting and people’s most importantly perceived issues.

While this breakthrough study was the first to give support for agenda setting, critics were quick to point out the lack of direction in the relationship between the media and the public’s most salient political concerns. The argument can roughly be thought of in terms of the chicken or egg riddle. Were the media simply influenced by the public’s agenda, or were the media doing the influencing? This study could not empirically establish the direction of the relationship.

The next major study looked at answering this question of causal order. McCombs and Shaw planned another study in 1977. The study featured a cross-lagged correlation, a study that uses two different points in time to help establish the order of relationships. This type of correlation helped the two authors look at which agenda changed first. The study showed that the media’s agenda served as a predictor of the public’s agenda. Still, more significant studies were needed to prove a definitive answer.

Research that Shanto Iyengar conducted in 1982 had more luck establishing relationships in agenda setting. His laboratory-based experiments involved the creation of altered newscasts that manipulated the content of the broadcasts in such a way that emphasized some issues more than others. Iyengar was able on multiple occasions to prove that those issues given more emphasis in his altered newscasts were the ones that people would, in turn, rank as more personally important. These effects were seen rather immediately, as people were often surveyed right after viewing newscasts.
The conceived notion that media can influence people’s inherent agendas provides public relations practitioners with an opportunity. If it is true that the media can manipulate what topics people think about, this means through influencing the media, one can indirectly influence these people too. Because public relations plays an important role with the media by providing newsworthy information, practitioners can ultimately influence the way the media present information.

Second-Level Agenda Setting

The second level of agenda setting is a continuation of agenda setting and serves as an enhancement of the media salience variable for this thesis. The first published study examined the elections in Navarra, Spain in 1995 (McCombs et al., 1997). This study was the first to combine the first level of agenda setting with existing framing research. Second-level agenda setting goes beyond just tracking the media salience for issues in the news.

“The focus is not on coverage of objects, but on coverage of attributes of those objects. While coverage of the object continues to influence the perceived importance of that object – as first-level agenda setting argues – second-level agenda setting argues that the attributes linked to the object in the news media are mentally linked to the object by the public. Thus, while first-level agenda setting suggests media coverage influences what we think about, second-level agenda setting suggests media coverage influences how we think, or frame, the issues we are thinking about (Craft & Wanta, 2004).”

Different types of attributes have been shown to frame public opinion in second-level agenda setting studies. Attributes include: subtopics, framing mechanisms, affective elements and cognitive effects (McCombs et al., 1997) (Craft & Wanta, 2004) (Gahnem, 1997). These attributes can inherently affect the way the public perceives issues. Framing, as second-level agenda-setting theory defines it, is the “central organizing idea for making sense of relevant events and suggesting what is at issue (Gamson, 1989).”
This thesis focused on one attribute of second-level agenda setting, framing mechanisms. Framing mechanisms deal “with the emphasis given to topics in the media, such as placement and size as well as other elements that influence the prominence of a news item. (Gahnem, 1997)” Framing mechanisms have been shown to more effectively measure the amount of media salience for news stories. By adding additional variables that can account for articles that have been given special prominence or placement, more realistic measurements of media salience can be calculated. For instance, a framing mechanism technique might call for the measurement of news articles’ length in seconds or words. Another measurement might record when or where an article or news story runs in space or time. Realizing that all news stories were not equally prominent and accounting for these different levels better measures the key independent variable of an agenda-setting study, media salience.

Contemporary Agenda Setting: Social Networking, Digital Media & the Internet

There has been a marginal amount of research on the Internet and how it might apply to the germinal findings of the agenda setting theory. Older forms of Internet-fueled communication tools, such as bulletin boards and chat rooms, have been proven to follow the agendas set by traditional media (Rogers et al., 2002) (McCombs et al., 2005). More recently, Blog agendas have also been shown to follow the agendas of mainstream media (Lee, 2007). Overall, the body of research from the last century suggests that media salience predicts public salience on the Web.

Newer articles have tackled Internet-driven social media. In a 2010 preliminary study of agenda setting and YouTube, Sayre et al. investigated if, when and to what degree
videos posted on YouTube may have led or followed traditional news media. They looked at one specific issue, California’s Proposition 8. The highly debated news story was over a ballot proposition that would redefine the laws of marriage. The study took daily frequency counts for the story in national cable news programs, national newspapers and YouTube video uploads. The study then took the three frequency counts and did an ARIMA time series analysis. As a result of the analysis, the study identified when and how traditional media led or followed YouTube content. While the findings had no one time series model that could fit the entire 14 months in which the study was conducted, some significant conclusions could still be drawn. YouTube was found to both follow and lead. Prior to the day during which the public voted on Proposition 8, YouTube public salience followed mainstream media salience. However, following the election, YouTube public salience was found to lead the way. Speculation aside, the change seen immediately following the vote could not be empirically explained.

Another 2010 study looked at mainstream media and a new measurement, Google Trends, for a possible correlation. This study explored a potential relationship between mainstream media coverage of a particular political rumor concerning Barrack Obama being of Muslim faith and its public salience as measured by online search activity. The results showed that mainstream media coverage, especially television coverage, influenced Google Trends’ public salience of the political rumor. This study supports and reinforces the original definition of agenda setting. It suggests that mainstream media still have the power to influence public salience. The study also shows that the results of agenda setting were most greatly seen the same day. Days in which an issue received increased coverage in mainstream media, in turn, showed a positive response in Google Trends. The study
showed that the agenda-setting effect began to wear off on Google Trends as early as day two and all but vanished by days three and four (Weeks et al., 2010).

Weeks et al. conclude by calling for the need to investigate possible variables that may have affected the correlation between Google Trends and the traditional mainstream media. They cite blogs as the possible mediating source. The study opens the possibility that reporters and writers for mainstream media could be influenced by blogs they read. Such research acts as an invitation for an agenda-setting investigation to be conducted on Twitter, the world’s most popular microblogging platform.

Twitter is already regarded as an electronic word-of-mouth platform for businesses seeking to gage consumers’ feelings about certain products (Jansen et al., 2009). Jansen found that Twitter users enjoy commenting on subjects that they think about in everyday life. While he cited that 19 percent of these postings often involved a brand or product, he also noted that Twitter users were increasingly likely to post about a product if it was “newsworthy” or if the brand was related to an event that was currently happening. The study was able to effectively scope how Twitter users felt about certain brands. Expanding on this idea, other studies have suggested that Twitter also effectively summarizes how users feel about events, news stories and persons.

In 2010, a time series analysis was applied to political public opinion polls and Twitter messages that mentioned President Barrack Obama (O’Connor et al., 2010). Using software that measured for the sentiment in Twitter messages, they were able to compare the public sentiment of Barrack Obama to traditionally collected public opinion polls. A high correlation between the two collection methods was found. Authors of the study go as far as to suggest that future uses of Twitter might include the “substitute and supplement
[of Twitter Sentiment Analysis] for traditional polling.” This thesis, too, argues that Twitter is an accurate measurement of public opinion.

Promising research shows that Twitter users as a whole are more intrinsically motivated to Tweet as compared to other social networking or microblogging websites (Agrifoglio et al., 2010). Users are not found to Tweet to reach external goals, such as visibility, or to reach perceived-expert status on a topic. Instead, typical users Tweet for the pure enjoyment of interacting with the medium itself. This lack of extrinsic motivation allows users to Tweet more candidly and without external motivation bias. The lack of external motivation encourages users to post without reservation or polarized opinion while still exhibiting high levels of involvement. Consider a Twitter user posting for the joy of using the medium as compared to a blogger posting on particular news beats. While both may prove factual, the first is more likely to candidly reflect the opinions of the user. The latter is more likely to show an agenda similar to a news website and less like a public opinion poll.

Twitter: A Quantifiable Source of Public Salience

Social networking has generally been perceived as a tool in which friends and family communicate and interact online. Generally this engagement is in the form of internal conversations that are intended to be private (person-to-person) or semi-private (person-to-friends). When treated as private or semi-private, social networking demands confidentiality. Sites such as Facebook, which adopt this model of private or semi-private communication, have faced outside pressure to increase their privacy efforts (Facebook, 2010). Twitter has avoided this issue by placing an emphasis on being a public medium.
Twitter pays little attention to privacy when it comes to the distribution of the messages that user’s posts. Twitter pegs itself as: “...a platform for you to influence what’s being talked about around the world. Search results spread across Twitter and in other ways across the Web so you can discover what’s happening on and off of Twitter.com. (About Us, 2010)”

The overwhelming majority of Twitter accounts are created for public viewing. Free for all to see, search and analyze, general accounts are as public as Web pages or blogs. Making public what once was treated as private, Twitter has taken social networking and has progressed it into a scalable and knowable body of information. This discourse can be considered a sample of conversations from all different types of demographics. In this way, Tweets themselves can serve as indirect measurements of topics that are salient to the general public. Twitter’s body of knowledge should now be considered a part of the ever-changing media landscape.

Since its conception in 2006, Twitter has become the ninth most populated website on the Internet and is still gaining users at an exponential rate. This amasses to a lot of Tweets: 50 million to 140 million daily on average. Today, 17 million Americans actively use twitter at least once a week. While the ages and demographics of users are not quite even, they are approaching a more even equilibrium (Webster, 2010).
The true innovation of Twitter – the reason why this social networking tool lends itself so well to data analysis – is the fact that virtually all of the Tweets on Twitter are searchable and quantifiable. Various search tools have been created using Twitter’s API that track trends, daily mentions and keywords on Twitter. These tools make Twitter a viable option for quantitative research (Java, 2007).
PURPOSE AND HYPOTHESIS

To date, there has been a limited amount of research on social networking conversations and how such conversations might follow or set the media salience of mainstream media such as national television news and newspapers. No research has been conducted concerning the possible link between national television news, newspapers and Twitter as it would apply to agenda setting.

This study aimed to investigate such a correlation. As Twitter grows in overall usage and importance, it becomes a digital medium that carries undeniable influence. 35 percent of all businesses in the United States claim that they successfully use Twitter to attract more customers (Sachoff, 2010). For those companies that use it, for those who want to use it better and for those that have yet to implement it, the more that is understood about Twitter and its relationship to traditional media, the better. The presence or absence of a link would help practitioners as they plan future media campaigns. Knowing if mainstream media salience and Twitter public salience are correlated would help in the planning stages of campaigns. If a traditional agenda-setting relationship exists, one might plan to implement traditional media coverage slightly before or immediately with social media coverage.
Public relations practitioners would then be best suited to treat social media campaigns and traditional media campaigns as supplemental and complementary.

Hypotheses

This thesis expected to see an agenda-setting effect similar to one observed in recent studies that incorporated digital measurements of public salience, YouTube and Google Trends (Weeks et al., 2010) (Sayre et al., 2008). Twitter provides a similar measurement that also tracks the overall public popularity of issues over time. The observations gathered in the YouTube and Google Trends studies were in agreement with one another. Moreover, the studies were in agreement with the general body of agenda-setting work that states that media salience should be a predictor for public salience (Rogers et al., 2002). The effect observed should be similar for all three selected issues.

Agenda-setting research states that the effect observed should be similar for both newspapers and television (Wanta & Foote, 1994).

H1: A day’s mainstream television coverage of selected issues will be a positive predictor of the volume of Tweets published on that same day.

H2: A day’s mainstream newspaper coverage of selected issues will be a positive predictor of the volume of Tweets published on that same day.

H3: Media salience will transfer to public salience with a zero day lag and be the strongest on the same day.

This thesis did expect the agenda-setting effect to be more rapid than agenda-setting works on more traditional media. This acceleration has largely been attributed to the ability to instantly post news and opinions on new digital media, such as Twitter. Public opinion was once a calculation that was set on intervals of a day or larger. Digital media, such as Twitter, now allow real-time, constant collection.
With these changes to the collection of public opinion and using new digital media agenda-setting studies as a guide, this thesis expected to see an accelerated effect that occurred on the same day.
METHOD

Dependent Variable: Twitter Activity (Tweets)

This thesis attempted to use a new measure of public salience: Tweets. A tweet is a post or status update on Twitter, a microblogging service. A Tweet is as much a play on the size of the message as it is on the audible similarity to Twitter. Technically, a Tweet can be a combination of any 140 characters. But more specifically, research has shown three main types of Tweets to exist on Twitter:

“First, there are status-updates of every day occurrences such as, ‘getting coffee,’ ‘check out this post on X,’ ‘going to sleep,’ or other common life events. Second, there are short-term-memes where many people talk about some event before, during, or after it. These conversations are usually short lived – ranging from a few minutes to a few hours. For example a television show like ‘Lost’ will have some buzz, before, during, and for a short time after the show airs, but will drop out of the stream very quickly. The final type of discussion we see on Twitter, are long-term-memes. These are topics of interest that people talk about for days, weeks, or even months. Politics or new video games are great examples of these longer term discussions happening on the platform (Catone, 2008).”

In general, the types of Tweets in which this thesis was interested in came in the form of the latter two types. These Tweets tap into the behaviors of its users such that they are theoretically crucial manifestations of users' agendas. Combined, all the users of Twitter should then amass a public agenda. Because this collection of salience was passive and not active, it was not subject to survey biases. Scholars such as Shaw, Stevenson and Hamm had called for future agenda-setting tests to better analyze public opinion with better gauges of
“contemporary social behavior (Shaw, Stevenson and Hamm, 2001).” Twitter should be able to answer this call. In this way, this thesis proposes Twitter as an indirect measure of public salience.

Issue Selection

To test the hypotheses and identify a potential agenda-setting effect in Twitter, key issues that exist on a nationwide scale were selected on TweetReports.com for monitoring. The overarching goal was to choose ongoing issues that had little chance of immediate resolution. Salient public issues with an ongoing flow of coverage provided the best data in which to analyze. The best issues that satisfied these conditions were found to be: The BP Oil Spill, The Mortgage and Housing Crisis and Immigration.

After many sample searches, the term “bp oil” was found to be the most effective search term for the BP Oil crisis. For the Mortgage and Housing crisis, “housing crisis” and “mortgage crisis” results were combined. For immigration, the search term “immigration” yielded the most accurate results.

Quantifying and Analyzing Tweets

Ideally, this thesis would have chosen issues that occurred in the past. Following prior agenda-setting studies, a look at archives of newspapers, television transcripts and Tweets would reveal the dates and frequencies of coverage on these issues. Unfortunately, while one can monitor current issues using Twitter search methods, Twitter did not provide exhaustive archives of past Tweets. With that limitation in mind, issues had to be tracked on a daily basis. As mentioned earlier, Twitter's public search engine is far from
exhaustive. In fact, it fails to even provide a comprehensive search of Tweets from any given day. Instead, it caps its searches at 1,500 results per query. Fortunately, third-party Twitter search options exist. Again, these search engines did not include exhaustive Tweet archives from the past but did allow exhaustive daily reporting when tracking keywords. The issues chosen and tracked were premeditated. TweetReports.com offers the most affordable solution for this type of monitoring. It is a third party service that uses an Application Program Interface (API) connection to Twitter. It offers the ability to deliver daily reports on custom keyword searches. At its introductory membership cost, it allows tracking and daily reporting of up to five keywords daily.

For each issue that was chosen, a daily frequency count was taken for how many times the topic was mentioned in Tweets inside of the United States. For the purposes of this thesis, this frequency count represents public salience.

Independent Variables: Quantifying and Analyzing Traditional Mass Media

The Vanderbilt Television News Archive served as a representation of the United States national television networks. This archive touts itself as the world’s most extensive and complete archive of television news. It covers regularly scheduled newscasts on ABC, CBS, NBC, CNN and Fox News. It is widely respected as a fair representation of national media. All of the broadcast transcripts from all of the networks for all of the 92 days were manually coded for the relevant topics. When a story’s abstract matched one of the selected topics, the article was counted in a daily frequency count. The database also includes the length of time in which news stories run and the time during the broadcast in which they appear. The total duration in number of seconds was recorded for each story that matched
the three tracked issues. The time in which the story appeared in the broadcast was also
coded. These two measurements, alongside a daily frequency count for each issue, were the
core measurements of media salience for television articles.

The final database utilized all of the newspaper articles available from the
mainstream national newspapers in the ProQuest NewsStand archive. It accessed archives
Globe, Chicago Tribune, Seattle Post-Intelligencer* and *USA Today* (ProQuest NewsStand,
2010). The archive of these ten United States newspapers provided a representative
sample of the overall coverage in the United States. It included daily article and word
counts for all mentions of the selected issues. For all of the results that came from an initial
search, each article was manually coded and checked for relevance. Only relevant articles
were counted.

Additionally, some second-level agenda-setting measurements were calculated for
more accurate measures of media salience. This thesis addresses two framing mechanisms,
or second-level agenda setting attributes, as laid out by Tankard et al. (1991). The
measurements include the total duration in number of words for each article, as well as the
section in which each article appeared in the newspaper. Alongside a daily frequency count
for each issue, these three values were the core measurements of media salience for
television articles. All three symbolize measurements of media prominence and placement
as defined by second-level agenda setting (Gahnem, 1997).

Additional coding was done to reflect the location in time or space that the news
stories appeared in relation to other news stories as well as the daily frequency of
coverage. These new variables were entitled “Power,” as they not only reflected the
frequency of coverage but the prominence and placement the coverage received. This
adjusted value should serve as an overall measurement of media salience as defined by
second-level agenda setting (Gahnem, 1997).

Newspaper placement was coded into four categories. The first category
represented articles that appeared on the front page of the newspaper. Perceived to be the
most frequently seen, the frequency counts of these articles were multiplied by a factor of
three. The second category denoted any other article that appeared in the first section of
the newspaper. These articles were multiplied by a factor of two. The third category
contained articles that appeared on the first page of other sections. This category was also
multiplied by a factor of two. Any remaining articles were then added with the value of one.
The summation of all these categories resulted in a variable that stratified the news stories
in regard to their placements in the newspapers as well as the prominence of the coverage
that was seen.

A similar procedure was adopted to better measure the media salience television
news stories. The first of three categories was dedicated to stories that appeared in the first
ten minutes of the television news program. Those stories were multiplied by a factor of
three. The second category contained stories appearing in the second ten minutes of
broadcast. Those stories were multiplied by a factor of two. All remaining stories were
added with the value of one. The summation of all these values resulted in a second
measurement of placement as defined by second-level agenda setting (Gahnem, 1997). This
variable was entitled “Power” in this thesis’s datasets.
Duration

The data collection period ran consecutively for 92 days. The time period of three months was chosen to satisfy a requirement of at least 30 to 40 data points, an amount beneficial for a significant ARIMA Time Series Model (Sayre et al. 2010). The data collection started on Oct. 12, 2010 and concluded on Jan. 11, 2011. Each day, a raw frequency count was taken for all three issues in newspapers, national television news and tweets.
FINDINGS

For an agenda-setting effect to occur, there must be evidence that would support a transfer from media salience to public salience (Weeks et al., 2010). To detect this possible transfer, an analysis of the variables associated with media salience and public salience had to occur. More specifically, three time series analyses, one fore each issue, had to be calculated. An ARIMA time series modeling analysis sufficiently evaluated the effective predictability of each dependent variable.

The ARIMA analysis is synonymous with time series agenda setting analysis. ARIMA was first proposed for use within journalism research in 1981 (Maisel & Wunsch, 1981). A decade later, the first noted study to utilize ARIMA in agenda setting studies came when looking at AIDS in the news and public opinion (Rogers et al. 1991). The study had a key advantage over previous time series analyses in that the ARIMA test was able to better mathematically model stationary and autocorrelation components (Gonzenbach, 1996). Since that breakthrough, the overwhelming majority of agenda-setting research has relied on ARIMA modeling for time series analyses.

This study used ARIMA to mathematically model the three major time series components collected. The results showed how the different time series were related
(Gonzenbach, 1996). Understanding the relationship and lag between the variables datasets ultimately addressed all three hypotheses.

Before the ARIMAs were calculated, two additional prerequisite calculations were done to validate the correlation of data sets. First, the dependent variable, Tweets, was assessed for a bivariate correlation with the independent variables, media coverage. Then, if significant relationships existed, an ordinary least squares (OLS) regression test, with the Durbin-Watson statistic, was also calculated.

The Durbin-Watson statistic inside of the OLS regression determines the relationship between dependent and independent variables separated from each other by a given time lag. Provided that the Durbin-Watson assessment could address the autocorrelation of the dependent and independent variables, then the autocorrelation was a violation of typical OLS assumptions. If the bivariate correlations were also significant, and the autocorrelation check was satisfied, the ARIMA model could then calculated.
Findings

To test hypotheses H1 and H2, a look at the bivariate relationships between television stories, newspaper stories and same-day Tweet volumes for the selected issues was needed. The results are shown in Table 1 below.

<table>
<thead>
<tr>
<th>Tweets</th>
<th>Pearson Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TV # of Seconds</td>
<td>.185</td>
</tr>
<tr>
<td>TV # of Stories</td>
<td>.260</td>
</tr>
<tr>
<td>Newspaper # of Stories</td>
<td>.179</td>
</tr>
<tr>
<td>Newspaper # of Words</td>
<td>.073</td>
</tr>
<tr>
<td>TV POWER of stories</td>
<td>.197</td>
</tr>
<tr>
<td>NP POWER of stories</td>
<td>.166</td>
</tr>
<tr>
<td>TV + NP POWER of stories</td>
<td>.241</td>
</tr>
</tbody>
</table>

Table 1 – Bivariate Correlations – All Independent Variables & Dependent Variables

<table>
<thead>
<tr>
<th></th>
<th>Immigration Tweets</th>
<th>BP Tweets</th>
<th>Mortgage &amp; Housing Crisis Tweets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tweets</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TV # of Seconds</td>
<td>.185</td>
<td>.265</td>
<td>.514</td>
</tr>
<tr>
<td>TV # of Stories</td>
<td>.260</td>
<td>.337</td>
<td>.575</td>
</tr>
<tr>
<td>Newspaper # of Stories</td>
<td>.179</td>
<td>.374</td>
<td>.460</td>
</tr>
<tr>
<td>Newspaper # of Words</td>
<td>.073</td>
<td>.208</td>
<td>.395</td>
</tr>
<tr>
<td>TV POWER of stories</td>
<td>.197</td>
<td>.266</td>
<td>.608</td>
</tr>
<tr>
<td>NP POWER of stories</td>
<td>.166</td>
<td>.383</td>
<td>.532</td>
</tr>
<tr>
<td>TV + NP POWER of stories</td>
<td>.241</td>
<td>.467</td>
<td>.611</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the .05 level (2-tailed).
* . Correlation is significant at the .01 level (2-tailed).

For the issue Immigration, Table 2 showed two significant correlations for two independent variables at the .05 level: Television Number of Stories ($r = .260$) and Television + Newspaper Power of Stories ($r = .241$). For the issue BP, four independent variables were significant at the .01 level: Television Number of Stories ($r = .337$), Newspaper Number of Stories ($r = .374$), Newspaper Power of Stories ($r = .383$) and Television + Newspaper Power of Stories ($r = .467$). Additionally, three independent variables were significant at the .05 level: Television Number of Seconds ($r = .265$), Newspaper Number of Words ($r = .208$) and Television Power of Stories ($r = .266$). For the third issue, Mortgage and Housing Crisis, all seven independent variables were significantly
correlated at the .01 level: Television Number of Seconds ($r = .514$), Television Number of Stories ($r = .575$), Newspaper Number of Stories ($r = .460$), Newspaper Number of Words ($r = .395$), Television Power of Stories ($r = .608$), Newspaper Power of Stories ($r = .532$) and Television + Newspaper Power of Stories ($r = .611$).

Because there was significant correlation for all three issues in at least one or more independent variable, there was at least some mild support for H1, H2 and H3. It was apparent, however, even in this early calculation, that the issues Mortgage and Housing Crisis and BP Oil had more statistical support than Immigration. BP Oil had six independent variables significant at the .01 level and four issues significant at the .05 level. Issue Mortgage and Housing Crisis had all 10 independent variables significant at the .01 level, whereas the issue of Immigration only had two issues salient at the .05 level.

Next, an OLS regression was calculated with a Durbin-Watson statistic. The test yielded a 1.21 value for Immigration, a 1.86 value for BP Oil and a 1.698 value for Mortgage and Housing crisis. All values were less than two and suggested a positive serial correlation among residuals.

An ARIMA 2, 0, 0 model was applied to Immigration Tweets and all of its corresponding independent variables that were significant through bivariate correlation and OLS regression (Table 2). The model found one independent variable to be a significant predictor, Television Number of Stories, with a $R^2$ of .378 ($p < .05$). With a non-significant Ljung-Box Q value of .219 ($p < .10$), it can be assumed that the model was correctly specified and that the model used eliminated autocorrelation among residuals.
### Table 2 – ARIMA Model for Issue of Immigration

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>SE</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(DV) Immigration Tweets Constant</td>
<td>2987.633</td>
<td>107.917</td>
<td>27.685</td>
<td>.000*</td>
</tr>
<tr>
<td>AR Lag 1</td>
<td>.662</td>
<td>.100</td>
<td>6.646</td>
<td>.000*</td>
</tr>
<tr>
<td>(IV) TV # of Stories Numerator Lag 0</td>
<td>457.426</td>
<td>162.315</td>
<td>2.818</td>
<td>.006*</td>
</tr>
</tbody>
</table>

Note. $R^2 = .378$; Ljung-Box Q = 20.020, $df = 16$, $p = .219$
Correlation is significant at the .05 level.

An ARIMA 1, 0, 7 model was applied to BP Oil Tweets and all of its corresponding independent variables that were significant through bivariate correlation and OLS regression (Table 3). The model found two independent variables to be significant predictors: Television Number of Stories and Newspaper Number of Stories. With a combined $R^2$ of .486 ($p < .05$) and a non-significant Ljung-Box Q value of .563 ($p < .10$), it was safe to say that the model was correctly specified and that the model used eliminated autocorrelation among residuals.

### Table 3 – ARIMA Model for Issue of BP Oil

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>SE</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(DV) BP Tweets Constant</td>
<td>6.783</td>
<td>.086</td>
<td>79.001</td>
<td>.000*</td>
</tr>
<tr>
<td>AR Lag 1</td>
<td>.300</td>
<td>.110</td>
<td>2.717</td>
<td>.008*</td>
</tr>
<tr>
<td>MA Lag 7</td>
<td>-.450</td>
<td>.114</td>
<td>3.931</td>
<td>.000*</td>
</tr>
<tr>
<td>(IV) TV # of Stories Numerator Lag 0</td>
<td>.278</td>
<td>.048</td>
<td>5.813</td>
<td>.000*</td>
</tr>
<tr>
<td>Lag 1</td>
<td>-.117</td>
<td>.046</td>
<td>2.538</td>
<td>.013*</td>
</tr>
<tr>
<td>(IV) Newspaper # of Stories Numerator Lag 0</td>
<td>.073</td>
<td>.024</td>
<td>3.049</td>
<td>.003*</td>
</tr>
</tbody>
</table>

Note. $R^2 = .486$; Ljung-Box Q = 14.482, $df = 16$, $p = .563$
*Correlation is significant at the .05 level.

An ARIMA 0, 1, 14 model was applied to Mortgage and Housing Crisis Tweets and all of its corresponding independent variables that were significant through bivariate
correlation and OLS regression (Table 4). The model found two independent variables to be significant predictors: Television Number of Seconds and Newspaper Number of Stories. With four outliers, a combined $R^2$ of .749 ($p < .05$) and a non-significant Ljung-Box Q value of 17.099 ($p < .10$), the model was correctly specified and eliminated autocorrelation among residuals.

Table 4 – ARIMA Model for Issue of Mortgage & Housing Crisis

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
<th>SE</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mortgage &amp; Housing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Crisis Tweets</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Transformation</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA</td>
<td>.677</td>
<td>.130</td>
<td>5.207</td>
<td>.000*</td>
</tr>
<tr>
<td>Lag 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lag 14</td>
<td>-.346</td>
<td>.121</td>
<td>-2.867</td>
<td>.005*</td>
</tr>
<tr>
<td><strong>Mortgage &amp; Housing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Crisis TV # of Seconds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Transformation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numerator</td>
<td>.216</td>
<td>.089</td>
<td>2.421</td>
<td>.018*</td>
</tr>
<tr>
<td>Lag 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mortgage &amp; Housing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Crisis Newspaper # of Stories</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No Transformation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numerator</td>
<td>9.606</td>
<td>4.093</td>
<td>2.347</td>
<td>.021*</td>
</tr>
<tr>
<td>Lag 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note $R^2 = .749$; Ljung Box $Q = 17.099$, $df = 16$, $p = .379$, Outliers = 4
*Correlation is significant at the .05 level.

In summary, H1 was given mild support by one or more independent variables for all three issues. H2 was also given mild support by one or more independent variables for BP Oil and The Mortgage and Housing Crisis issues. H2 was not supported for the issue Immigration.

H1 and H2 were given additional support graphically. When the dependent variables and the predicting independent variables were scaled to percentages and graphed over time, similar spikes and trends were shown (Charts 1 - 3). This relationship has been argued as additional predictor support for time series analysis (Wanta & Foote, 1994).

H3 predicted that the correlations between Tweets, television coverage and newspaper coverage would be stronger on the same day than compared to the days immediately following the coverage. This hypothesis was also given mild support (see
Tables 2, 3 & 4). For all ARIMA calculations, a zero-day lag yield was the only significant correlation. For the issue Immigration, the independent variable was significant with the dependent variable on the same day (Sig. = .006 (p < .05)). For the issue BP Oil, BP Television Number of Stories (Sig = .000) and BP Newspaper Number of stories (Sig. = .003) were also significant on the same day. For the issue Mortgage and Housing Crisis, Television Number of Seconds and Newspaper Number of Stories were significant on the same day (Sig = .000).
Chart 1 – Scaled Chart of DV and All Predictor IVs for Issue of Immigration
Chart 2 – Scaled Chart of DV and All Predictor IVs for Issue of BP Oil
Chart 3 – Scaled Chart of DV and All Predictor IVs for Issue of Mortgage & Housing Crisis
DISCUSSION

As expected, the results give some support that would suggest media salience as a predictor of public salience. The correlation was observed in regard to the Mortgage and Housing Crisis issue with two out of seven possible predicting independent variables: Television Number of Seconds and Newspaper Number of Stories. Mild support was also given in regards to the BP Oil issue with two predicting out of seven possible independent variables: Television Number of Stories and Newspaper Number of Stories. Immigration’s public salience only had one significant predictor: Television Number of Stories. Correlations of a same-day, or zero-day, lag were found for all the significant predictor independent variables.

These results fall in alignment with recent studies investigating YouTube and Google Trends. Both studies found traditional mainstream media salience to be a predictor of public salience (Weeks et al., 2010) (Sayre et al., 2008). Weeks’s study on Google Trends also found the timing of said agenda-setting effect to be rather instantaneous. Results correlated most highly on the same day. This prediction follows Weeks’s findings when examining Google Trends. Research from the study found that results correlated most
highly on the same day. While performing a search on Google was not precisely the same as broadcasting a Tweet, both are relatively instantaneous and require very little premeditation. In these ways, Tweets were thought to mimic the temporal effect found with Google.

Alternate Conclusion: Public Salience as the True Influencer

A plausible alternative to hypotheses H1 and H2 was a reverse transfer of agenda setting. Instead of media salience transferring to public salience, it was conceivable that with this new medium, public salience could predict media salience. This was conceivable and would assume that reporters from mainstream media outlets used Twitter as a basis for breaking emerging stories. Research has found that audiences find this type of user-generated content to be desirable, authentic and real (Wahl-Jorgensen et al., 2010). There have been several documented cases where stories have been brought to mainstream media’s attention through blogs (Lewis, 2009). In these cases, there was little doubt that the measure of public salience, Tweets, would have preceded the measurement of media salience. Is it possible that Twitter, or public salience, predicts the media salience more often than not?

To test for support of this scenario, the dependent and independent variables were swapped for one another. Media salience served as dependent variables and public salience served as independent variables. For all variables that were significantly correlated from the initial bivariate correlation analysis (Table 1), additional Durbin-Watson statistics were run with Tweets as the independent variable. According to the parameters of the Durbin-Watson test, if the results yielded stronger values – values closer to one – the relationship...
between values would then be more positively correlated over time. This tighter relationship would serve as support for this reversed vision of H1.

Durbin-Watson values closest to two were perceived to have values that, on overall average, differ from one another. Conversely, values closest to one have the strongest positive serial correlation with one another. These values with the strongest correlation are highlighted in yellow and denoted with an asterisk in Table 5. All Durbin-Watson values for Immigration and BP Oil were more highly correlated in the originally conceived direction of hypotheses H1. For the issue Mortgage and Housing Crisis, there were three values that supported the original H1. However, three values did support H1a, and one value virtually tied. The results for this issue were inconclusive. This thesis failed to give support for H1a. However, it only clearly gave support in the direction of H1 for one issue, BP Oil. While the issue of Immigration gave support to H1, only two of seven variables were significantly correlated enough to warrant Durbin-Watson tests. This handicap limited us
from making a strong verdict about the direction of transfer for this issue. The issue of Mortgage and Housing Crisis was more confounding and provided no support for H1 or H1a. While H1a was not given the majority of support for this issue, it was given enough support to warrant suspicion. Combined, one issue gave support to H1, one issue abstained from measurement, and one issue spoke against H1 and H1a. This inconclusiveness showed that while H1a should likely be rejected, the door should not be closed on possible mediating explanations for salience transfer.

Daily Versus Hourly Intervals

This thesis may have better revealed the duration of the agenda-setting transfer if the time interval in the data collection process had been increased. Because the data collected in this thesis only allowed analysis at a daily interval and because the agenda-setting effect observed happened so quickly, it was impossible to empirically determine exactly when and in what direction public salience and media salience affected one another. If further studies are conducted at the hourly interval, a directional relationship may be better established. Such a study would set a seminal example for agenda setting and online mediums. Currently, no known research exists addressing agenda setting at the hour interval for online media.

The Twitter data provider chosen, TweetReports.com, did report Tweets at the hourly interval. The ProQuest database and The Vanderbilt Television News Archive, however, only reported stories at the daily interval. Newer databases that meld several media sources into one, such as Google News, did report news stories at an hourly interval. It would then be possible, given these two mediums’ intervals, to analyze both against one
another at the hourly interval. This opens a possibility for further research that would to better address temporal order issue observed in this thesis.

Immigration & Lack of Correlation

While the issue Immigration had one significant predictor, overall, it was not found to be as significant as the other issues. This author suggests that the reason for this lack of correlation was with the global reach and segmentation of this particular news topic. While the other two issues specifically occurred inside of the United States, Immigration was a broader issue that occured globally. As mentioned earlier in this paper, the initial tests that screened Tweets found that the issue Immigration also yielded the lowest amount of valid responses. A high level of noise was apparent. One type of overshadowing invalid response was found. The majority of the invalid responses pertained to immigration issues outside of the United States. This contrasts the newspaper and television databases that were chosen. These media only covered immigration issues inside of the United States.

A simple Google News Archive search for the three-month period in which data was collected confirmed this assumption. Given Google News's global reach, it served as a fair barometer of all the major immigration stories that were salient at that time. 26,800 unique news stories resulted for the three-month period (Immigration Search 1, 2011). When an additional search was completed, refining for only English articles, only 17,000 were returned (Immigration Search 2, 2011). A final search was refined to English articles that included a mention of the United States or one of the 50 states. This time only 11,900 of the possible 26,800 articles were returned (Immigration Search 3, 2011). These initial keyword searches revealed a high percentage of articles that conceivably did not pertain to
the United States. Such results correlated nicely with the aforementioned 68 percent Tweet relevancy mentioned for Immigration in the method section. These findings assisted in the conclusion that there were, indeed, a significant amount of news stories on Immigration that did not involve the United States. This provided reason to believe that the Twitter sample used was, in turn, also more global for this specific issue. It was not presumptuous to assume that this lack of a direct relationship could have accounted for the lack of high correlation and predictability for this issue.

Real World Cues as a Mediating Variable for Mass Media & Twitter

While this study suggested that there was mild support for independent variables as predictors of the dependent variables, it was possible that the relationship could have been dependent on a mediating variable, such as the natural occurrence of events. An existence of real-world conditions may have actually affected the media in question. It is presumable that the relationships of these variables were actually the results of events and actions that occurred concerning these stories. This effect in agenda-setting research is known as real-world cues (Ebring et al., 1980). Research has shown that these prevailing conditions and events did, indeed, directly and indirectly affect newspapers and television broadcasts (Behr & Iyenar, 1985) (Ebring, 1980).

With the data collected in this thesis, it was impossible statistically to detect this occurrence. However, given the lack of extraordinary events that occurred during this period, the effect of real-world cues was perceived to be minimal. This thesis chose events that were already ongoing national discussions prior to collecting data. These issues already had seminal events occur that sparked national media interest. The coverage that
was tracked was subsequent of these events. While small developments in these stories occurred throughout the three-month period, no significant developments occurred during observation. The stories in the mainstream media were, by in large, commentary, opinion and conjecture of earlier events. This lack of natural occurrence should eliminate the potential influence for real-world cues as a mediating variable. If a follow-up study was conducted, various counts of real-world cues might be included. For these issues, values such as the daily oil price in gallons, daily number of border arrests or the daily national foreclosure rate might provide interesting results. These variables could then be considered as event independent variables in ARIMA analysis.

News Organizations Using Twitter

While at the time of this thesis roughly 95 percent of all Twitter users were consumers, some of the most active Twitter accounts were not public accounts. Instead, they were organizations, companies or news media (Cantone, 2010). There was no easy way to discriminate these Tweets from others when taking daily frequency counts. Therefore, in some cases, the Tweets that were collected as a measurement of public salience were actually media salience. Some of the most active Twitter accounts on the Web come from sources including CNN, Fox News and NBC. It is also now common procedure for news sources to syndicate their news stories on Twitter as well as on air and in print. This simultaneous reporting method could have inflated or exaggerated the results.

However, it could also be argued that as soon as a Tweet was shared or Retweeted by another user of Twitter, it would again be considered public salience and not media
salience. Therefore, while news media organizations may have broadcasted a Tweet to their large amount of followers, doing so would have only inflated the recorded measurement of Tweet frequency by a count of one. Since data was collected solely from the 15 largest national television and newspaper organizations, and only some of these organizations actively rebroadcast stories through Twitter, the total inflation was likely to have been very low.

Lack of Customizable Search

The search capabilities used in compiling the frequency data for newspapers and Twitter were the result of simple keyword searches. The key advantage to this method was the time saved in coding. However, it could be conceived that some unrelated issues or irrelevant uses of the words resulted in false positive counts for issues. This was corrected for the newspaper medium, as all of the search results were then manually coded for maximum article relevancy. Still, it was likely that some mentions were missed by keyword searches. If the keywords were not directly and specifically mentioned in the newspaper article or Tweet, they likely did not register in frequency counts. The Vanderbilt Television News Archive was the only medium not subject to either possible error. The number of total news stories was low enough in volume to allow manual coding. This, in turn, allowed for maximum relevancy.

Initial Study Limitations & Twitter as a Growing Medium

As an initial study of Twitter and agenda-setting, there were several inherent limitations to this thesis. This thesis decided to analyze a new dependent variable for
agenda setting. Tweets. While convincing correlations were found, it was possible that these results were correlated by natural chance. An expanded study that covers a multitude of issues would better prove the possible transfer of salience.

This was the first time that Twitter, as a medium, has been addressed in agenda setting work. The agenda-setting effect of the traditional media chosen, newspapers and television, has been tested time and again. Over three hundred known studies have attempted to solidify these mediums and the roles they play in agenda setting. Twitter is still considered to be in a relative infancy when compared to other websites. At the time of this thesis Alexa's website information database pegged Twitter as the ninth most trafficked site in the United States. Twitter was also the youngest website listed in the top 10 by three years. In 2006, the medium was born into an “avalanche of incredulity, ridicule and skepticism (Naughton, 2011).” Now, Twitter is trusted with tasks ranging from relaying communications amidst Egypt's turmoil to discussing celebrity train wrecks (Naughton, 2011). The medium is still constantly evolving as the technology is developed and enhanced. Users are still innovating and discovering new ways to use the microblogging site. Nothing about Twitter remains static.

This growth should not only bring change but competition as well. As more and more Internet websites become temporal fads, it is hard to forecast what role this new medium might hold a century from now. While current data shows nothing but growth for Twitter, it is conceivable that Twitter could gradually derail from the mainstream and become less of a measure of public salience if an improved competitor comes along. All of this uncertainty furthers the need for continued study of this medium over a longer period.
of time. Additional work is needed to secure Twitter’s function as a new medium in agenda setting.
REFERENCES


