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Setting The Nutritional Agenda: An Analysis of Nutrition Blog Sourcing

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Setting The Nutritional Agenda: An Analysis of Nutrition Blog Sourcing

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of

Philosophy at Virginia Commonwealth University

by

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Abstract

SETTING THE NUTRITIONAL AGENDA: AN ANALYSIS OF NUTRITON BLOG

SOURCING

By Shana Leann Jodhan Meganck, Ph.D.

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

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This research study analyzed the sources of nutrition blog information as measured by frequency

and type of sources used by nutrition bloggers. Since the use of online resources for finding

health information has become more prevalent, it is important to further research the topic for the

purpose of better understanding how our nutrition agenda is set by nutrition bloggers. Focusing

on 20 nutrition blogs, the study content analyzed 3,156 blog posts during a one-year period from

September 1, 2011 to August 31, 2012, yielding 5,263 sources. Additionally, in-depth interviews

were conducted with the writers of all 20 blogs in July 2012. The findings showed that (1)

nutrition bloggers are sourcing half of the time, (2) nutrition bloggers are citing a variety of

sources that include both credible and less credible sources, (3) nutrition bloggers are finding and

choosing sources in various ways that include both credible and less credible methods, and (4)

there is no difference in the sources selected by men and women bloggers. Overall, this study

shows the need to create best practices for blog sourcing that serve as guidelines for both

bloggers and readers, with emphasis on guidelines for source frequency and credibility of

sources.

Introduction

As of 2012, the U.S. Census Bureau reported that more than 78.6% of the North American population had access to the Internet (Internet World Stats, 2012). A Pew Internet and American Life Project estimated 95% of adults between 18 and 29 were Internet users, as well as 87% of adults between 30 and 49, 74% of adults between 50 and 64 and 42% of adults over age 65 (Zickuhr & Smith, 2012).

This overwhelming adoption of the Internet has altered peoples' relationship with information. For example, the most popular Internet activities for Internet users 18 years old and over included online banking (24%), job hunting (30%), researching a product or service (28%), taking part in chat rooms or online discussions (61%), using a search engine to find information (59%) and using a social networking sites (43%) (Zickuhr & Smith, 2012). According to the BlogHer 2011 Social Media Matters Study (Collins, 2011), 47% of U.S blog readers tap into blogs for finding new trends or ideas, 35% for finding out about new products, and 25% for help with making a purchasing decision. Additionally, more than 70% of Americans get at least some of their news online (Mitchell, Rosenstiel & Christian 2012). Forty-six percent of people get their news online at least three times a week, and as of 2012 online news revenue had surpassed print newspaper revenue (Laird, 2012). Overall, Americans are more likely to get their news from the Internet than from radio or newspapers, and 75% receive news via e-mail or updates on social media sites (Gross, 2010). All of this highlights the expanding use of the Internet for everyday activities.

According to a Pew Internet and American Life Project survey (Sullivan, 2011), 10% of adult Internet users consider looking for medical or health information online a typical daily Internet activity, and 55% have performed this activity at least once. Additionally, solidifying the importance of online influencers and reliable information online, Perna (2012) concluded that Americans trust information about their health that appears online. Three in 10 adults 18 and older "always" or "frequently" turn to the Internet to find information and answers regarding health questions, and 65% of these adults trust the information they find. The same survey concluded that 67% of Americans believe that the ability to self-seek medical information and answers online has made them better informed as patients and ultimately improved the doctor-patient relationship. Similarly, it was concluded that doctors also turn to the Internet for information, citing search browsers such as Google and Yahoo as a source of information for 46% of physician respondents (Perna, 2012).

As noted, with consumers, as well as doctors using the Internet to find medical information, placing importance on the reliability of online influentials and information is essential. Additionally, there has been significant research support for an agenda-setting model: that the public learns both facts and the salience of those facts from the media. In other words, the media's agenda sets the public's agenda, placing great significance on the topics covered and sources of information. This proposition has been supported in hundreds of studies, with considerable diversity in their geographic settings, time spans, media vehicle and public issues studied (McCombs, 2005). And, this area of research has grown enormously over the past three decades and now includes five distinct aspects of theoretical attention. The first phase, initiated by McCombs and Shaw's (1972) Chapel Hill study, was centered on the influence of the media's issue agenda on the public's issue agenda. The second phase elaborated this influence on the

news media, exploring a variety of contingent conditions that enhance or constrain agenda setting effects among the public. The third phase expanded on the scope of agenda setting influence by the media from effects on attention – agendas of objects – to effects on comprehension – attribute agendas. The fourth phase explores sources of the media agenda. And, the fifth phase focuses on the consequences for agenda setting on attitudes and opinions, based on forming an opinion, priming opinions about public figures through an emphasis on particular issues and shaping an opinion based on particular attributes (McCombs, 2005; Valenzuela & McCombs, 2009).

The fourth level, origins of the media agenda, is often times referred to as agenda building. Agenda building, as defined by McCombs (2004), refers to the process by which news organizations and journalists feature, emphasize, and/or select certain events, issues, or sources to cover over others. The pattern of news coverage that defines the media agenda results from the norms and traditions of journalism, the daily interactions among news organizations themselves, and the continuous interaction of news organizations with numerous sources (McCombs, 2005). This being said, agenda setting can be influenced not only by the salience attached to certain issues, but also by intermedia effects and the sources utilized by the media.

Whereas agenda setting focuses on the audience and how items appearing in the media affect their perceptions, agenda building actually occurs prior to agenda setting by focusing on how issues receive attention in the press. And, while a number of studies have focused on intermedia agenda setting and sourcing as they relate to traditional media, there has been little research conducted on the agenda building impact of new media on traditional media as well as new media on other new media.

As noted by Morris and Ogan (1996) in the early stages of Internet research, mass communication researchers tended to stay with the more traditional forms of communication research such as broadcast and print media and away from new media research on the Internet. Morris and Ogan (1996) stated that print and broadcast fit "much more conveniently into models for appropriate research topics and theories of mass communication" (p.39) and "that future studies may show that the existing theories of mass communication are not suited to the new medium" (p. 39). With this being said, Morris and Ogan (1996) believed that communication researchers needed to study the Internet and computer-mediated communication as a new arena to reexamine mass communication structure and theory. Thus, with the rising popularity of the Internet in the past decade, researchers have started to focus on this area, and investigations of the content of information being generated online as it relates to agenda setting have started to increase in importance, but there is still much room for growth.

Regarding agenda building in traditional media, several studies have concluded that traditional media have an effect on the content of other traditional media (Snider, 1967; Lopez-Escobar, Llamas, McCombs & Lennon, 1998; Ku, Kaid & Pfau, 2003; Breed, 1980). Similarly, looking at the few studies conducted on agenda building between traditional and new media as well as new media and new media, studies have typically concluded that traditional media and new media influence each other's news agendas, passing content between media (Singer, 2005; Reese, Rutigliano, Hyun & Jeong, 2007; Lowrey & Mackay, 2008; Messner and DiStaso, 2008).

However, as noted by Meraz (2009), "Unlike traditional media outlets that must rely on bureaucratic, routine sources in their effort to produce reliable, credible, and predictable journalism, independent bloggers are bound by no such codes. Citizen media gain their strength to critique traditional media's news reports through the dynamic, real-time assemblage of

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relevant perspectives and opinions shared by other citizen media outlets" (Meraz, 2009, p. 701). Therefore, although typical agenda setting and agenda building effects of traditional news media have been proven to have the same or similar effects on new media based on the limited research conducted on the topic, there is still much research to be conducted in this area because new media are governed by different rules than traditional media. This is nothing new, as it has become common that every new medium of communication is labeled as a radical departure from preexisting forms of communication, and all have prompted speculations about their potential challenges and benefits to journalistic norms and practices (Haas, 2005). One of the newest media formats to do that are blogs.

Blogs are typically defined as "online journals that are regularly updated and have entries, called posts, which are usually listed in reversed chronological order" (Messner & DiStaso, 2008, p. 450). Originally, blogs were considered someone's online record of the websites he or she visits, but they have grown into much more than that, and have also grown from only dozens in 1999 to millions today. There are an estimated 164 million blogs worldwide, and the U.S. accounts for nearly half of the blogging population (Treanor, 2011). More than 133 million blogs have been indexed since 2002 and around 77% of Internet users read blogs (Brosnan, 2011).

Therefore, blogs enable a diversity of individuals with a plethora of interests to publish and read news free from traditional gatekeepers like journalists, editors and large publishing organizations. For this reason, a number of mass communication researchers have begun to see blogs as an important medium of mass communication and have in turn begun to focus their research efforts in this area.

Kenix (2009) stated that blogs are a diversion from other media because they allow for

reporting without the censures of other vehicles:

> It has been argued that blogs, as an extension of 1960s 'New Journalism,' have become an important form of alternative media. At their idealized best, blogs can report news without the constraints of censure or the pressures of advertising. This argument suggests that blogs can therefore offer a deeper analysis, based upon a diverse range of sources and contributing citizen commentators, which is not possible through modern corporate, mainstream outlets. (p. 790)

Blogs fulfill the needs of the general public and healthcare providers, as well as the

broader health community with timely and accessible information and interaction, which is

specifically relevant to health news, knowledge and communication (Deshpande & Jadad, 2006;

Giustini, 2006; Kennedy, 2004). National estimates indicated that 59% of adult Internet users

have looked online for health information in the past year (Fox, 2013a). Fox (2011a) reported

that while doctors, nurses, and other health professionals continue to be the first choice for most

people with health concerns, online resources are a significant source of health information in the

U.S. This online conversation regarding health information is being driven by both the

availability of social tools and the motivation among people to connect with others. In other

words, information is now transportable, personalized and participatory. Health consumers have

become health collaborators proactively seeking information for their own good through peer-

managed blogs, online social networks, text messaging, podcasts, online gaming, and virtual

worlds. The proliferation of this computer-mediated communication is resulting in a blossoming

of human interaction and has put the consumer in control (Macario, Ednacot, Ullberg & Reichel,

2011). Consequently, how the medical profession and the media communicate to the public is

changing, leading both the medical profession and the media to incorporate more Web, mobile

media, and social media avenues.

Additionally, the generational line is blurring as far as who is looking for health information online. According to Zickuhr (2010), "searching for health information, an activity that was once the primary domain of older adults, is now the third most popular online activity for all internet users 18 and older," (p. 3). Lenhart, Purcell, Smith and Zickuhr (2010) came to the same conclusion, noting that 60% of all adults search for health topics online, with a larger growth among teens. Specifically, Fox (2011a) concluded that of the 74% of adults who use the Internet, 80% have looked online for information about health topics, such as specific diseases or treatments. A growing number of Internet users of all ages have used the Internet to read about somebody else's experience or opinions regarding health or medical issues on an online news group, website or blog; have watched an online video about health or medical issues; have consulted online reviews of a particular drug or medical treatments; have gone online to find people with similar health concerns; have consulted online rankings or reviews of doctors and hospitals. Thirty-one percent of teens turn to the Internet for health, dieting, or physical fitness information. And, 17% of teens who are online gather information on health topics such as drug use and sexual health – topics that are typically harder to discuss with others (Lenhart, Purcell, Smith & Zickuhr, 2010). Therefore, the use of the Internet for finding health information by all generations has increased over the last few years.

Moreover, the way health information is retrieved and shared through new platforms, such as mobile applications and social networking sites, has changed. Fox (2012) found that 31% of cell phone owners have used their device to look up health or medical information, and 19% of users have software applications on their mobile devices to help them track or manage health. As of 2012, there were over 13,600 apps related to health, connecting social and mobile media with health communication (Dolan, 2012). Related to social networking sites, Fox (2011a)

reported that 23% of social networking site users have followed a friends' personal health experience or updates, and 15% have received health information from social networking sites. Additional trends demonstrated that adults used social media to raise money or awareness for a particular health issue, to track their diet, weight or exercise routine, to post comments about a particular health question, and to join a health-related group. Thus, it is evident that mobile and social media are providing ways for the public to communicate health information both quickly and efficiently, as well as among itself.

As with other newsworthy media topics, news media coverage of health topics can frame and increase the salience of health-related issues, and therefore, influence the public's beliefs, attitudes and behaviors. One difference that makes the coverage of health issues different than other issues covered in the media is the necessary explanation of a large part of health information. As noted by Wallington, Blake, Taylor-Clark and Viswanath (2010), "News media are critical intermediaries for translating important health and science information into forms easily disseminated to and understood by the public" (p. 76). Consequently, health is not only a topic that is and should be important to the public, but also one that is often in need of interpretation by the media, allowing the agenda setting impact of the media to play an even stronger role as it relates to nutrition topics.

Therefore, considering the agenda setting impact of the media on society and this growing popularity of blogs by consumers and communication researchers, which increases the capability for consumers to self-seek information and answers, it is important to find out where online influencers, such as bloggers, are getting their information and what the expertise is of their sources of information.

This study will uncover the frequency with which popular health bloggers are using sources, as well as how they find sources and which sources they choose to use. Sources provide information for stories, and they are one of the three key elements that are often understood as defining and setting the media's and, in turn, the public's agenda (Valenzuela & McCombs, 2009). Therefore, an analysis of health blog sourcing will help to determine the validity and diversity of the sources being used by health bloggers, in order to better understand where a growing majority of our health information is coming from.

Literature Review

The goal of this study is to determine where health blogger information originates from in order to understand the reliability of these sources that are ultimately setting the media's and the public's agenda. This is why, as a basis, the literature review below focuses on agenda setting research for both traditional media and computer-mediated communication, communication that takes place or is assisted by computers. It also includes general blog research related to the journalist/blogger relationship and blogger credibility, since blogs are the medium under study. There is specific emphasis on the fourth stage of agenda setting research – agenda building – because this refers to the process by which writers choose what to feature, emphasize or select, including sources. Additionally, there is a focus on gender and health news coverage as they relate to each of these research areas – agenda setting, blogging and agenda building – and as separate components in the research process because there is an overall focus on health information dissemination and overall curiosity in the role gender plays, if any, in coverage.

Agenda Setting

There have been hundreds of studies conducted on agenda setting, starting with the 1972 Chapel Hill study conducted by McCombs and Shaw (McCombs & Shaw, 1972). This study established agenda setting as the transfer of salience from the media's agenda to the public's agenda by attempting to match what Chapel Hill voters said were key issues of the 1968 presidential campaign with the actual content published by mass media during the campaign. The

study supported the notion that those aspects of public affairs that were prominent in the news media become prominent among the public.

Since the McCombs and Shaw (1972) study, there have been numerous other studies that have reexamined the agenda setting function of the media, including both election and nonelection studies with considerable diversity in their geographic settings, time spans, media vehicle and public issues studied (Valenzuela & McCombs, 2009). Overall, agenda setting research has grown far beyond its original realm – the transfer of salience from the media agenda to the public agenda – and now encompasses five distinct aspects: basic agenda-setting effects, contingent conditions for those effects, attribute agenda setting, origins of the media agenda and consequences of the agenda-setting process on people's opinions, attitudes and behaviors (McCombs, 2005).

Each object of interest studied, whether it is a public issue, public figure, organization, country or anything else that is the focus of attention has various attributes – those characteristics that describe and define the object. First-level agenda setting research focuses on the transmission of object salience; second-level focuses on the transmission of attribute salience. In other words, while first level agenda setting suggests media coverage influences what we think about, second level agenda setting suggests media coverage influences how we think about the issues that are on our mind (Valenzuela & McCombs, 2009).

Therefore, while both levels are important for communication research, attribute agenda setting research looks deeper, because it focuses on how issues are presented, not just how often. This is why the second level of agenda setting has become a focus of agenda setting literature since its informal introduction by Weaver, Graber, McCombs and Eyal (1981). Through a nine-wave panel study, Weaver et al. (1981) revealed a high degree of correlation between traditional

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media's agenda of attributes for the 1976 presidential candidates and the public's agenda of attributes for those candidates. Since then, many studies have also found strong evidence of the traditional media's attribute agenda setting ability (Kim, Scheufele & Shanahan, 2002; Craft & Wanta, 2004; Valenzuela & McCombs, 2009).

Attribute agenda setting research has often focused on elections studies (Becker & McCombs; 1978; Weaver et al., 1981; McCombs, Lopez-Escobar & Llamas, 2000; Golan & Wanta, 2001; Coleman & Banning, 2006). However, second-level effects have also been extended to general public issues. For example, Kim et al. (2002) conducted a study that focused on attribute agenda setting by examining how a local issue, and its various advantages and disadvantages (issue attributes), were covered in the dominant local newspaper and how the coverage influenced the salience of various attributes of the issue among readers. The authors concluded that the study provided support for the notion of attribute agenda setting, which "hypothesizes significant correspondence between prominent issue attributes in the media and the agenda of attributes among their audience" (p. 20). Additionally, Craft and Wanta (2004) focused on the attributes linked to the aftermath of the terrorist attacks of September 11, 2001. Through a content analysis of two local newspapers and two network channels, and a telephone survey focusing on public concern, the results offered some support for second-level agenda setting in that the main issues that the news media consumers expressed concern with, were the same issues that received extensive news coverage.

Agenda Setting and CMC

Focusing specifically on agenda setting and computer-mediated communication, various researchers have concluded that agenda-setting effects online are similar to those of traditional news media.

For example, Roberts, Wanta and Dzwo (2002) stated that the Internet drastically changed the way that people received and consumed information and news. Therefore, the focus of their study was to investigate whether traditional news media sources had an agenda-setting impact on the discussions taking place on electronic bulletin boards (EBBs). Hence, this study took an important step in linking the Internet to agenda setting. As stated in the research article, at the time EBBs offered Internet users a chance to openly discuss important topics, including those covered by the news media. Specifically, the researchers asked whether individuals would take issue information gained from news media and pass information about this issue online to other electronic bulletin board users. Roberts et al. (2002) concluded that prominent issue information discussed on EBBs correlated with issues covered in the media, therefore acknowledging that media coverage can provide individuals with information to use during EBB discussions.

Also related to EBBs, Lee, Lancendorfer and Lee (2005) conducted a study on the intermedia influence of the Internet on traditional news media in South Korea. The study found that EBBs had first and second-level agenda setting effects on newspaper content in South Korea, leading the authors to conclude that "Internet bulletin boards may function as a channel that journalists are able to access in order to ascertain the climate of opinion in the shortest time" (Lee et al., 2005, p. 68).

Looking at the relationship between traditional news media and online information-seeking, Weeks and Southwell (2010) studied the agenda setting effects of television and newspaper coverage of a prominent rumor from the 2008 presidential election: that Barack Obama was Muslim. The authors concluded that television coverage of the rumor was correlated with same-day Google searches of the rumor, and although newspaper coverage of the rumor did positively correlate with the volume of Google searches conducted on that same day, the degree was not as significant as it was for television.

Specifically interested in variance of coverage, Maier (2010) looked at how online news differs in coverage from traditional media news stories. The author concluded that new consumers were likely to receive the same mix of news on news websites as they were from traditional news media. Additionally, the same storylines were covered by news websites and traditional news media, indicating that online news outlets not only tended to choose the same top stories as traditional media, but when they did, they often shared strikingly similar news values in how each storyline is played in terms of frequency and depth of coverage. This led the author to conclude that journalism's agenda setting role remains likely in the fragmented media universe.

While the studies Roberts et al. (2002) and Lee et al. (2005) focused on the CMC of bulletin boards, and Weeks and Southwell (2010) and Maier (2010) focused on traditional versus online news media use behavior, Meraz (2009) focused specifically on agenda setting and blogs. The author conducted a study that examined whether traditional mass media entities remained dominant as source influencers in the independent political blogosphere, blogs unaffiliated with professional newsrooms. As noted in the study, active, independent political bloggers command a readership that rivals traditional media outlets, and these independent bloggers are increasingly

gaining respect among readers. By using hyperlinks as an external marker of source influence, the study concluded that traditional news media's agenda setting power is no longer as strong as it once was, because independent blogs are dividing the interest between traditional news media and citizen media by giving citizens more of an opportunity to set news agendas.

Blog Research

Blogs are traditionally defined as online journals or frequently updated websites, with posts arranged in reverse chronological order, so the newest entry is always on top (Blood, 2003). The actual term "Web log" was coined in 1997 and shortened to "blog" in 1999 (Kovic, Lulic & Brumini, 2008). It was also around 1999 when blogging became popular among the general population due to the creation of software – such as LiveJournal and Blogger – that allowed users to quickly post entries into predesigned templates without having to understand hyptertext markup language (HTML) (Kovic et al., 2008). Since their inception in 1999, more than 164 million blogs have been indexed (Treanor, 2011).

Although some scholars contend that bloggers are a type of new-age journalists who challenge and renegotiate traditional journalistic conventions (Matheson, 2004; Robinson, 2006; Wall, 2005), others believe that these bloggers maintain typical practices, reinforcing the structure and form of traditional news media (Haas, 2005; Singer, 2005). This raises the ongoing debates in scholarly and professional groups around whether bloggers are journalists, how bloggers and journalists are intertwined, and whether blogs are credible sources of news (Hargrove & Stempel, 2007; Tomaszeski, Proffitt & McClung, 2009; Ji & Sheehy, 2010).

The Blogger/Journalist Relationship

With mention of the difficulties posed by external and internal factors that have led journalism to neglect some types of news information, which in turn have been poached by bloggers, Hargrove and Stempel (2007) continued to study how blogs, typically free of the constraints and the review procedures of news organizations, may or may not serve as a threat to these traditional media vehicles. The authors concluded that blogs were not a threat to traditional media at the time of the study; however, they acknowledged that blog use would continue to grow and deserved future attention.

Tomaszeski et al. (2009) conducted a study that sought to understand the relationship of news media and bloggers from the perspective of political bloggers. Through an online questionnaire, the study examined the demographics of political bloggers, how they view the blogosphere, and how they perceive their relationships with mainstream media. The responses showed that bloggers believed that blogs were an effective source of obtaining news and information, but they were concerned about accuracy and rumors. Bloggers did not feel that they had a large impact on voter behavior at the time, but that they most likely would during the next election. However, bloggers overall tended to define their role in the blogosphere as an extension of traditional media, sharing similar norms and values such as accuracy, responsibility and independence, and at the same time believed that they were an accurate source of news regarding political information.

Ji and Sheehy (2010) looked at how bloggers perceived blogging as a possible form of journalism and determined that 32% of the bloggers studied saw blogging as journalism. Seventy-one percent viewed blogging as having a direct connection with journalism. From 2006 to 2008, there was an increase in the number of bloggers who perceived blogging as journalism,

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which led the authors to conclude that bloggers, including both journalistic bloggers and non-journalistic bloggers, were becoming more comfortable with the concept of blogging as journalism.

Blogger Credibility

Lasica (2003) discussed blogger credibility, stating that readers would never be able to completely rely on bloggers for dependable news and information, because bloggers do not live by the same established principles of journalism that traditional journalists do. However, with time, bloggers grow a reputation for accuracy and relevance, and circles of trust within the blogosphere help weed out the those that are not credible. With this said, there have been studies that have focused on blogger credibility, studying how readers view the credibility of blogs compared to traditional media as well as other online sources.

Internet credibility, in general, has been studied for a number of years and studies have concluded that Internet information is perceived to be as credible as that obtained from television, radio and newspapers; however, research on the credibility of blog information specifically has been more varied (Flanagin and Metzger, 2000; Choi, Watt and Lynch, 2006).

Studies that have examined general Internet users, rather than specifically blog users, have found that blogs rate low on credibility measures. However, scores were higher for those who had regularly visited blogs than those who had not (Johnson, Kaye, Bichard and Wong, 2008). In contrast, studies that have focused on blog users or politically-interested users who rely heavily on blogs have concluded that information credibility was as high for blogs as for traditional media formats.

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Johnson and Kaye (2004) determined that figuring out the role blogs play in political discourse is an important question as many politically active citizens rely on blogs as primary sources for political information. The authors stated that the emerging influence of blogs and the ambiguity that exists in both the popular and scholarly literature concerning blogs' role in political discourse indicates that there is a need for systematic comparisons of blog content with the content of other media. The focus of the study was on how credible users judge blogs, and whether blog users judge blogs as significantly more credible than other online sources and traditional sources of information. After conducing an online survey of blog readers, Johnson and Kaye concluded that a majority of blog users determined blogs to be at least moderately credible. And, overall, users viewed blogs as a new and better form of journalism than the mainstream media.

Similarly, Johnson et al. (2008) as well as Johnson and Kaye (2010) determined that politically-interested blog users not only relied on blogs more than any other news source, but also judged them as more credible than any online traditional media vehicle, such as online newspaper sites and online broadcast news sites.

Sweetser, Porter, Chung and Kim (2008) looked at how communication professionals – professional journalists and public relations practitioners – viewed the credibility of blogs, and in turn, how they utilized them. The authors concluded that communication industry professionals were using blogs as a resource, or an extension, of their own work and believed that blogs would have an impact on the communication industry. Additionally, it was posited that credibility would continue to increase as blogs became more common, which has been typical of past media.

Relating blog credibility to gender, Armstrong and McAdams (2009) looked at how gender cues and individual motivations influenced perceptions of credibility. In order to do so, the authors manipulated the gender of the blog author to determine the effects on the blog post's perceived credibility. The authors hypothesized that the gender of the blogger would affect the perceived credibility of the post. They found that blog posts written by men were deemed more credible than those written by women.

Gender and Blogging

Gender and blogging, in general, is a topic that has not received as much attention as other areas; however, a couple of recent studies should be noted. Trammell and Keshelashvili (2005) looked at A-list bloggers – the most "well known and regularly linked to" bloggers (Trammel & Keshelashvili, 2005). The authors concluded that gender played an interesting role in blogs, as men were more likely to maintain the traditional filter blog – "blogs that contain links to content the author finds from searching the Web" – whereas women were more likely to run a diary-based or journal-based blog that focused on personal information and overall content (Trammel & Keshelashvili, 2005). This further emphasized that women are more likely to self-disclose and prefer more intimate communication, which is common of representation of gender online.

More explicitly, Harp and Tremayne (2006) studied the "gendered blogosphere," examining inequality among the most-read political blogs. The study found that among the top 30 political blogs, only three had a primary female author. The authors stated that discourse analysis of bloggers' explanations for gender disparity revealed three dominant beliefs: women do not blog about politics, women's blogs lack quality, and top bloggers do not link to women's sites. The first two beliefs were negated and the third was considered an avenue for future research.

Miller, Pole and Bateman (2011) looked at whether gender and occupational differences occurred in the health blogosphere as well as whether there were differences on the basis of blogger perspective. The authors concluded that women were less likely to work in health-related occupations and, therefore, more likely to blog about personal disease and disability experiences. Females were more likely to blog from the perspective of patient/consumer and caregiver, rather from that of a professional.

Agenda Building

As defined earlier, agenda building is the process by which news organizations and journalists feature, emphasize, and/or select certain events, issues, or sources to cover over others (McCombs, 2004). As stated by McCombs (2005), the pattern of news coverage that defines the media agenda results from several things, including the daily interactions among news organizations themselves – intermedia agenda setting – and the continuous interaction of news organizations with numerous sources – sourcing.

Intermedia Agenda Setting

As some of the studies on agenda setting and blogging alluded to but did not define, much research on agenda setting and blogging relates to the concept of intermedia agenda setting, which can be defined as "how the media set their own agenda for news" (Breen, 1997, p. 354).

Early examples of intermedia agenda setting did not use this name; they were studied as gatekeeping, "the process by which the billions of messages that are available in the world get cut down and transformed into the hundreds of messages that reach a given person on a given

day" (Shoemaker, 1991, p. 1). White (1950), Breed (1955), and Snider (1967) all found that the news agenda of wire services influenced the news selection of newspaper editors.

More recent evidence from studies of intermedia agenda setting still leave room for research in the area; however, some general conclusions can be drawn: Newspapers tend to influence television agendas (Danielian and Reese, 1989; Dearing and Rogers, 1996; Lopez-Escobar, Llamas, McCombs and Lennon, 1998; Roberts and McCombs, 1994); campaign advertising is linked with newspaper and television network stories (Roberts and McCombs, 1994; Boyle, 2001; Ku, Kaid and Pfau, 2003); and certain elite newspapers tend to influence the agendas of less prestigious newspapers (Breed, 1980; Danielian and Reese, 1989).

Determining where the Internet, and specifically blogs, fit into this scheme has recently added a new dimension to the research on intermedia agenda setting. During the early years of blogging, Lasica (2003) argued that blogs should not be considered in isolation, but should be seen as part of an emerging new media ecosystem – a network of ideas:

No one should expect a complete, unvarnished encapsulation of a story or idea at any one Blog. In such a community, bloggers discuss, dissect and extend the stories created by mainstream media. These communities also produce participatory journalism, grassroots reporting, annovative reporting, commentary and fact-checking, which the mainstream media feed upon, developing them as a pool of tips, sources and story ideas. The relationship is symbolic. (p. 71)

Lasica (2003) also pointed out that society needed to stop looking at journalism and blogging as a binary system and move beyond the debate as to whether or not blogging is or is not journalism, and recognize that journalism and blogging complement one another.

With this in mind, Haas (2005) noted that there are distinct similarities that have emerged between the mainstream news media system as a whole and the blogosphere, and between the

journalistic norms and practices of traditional news organizations and individual blogs. Haas argued that a small number of blogs set the news agenda for most blogs, much the same way that certain elite news organizations do for traditional media.

Also seeking to better understand the journalist/blogger relationship, Singer (2005) conducted a content analysis of 20 blogs maintained by national or local news organizations. The results indicated that although expressions of opinion were common, most journalists were seeking to remain gatekeepers even in this highly interactive and participatory format, and political journalism bloggers used links extensively, but mostly to other mainstream media sites. Only about 3% of links were to alternative news providers. Having found such an overwhelming majority of blogs citing mainstream media sources, the author concluded that journalistic blogs were "being normalized as a component, and in some ways an enhancement, of traditional journalistic norms and practices" (Singer, 2005, p. 194).

Reese, Rutigliano, Hyun and Jeong (2007) further emphasized Singer's (2005) conclusion that bloggers often link to traditional news media, but concluded that blogs also promote the circulation of public dialog by linking with other bloggers.

Specifically focusing on intermedia agenda setting in television, advertising and blogs during the 2004 presidential election Sweetser, Golan and Wanta (2008) looked at whether the political ads and candidate blogs were successful in influencing the issue and news agenda of the major television news networks. The authors concluded that the news agenda of several traditional broadcast organizations was shaped by modern campaign tools, such as blogs and political advertisements.

Flipping the analysis of the blog/traditional news media relationship, Lowrey and Mackay (2008) looked at blogging as a resource for traditional news media. The overall question

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posed by Lowrey and Mackay (2008) was whether blogging presented an opportunity or a challenge to journalists and their organizations. Overall, it was concluded that awareness of local blogs did have an impact on the way journalists practiced their profession, especially in their increased use of blogs as sources. Additionally, perceived blogging activity affected the degree to which newspapers themselves adopted the blogging form; however, blogger activity had no impact on journalists' transparency with readers.

Messner and DiStaso (2008) looked at intermedia agenda setting from both angles and reaffirmed the importance of traditional media for the blogosphere as well as the increased influence of blogs on journalistic reporting. Blogs rely heavily on traditional media for information gathering. But, on the other hand, journalists also read blogs to capture the general cultural, ethical and/or political climate within a nation or even specific groups. In the study, through content analysis, the researchers found a sharp increase in the number of times the *New York Times* and the *Washington Post* used blogs as sources of news, indicating that journalists were increasingly viewing them as credible sources of news. Additionally, when they examined what sources were used by 120 bloggers they found that a large majority of bloggers relied on traditional news media as sources. This being noted, the researchers concluded that traditional media and blogs create what they called "a news source cycle," where news content and information is passed between different media (p. 447).

Looking beyond how frequently traditional media utilized blogs as sources, and vice versa, Messner and Garrison (2011) analyzed how traditional media typically sourced the blogs they used, as well as how blogs sourced the traditional media they used; and how different traditional news media and blogs used each other as sources. The authors concluded that traditional media were the dominant sources of blogs, and blogs were increasingly impacting the

agenda of traditional news media. Traditional media tend to use blogs more as opinion sources than factual sources, and the opposite was found true for blogs sourcing traditional media. Additionally, it was concluded that there was no consistency in how traditional media used blogs as sources, or how blog sources were attributed.

Like Messner and DiStaso (2008) and Messner and Garrison (2011), Meraz (2011) also compared intermedia agenda setting influences between traditional media and blogs. The study focused on political blogs and looked at issue selection and emphasis, using a time series analysis. The author concluded that political blogs were setting other media agendas, as well as diluting the influence of traditional media during heighted political periods.

Sourcing

Looking at how different media interact with one another takes us one step closer to understanding how traditional news media interact with other institutions in society to create issues of public concern. As mentioned earlier, this is the idea behind the concept of agenda building, which can more clearly be defined as "the process by which news organizations and journalists feature, emphasize, and/or select certain events, issues, or sources to cover over others" (McCombs, 2004, p. 143). This agenda building approach is more concerned with how issues originate, or how subjects of news coverage become issues, than with the media/audience relationship studied so often by agenda setting researchers.

Agenda building was first defined by Weaver and Elliot (1985) who compared the topics discussed at a small town's city council meetings with news reports of those meetings in the local paper. However, more common in recent studies looking at agenda building, researchers have

tended to examine the actual channels and sources from which published news stories seemed to have evolved.

For example, Brown, Bybee, Wearden and Straughan (1987) examined news sources and news channels appearing in the *New York Times*, the *Washington Post* and four North Carolina newspapers, specifically focusing on sources and the limits of diversity. It was assumed by Brown et al. (1987) that given the competing interests that must be satisfied in the day-to-day production of news, it seemed reasonable to expect that elites, who have a vested interest in the preservation of things as they are, would dominate news coverage. This postulation is based on Gans' (1979) two main criteria for source selection: availability and sustainability. After conducting a content analysis, the authors concluded that both national and local news coverage relied heavily on government sources that were primarily men in executive positions. Additionally, most reporting relied on routine channels, such as press conferences and press releases.

Looking at a different elite group, Stempel and Culbertson (1984) found that physicians were the most frequent sources of medical news in Ohio's 11 largest daily newspapers. Physicians were quoted in almost half of the articles examined and were also the dominant sources within most stories. Physicians dominated coverage in discussions of medical and surgical techniques and specific medical problems. They also dominated when quoted in stories dealing with how the healthcare system worked. Stempel and Culbertson (1984) said dominance in this category could be a reflection of the power and status of physicians in society.

Similar to the Brown et al. (1987) study, Berkowitz (1987) hypothesized that television news would use more government officials as news sources than other kinds of news sources, but that television news would use a higher proportion of routine-channel (press conferences, press

releases, official proceedings) stories than did the newspapers studied by Brown et al. (1987), and would also use more executives as sources than people identifiable as either spokespersons or workers. The results of the study indicated that officials and executives dominated the agenda building process in televisions news; however, that the outcome of the agenda building process should not be viewed within the framework of social control, but directed toward examining relationships between journalists and news sources.

Soloski (1989) further reiterated the work of Berkowitz (1987) on sources and channels of local news, concluding that journalists most often considered public officials as the most legitimate sources of news, which, in turn, showcased only a very specific picture of society.

Continuing to look at sourcing, but from a different perspective, Powers and Fico (1994) not only sought to identify sources that were used in news stories, but also tried to uncover the key influences or reasons for using or failing to use certain sources in order to uncover why previous studies of news stories found most of them to be unbalanced or unfair. In order to accomplish this goal, reporters from high-circulation U.S. newspapers were asked how news sources and reporters' judgments of sources influenced story content. Reporters also were asked about influences from their news organizations including peers, managers and advertisers. It was concluded that news content was most powerfully shaped by journalists' own orientations toward key source qualities, not organizational pressures. However, although reporter judgment dominated, pressures from within the newsroom were still a factor in source selection. Additionally, the view that people who hold power in society control news also was supported by this research study. Finally, professional background of the reporter was found to negatively correlate with reliance on anonymous sources.

Salwen (1995) focused on the relative power of news sources in shaping the news agenda during a natural disaster, Hurricane Andrew. The study investigated whether newspapers quoted sources in business and government more than unaffiliated individuals, as well as whether sources were quoted about topics related to their expertise or personal concerns. The study concluded that reporters interviewed individuals who were not affiliated with government or business more often than government officials, which led to the conclusion that hurricane victims were able to set the news agenda.

Looking specifically at sourcing and blogging, Lowrey (2006) addressed the likely areas of conflict between journalists and bloggers, as well as the strengths and vulnerabilities of both journalism and blogging. Lowrey concluded that the organizational constraints of journalism lead to both vulnerabilities, such as the need for predictability and safeness, as well as benefits, such as the ability to attract resources from other power institutions. Additionally, the internal structure of journalism also creates vulnerabilities, such as the tendency to ignore non-official sources in favor of official sources. These difficulties caused by internal and external factors have, in turn, created gaps that bloggers have started to fill, including partisan expression, stories driven by non-elite sources, and highly specialized content.

Leccese (2009) coded hyperlinks to different sources on six political blogs to determine to what sources of information bloggers were directing their audience with their links; at what rate political bloggers used hypertext links to direct their readers to primary sources; and to what categories of primary sources political bloggers typically linked. Through the analysis, Leccese concluded that political blogs gathered most of their information from secondary sources, including mainstream media and other blogs. It was also determined that political blogs linked to other political blogs at twice the rate that they linked to primary source material.

Sourcing and health news.

Health is a topic of widespread public interest and concern, and one that raises debates around the use of sources due to the important nature of the information disseminated. The research on health and sourcing is more recent, but has still been explored by some researchers, looking at both traditional news media and online media.

Viswanath, Blake, Meissner, Saiontz, Mull, Freeman, Hesse and Croyle (2008) stated that prior to their study, little was known about how health and medical science reporters and editors initiated, prioritized, and developed news stories related to health and medicine. In order to learn more, the authors surveyed 468 reporters and editors representing 463 local and national broadcast and print media outlets. One area of focus for the research was on news sources and resources. The authors noted that prior work on reporting suggested that sources were an important asset for a journalists; therefore, the authors hypothesized that while journalists typically use human sources (e.g., health care providers, scientists) to provide interpretation of results from a scientific study, offer quotes, and provide a context for the findings of a study (including how the results may be salient for a given audience or population), journalists may also use resources such as websites and print materials (nonhuman resources) to verify facts, gather background or additional information, and identify potential human contacts. Based on this assumption, it was concluded that initial ideas for stories came from a news source followed by press conferences or press releases. More specifically, however, it was noted that health journalism was, to a large extent, influenced by whether the journalist was working in a print or electronic medium and whether he or she was working for a local or a national medium. Additionally, the source reliance and newsworthiness criteria varied by the geographical scope, as well as the nature of the medium.

Similar to the Viswanath et al. study (2008), Len-Rios, Hinnant, Park, Cameron, Frisby and Lee (2009) conducted a nationwide survey of health journalists that also explored the agenda building process in health news, focusing on how journalists developed story ideas, valued expert source characteristics, and perceived the acceptability of using public relations materials. The authors concluded that journalists rated non-public relations resources (e.g., other news media, self interest and news audiences) as more important in generating story ideas. Typically, citizens were not thought to have a strong effect on media agendas, but the authors noted that this could be a difference with health-related communication because, unlike general news, the value of health information relied on whether people could use it, helping to explain why the results show that health journalists used audience members and themselves for story ideas more often than was typically believed to be the case in traditional news journalism.

Wallington et al. (2010) published a study that examined how factors that act as antecedents to media agenda setting and framing – a frame being a "schemata of interpretation which allows an individual to make sense of information or an occurrence" – in health and medical news were influenced by organizational and individual characteristics of health reporters (Zoch & Turk, 1998). In regards to sourcing, the results of the study revealed that various factors played a role in use of news sources, including individual characteristics such as education and years working as a journalist. Additionally, organization size, a structural characteristic, played a significant role in news sourcing as well. Health reporters and editors working for small media organizations were significantly less likely to use government scientists and officials, other scientists or researchers and healthcare providers. Regarding resource usage, reporters with less education were more likely to rely on press releases. The authors suggested that these results on source and resource use could be due to the literal and figurative accessibility of press releases

and local sources; both may be easily accessible under tight deadlines and may also do a good job of explaining complex scientific information and jargon in layman's terms and with a local or human-interest angle.

Specifically looking at online health information and sourcing, Hu and Sundar (2009) looked at the effects of online health sources on credibility and behavioral intentions. The study focused on the direct and combined influence of original sources, such as doctors versus laypersons, and selecting sources, such as websites vs. blogs, on the perceived credibility of – and behavioral intentions toward – health information. The authors stated that patients often seek information on their own to obtain answers to health-related questions, instead of waiting for the next appointment with a doctor and, as expected, the most popular place to seek this information is the Internet. Therefore, the research sought to retrieve more information on these computer-mediated communication formats and hypothesized that perceived credibility of health information would vary as a function of the source, that behavioral intentions would vary as a function of the source of health information, and that perceived level of gatekeeping and perceived information completeness would mediate the effects in both perceived credibility and behavioral intentions. Based on these hypotheses, the results indicated that sourcing on health sites had a significant impact on users. Respondents reported greater behavioral intentions toward information attributed to a website than a blog, a personal homepage, or the Internet; however, there was no significant difference between a website and a bulletin board. The effect was only partially mediated by gatekeeping, and participants reported higher levels of information completeness toward information sourced to websites and bulletin boards than to blogs and homepages.

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Additionally, Tanner and Friedman (2011) analyzed authorship and information sourcing for health news on local television websites, with an overall goal of assessing the health content on local TV websites, with specific emphasis on professional authorship, the primary sources of information cited, and the individuals, or expert sources, directly quoted in the news stories. The authors examined what associations exist between the content of the health stories (topic discussed or authorship) and sources of information included in these stories through a content analysis of health information on local television websites. The authors determined that health information was a prominent feature on television news sites, with a majority of sites containing health information, and more than half placing that information on a health-specific page. While stories were more likely to be authored by a television staff reporter, few stories included attribution or quotes from health sources. When a story did include a reference, it was more than likely from a government source.

When it comes to health blogs and sourcing, the topic has been explored by only a few researchers recently; however, there are still a couple of studies conducted of importance to this research study.

Buis and Carpenter (2009) analyzed health and medical non-personal blog content and interactive blog feature use, and their relationship to blogger expertise and blog host. Results showed most health and medical blog posts highlighted and provided commentary pertaining to medical issues found in external media such as books, television, websites, magazines, and newspapers, whereas only a limited number of posts contained actual health or medical information. Utilization of interactive blog features varied greatly throughout the sample utilized, with all containing comment opportunities and news feeds. In addition, distinct differences in patterns of content were evident between credentialed and noncredentialed bloggers, as well as

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different blog hosts. For instance, bloggers with more credentials posted more topic-specific content.

Related to science (not specifically health) blogs and sourcing, Walejko and Ksiazek (2010) analyzed the sources of science bloggers that discussed two different topics, global warming and intelligent design, between 2004 and 2007. The authors were interested in determining if the linking practices of science bloggers differ from those reported in previous sourcing studies and if the linking practices of science blogs differ from those of popular political bloggers. Results indicated that science bloggers often link to blogs and the online articles of traditional news media, similar to political bloggers writing about the same topics. Science bloggers also link heavily to academic and non-profit sources, differing from political bloggers in this study as well as previous research. Therefore, it was concluded that science bloggers utilize some of the traditional sourcing methods, but also diverge towards other methods when necessary.

Sourcing and gender.

Another area of interest in terms of sourcing, and one that often spurs debate, is gender. The relationship between sourcing and gender has been studied by researchers in order to help uncover the gender divide that was once apparent (and may still be) in terms of sourcing, and the agenda setting impact the divide has on consumers.

Zoch and Turk (1998) conducted a study that linked framing with source role in framing and gender of both journalist and source. The authors analyzed whether journalists favored official sources of information in their reporting of the news; whether the sources, and especially the official sources, upon whom journalists relied were typically male; whether the gender of the

reporter made a difference in the tendency to rely on official sources; whether the gender of the reporter made a difference in the extent to which women were used as sources. The authors concluded that based on the findings from three newspapers that were content analyzed, the media presented an undiversified view of the world. According to the study, media presented to their audiences that the news was made and information controlled almost exclusively by men acting in some official capacity. Women, therefore, were rarely cited as sources, which led consumers to conclude that women were virtually without power and thus had no access to information that would be of use to the public. However, the authors noted that although this was disappointing, it might have mirrored reality at the time, as women were not represented in the higher ranks of organizations in proportion to their total number in the population. Finally, it was found that female journalists would be more likely to source female than do male reporters.

Additionally, Armstrong (2004) conducted a more recent study on the topic of gender and source selection that analyzed the frequency and placement given to male and female sources and story subjects in newspaper coverage, and the relationship of the person cited to the gender of the reporter. Specifically, Armstrong (2004) was interested in determining whether the portrayal of women in newspapers began with the writer or an inter-media influence within the organization. The findings indicated that, as expected, male sources and subjects received more mentions and were placed more prominently than female sources in the stories. Moreover, the results indicated that the gender of the newswriter could be linked to the gender portrayals within the news stories.

To further explore the link between gender of the journalist and gender of sources represented throughout news stories noted by Armstrong (2004), Zeldes, Fico and Diddi (2007) explored whether gender and race of reporters was associated with source-use diversity in local

television coverage of the 2002 governor's race in Michigan in the context of the organizations they work for and the communities in which they report. Results indicated that gender and race of reporters influenced women and minority source use, as did community diversity. Female reporters used women sources more often than male reporters and female journalists used non-expert sources more often than male reporters.

Also looking at diversity and sourcing in television coverage, Voinche, Davie and Dinu (2010) specifically looked at the relationship between source gender and race as a factor in expert and non-expert sourcing. It was concluded that male expert sources were utilized more often than female expert sources, and white expert sources were utilized more often than minority expert sources.

Similarly, Freedman, Fico and Durisin (2010) looked at gender diversity in relation to expert versus non-expert sources. The authors hypothesized that male sources would more often be expert sources than female sources; male expert sources would get more attention than female sources; and female reporters would produce a greater portion of stories with female sources than would male reporters. The authors found that male expert sources were both more utilized and received a greater amount of attention, with female experts cited more likely to appear deeper in a story. Additionally, it was determined that female reporters were not more likely to source women than male reporters.

Overall, this review of the literature shows that agenda-setting researchers have shifted their focus away from just looking at traditional news media and have begun to analyze the impact of computer-media communication, with specific emphasis on blogs and on public opinion. Additionally, more researchers have turned their attention to agenda building, analyzing

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the impact of sources, because it has been determined that other media, as well as outside sources strongly impact the media's agenda.

Furthermore, while various studies have focused on intermedia agenda setting and sourcing, there are still gaps in the literature related to new media and agenda building, specifically as they relate to health news and gender issues.

Nutrition

Within the vast category of health, there are a number of specific topics that are regularly searched online, including specific diseases or medical problems, certain medical treatments or procedures, and nutrition. According to Fox (2011b), 52% of Internet users searched for exercise or fitness information online and 33% searched for information about how to lose or control weight. Additionally, 60% of U.S. adults track their weight, diet or exercise routine (Fox, 2013b). In order to narrow down the scope of the research, this study will focus specifically on the health category of nutrition: importance of improving societal nutrition, the need for reliable nutrition information, especially online where information is available at the touch of a button, and the fact that previous research has shown that people feel like they have more agency and authority when it comes to seeking out their own nutrition information than other health topics,

The Center for Disease Control and Prevention (CDC) (2011) stated that nutrition plays an important role in maintaining overall health, partially due to the fact that nutrition affects both ones physical and mental health. Additionally, the important role of nutrition is being recognized as an essential part in overall health-related quality of life, and there is increasing scientific evidence demonstrating clear links between nutritional maintenance and disease development (Lenoir-Wijnkoop et al., 2011). According to the Healthy Eating Index (HEI), the diets of most

Americans needed improvement, with only 10% of the population having a good diet (Basiotis, Carlson, Gerrior, Juan & Lino, 2002). This finding is a concern because, as mentioned above, nutritional maintenance is associated with disease development. Specifically, dietary factors are associated with 4 of the 10 leading causes of death (coronary heart disease, certain types of cancer, stroke, and type 2 diabetes) (Basiotis et al., 2002). All Americans, regardless of income level, could benefit from dietary improvements by making small changes, such as choosing more nutrition-dense forms of food, which would ultimately provide substantial health benefits (Guenther et al., 2008). And, the use of nutrition and health claims, and access to proper nutritional health information in general, have the potential to enhance consumers' nutritional knowledge and healthy eating patterns as well as improve public health more generally (Leathwood, Richardson, Strater, Todd & van Trijp, 2007).

Additionally, these days, a wealth of nutrition information is easily accessible. From diet books to blog posts, the prevalence of this information shows that nutritional health has become a priority in our society. Campbell and Campbell (2006) noted that "even though information and opinions are plentiful, very few people truly know what they should be doing to improve their health" (p. 1). They highlight that this is not because the research on nutrition has not been done; it is because the valid information is buried beneath irrelevant, and sometimes even harmful information. This confusion among Americans about diet and nutrition has much to do "with how health information is generated and communicated and who controls such activities" (p. 7).

Gender

In regards to gender issues, communication research, like that of other social sciences, has incorporated the study of gender into standard research approaches, and understands it as a variable that can account for measurable differences in women's and men's speech, interaction, and mass communication. However, there is some question whether communication research typically distinguishes properly between the categories of sex and gender in the research process. According to the World Health Organization (2012), "'sex' refers to the biological and physiological characteristics that define men and women, and 'gender' refers to the socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate for men and women." That is, according to this interpretation, all humans are either male or female; their sex is fixed. "But cultures interpret sexed bodies differently and project different norms on those bodies thereby creating feminine and masculine persons" (Mikkola, 2011).

In order to distinguish the biological differences from social/psychological ones, feminists appropriated the term 'gender' (Mikkola, 2011). For this study, gender will be studied as a variable to determine whether blogger's gender plays a role in their source selection by specifically looking at whether there is a difference in the sources selected by women and men nutrition bloggers. Gender was chosen as the variable under study, as opposed to sex, because it is the researcher's belief that the study of sex is never neutral; it is always interpreted within the context of deeply held beliefs about women's and men's nature. In other words, while sex is immutable, gender is something over which individuals have control– it is something that one can alter and change based on individual choices, and people should be allowed to make those choices. As noted by Butler (1999), "Gender is not something one is, it is something one does; it is a sequence of acts, a doing rather than a being" (p. 25). And repeatedly engaging in

'feminising' and 'masculinising' acts solidifies gender in our society and in turn makes people falsely think of gender as something they naturally are, when, in truth, gender only comes into being through these gendering acts (Mikkola, 2011).

  With that being said, it appears from a brief review of the literature in communication research, with a specific focus on "gender" and sourcing, that the terms 'sex' and 'gender' are often used interchangeably or incorrectly (when defining the terms similarly to the World Health Organization) or not defined at all. For instance, Zoch and Turk (1998) did not define their use of the term gender when analyzing the sources of news stories. They also used the terms gender and sex interchangeably throughout the study. Additionally, Armstrong (2004) looked at gender disparity within newspaper sources and subjects and then attempted to find potential influences of these disparities on newspaper content. In the study, Armstrong discussed gender and gender representation but did not define either term or outline how gender of the journalist or sources was determined. Armstrong and Nelson (2005) looked at gender by analyzing source information, such as names and titles. The researchers specifically mention that this source information may act as a trigger for implicit stereotypes, how sources cues within a story might trigger differences in one's propensity to make gender attributions and how individual personality differences might affect the way source information is read and interpreted. The authors defined gender stereotypes as "beliefs about certain attributes – traits, physical characteristics, role behaviors, and occupational status" – used to differentiate women and men; however did not define gender separately (Armstrong & Nelson, 2005, p. 822). Similarly, Zeldes et al. (2007) stated that they were studying gender, but did not operationally define the term or explain how gender was determined. Unlike the above studies, Voinche et al. (2010) stated that "Source gender simply categorized the sources used in the stories as male, female, or not

applicable/hard to decide," but did not specify how the selection was determined. And, Freedman et al. (2010) stated that gender was determined by bylines, and that ambiguous names and stories without bylines were put into a "can't tell" category.

Additionally, historically many feminists have understood 'woman' differently: not as a sex term, but as a gender term that depends on social and cultural factors (like social position). In so doing, they distinguished sex (being female or male) from gender (being a woman or a man), although most ordinary language users appear to treat the two interchangeably (Mikkola, 2011). All of the studies analyzed used the terms interchangeably (Zoch & Turk, 1998; Armstrong, 2004; Armstrong and Nelson, 2005; Zeldes et al., 2007; Freedman et al., 2010; Voinche et al., 2010). While this distinction of sex as male/female and gender as woman/man has been under debate recently, for consistency purposes and because the focus of the study will be on gender, this study will use 'woman,' 'man' and 'other' to distinguish between gender identifications. Gender will be defined as what it is to be a woman or a man and will be determined by the bloggers' choice of categorization, alternatively known as the bloggers' self-identified sex category.

Gendered Space

There is much information on the Internet as a gendered space, which generally concludes that although access to the Internet in the United States has reached parity among men and women, over time gender differences in terms of usage, agency, and representation with technology are becoming evident (Royal, 2008). Initially it was thought that the Internet had a more equalizing effect than previous media because of its reduced barriers to access and the potential for different voices, with sex and gender under the radar. However, according to Royal

(2008), considering access alone does not highlight other types of divides that may exist

regarding gender, such as the different trends in usage patterns, which are emerging now that

access to the Internet has reached parity.

So although women may be achieving levels of Internet access that are at least equal to

those of men, research indicates that there are other divides to which we must continue to pay

attention (Royal, 2008). Therefore, while there have been studies conducted on understanding

women's relationship with technology and the ways that women are ultimately represented

through technology, this study hopes to engage with specific online texts – nutrition blogs – to

explicitly understand whether and how women are underrepresented by this medium in terms of

sourcing, in order to hopefully lead to a deeper understanding of how both women and men are

making meaning supporting or negating the preconceived notions around women in terms of

support and representation online.

Research Questions

Based on the review of the literature related to agenda setting, it is evident that much

research has been conducted on this topic and has often concluded that the likelihood of agenda

setting effects – both first and second level – on news media consumers is well supported.

Additionally, it has been concluded that as society continues to utilize news media in

order to receive information, people will continue to see these agenda setting effects through new

media vehicles of communication. While traditional news media remain present in our society, it

has become apparent in recent years that new media, particularly blogs, are here to stay as well

as needing to continue to be a focus of research in the communication field. Although a majority

of the research on agenda setting has focused on traditional news media, more researchers are now interested in looking at the role of new media as agenda setters as well as agenda builders.

With this in mind, previous research that has been conducted on new media, with specific emphasis on blogs, and media relationships to both agenda setting and agenda building, has most often concluded that, similar to traditional news media, a small number of blogs set the news agenda for most other blogs (Haas, 2005); that an overwhelming majority of blogs cite traditional news media, as well as other blogs (Singer, 2005; Reese et al., 2007); that traditional news media are increasingly utilizing blogs as sources (Sweetser, Golan et al., 2008; Lowrey & Mackay, 2008); and that blogs are more likely than traditional news media to include partisan expression and stories driven by non-elite sources (Lowrey, 2006). For all of these reasons, there needs to be more research conducted on the agenda setting and agenda building effects of blogs, as a medium that is both similar and different to the traditional news media. And, assuming, that agenda building has a direct effect on agenda setting – in that what sets the media agenda will inevitably direct what sets the public's agenda – this study will focus on the impact of agenda building.

Most of the previous research on agenda building has primarily studied general assignment, political and public affairs topics (Salwen, 1995; Reese et al., 2007; Sweetser, Golan et al., 2008; Leccese, 2009; Messner & Garrison, 2011; Meraz, 2011); the work of journalists who cover health has been understudied, as has the work of health bloggers, with a couple of exceptions mentioned in the review of literature (Viswanath et al., 2008; Len-Rios et al., 2009; Wallington et al., 2010; Buis & Carpenter, 2009; Walejko & Ksiazek, 2010). Although agenda building and its relationship to both blogging in general, as well as health blogging, has been

brought to the communication research field in recent years, there is still more need for expanding research on health/nutrition blogging in regards to agenda building.

Therefore, from the review of the literature, several research questions emerged that linked agenda building with health/nutrition blogging.

Viswanath et al. (2008) found that health and medical reporters and editors' initial ideas for stories came from a "news source," followed by a press conference or press release; and Buis and Carpenter (2009) concluded that most health and medical blog posts highlighted and provided commentary pertaining to medical issues found in external media such as books, television, websites, magazines, and newspapers, whereas only a small percent contained actual health or medical information. Which leads to the following research question:

RQ1: How frequently do nutrition bloggers use sources?

Additionally, there were a variety of studies that looked at the type of sources used by health bloggers. Viswanath et al. (2008) and Len-Rios et al. (2009) determined that health journalists rated non-public relations resources (other news media, self-interest/news staff, news audiences) as more important in generating story ideas than non-public relations sources. Tanner and Friedman (2011) analyzed authorship and information sourcing for health news on local television websites and determined that few stories included attribution or quotes from health sources, and when they did, it was most often from a government source. Walejko and Ksiazek (2010) analyzed the sources of science (not specifically medical) bloggers and concluded that science bloggers often linked to blogs and the online articles of traditional news media, as well as academic and non-profit sources. Based on these studies, the following research question arose:

RQ2: Which sources do nutrition bloggers use?

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Gans (1979) hypothesized that availability and sustainability were the two main criteria for source selection. Brown et al. (1987) concluded that most reporting relied on routine channels such as press conferences and press releases and that both directed the reporters to official sources. Berkowitz (1987) also concluded that official sources dominated source use, but noted that agenda building needed to focus more often on examining the relationships between journalists and news sources. Powers and Fico (1994) concluded that pressures from within the newsroom were a factor in source selection, but reporter judgment and orientation towards key sources was even more important. Wallington et al. (2010) determined that both news organization structure and individual characteristics of health journalists may have an effect on sources and resources used. Additionally, looking specifically at blogs, Lowrey (2006) postulated that difficulties caused by internal and external factors within traditional newsrooms may lead to different source selection outcomes than the unstructured source selection procedures of blogs. These studies led to the following research question:

RQ3: How do nutrition bloggers find and choose sources?

Additionally, it is apparent from the review of the literature that gender is an important issue in relation to agenda building as well. Zoch and Turk (1998) looked at gender as a variable in source selection and use in traditional news media, and concluded that women were not only rarely cited as sources, but that official sources – which were mostly male – were cited more often than unofficial sources by both male and female reporters, and that female journalists were more likely to cite females than males. Furthermore, Armstrong (2004) looked at the influence of reporter gender on source selection in newspaper stories and concluded that female reporters were more likely to source females. With these two studies in mind, the following research question was derived linking gender and agenda building:

RQ4: Is there a difference in the sources selected by women and men nutrition bloggers?

These four research questions were chosen to best achieve the overall goal of this study: to analyze nutrition blog sources in order to determine the actual root of the information provided. In order to best answer the research questions, a two-method research approach was chosen (McLeod, Backer & Byrnes, 1974; Williams, Shapiro & Cutbirth, 1983; Hansen, Ward, Conners & Neuzil, 1994; Zeldes & Fico, 2007; Wu & Coleman, 2009).

Method

This study was conducted to establish how frequently nutrition bloggers use sources, determine which sources nutrition bloggers use, analyze how nutrition bloggers find and choose sources, and determine if there is a difference in the sources selected by men and women nutrition bloggers.

It was determined that the research questions would be best answered by different methods. Triangulation – using a combined methodological approach to solve a problem – has been understood as a good way to increase validity of evaluation and research findings. Typically, through triangulating researchers expect various data sources and methods to lead to a singular proposition around the area being studied (Mathison, 1988). As noted by Wimmer and Dominick (2011), "For the past several years, some friction has existed in the mass media field and in other disciplines between those who favor quantitative methods and those who prefer qualitative methods. Most researchers have now come to realize that both methods are important in understanding any phenomena" (p. 49).

For this reason, along with study's need for information that is best found through a combination of speaking with the bloggers and reviewing the blogs, in-depth interviews followed by a content analysis were determined as creating the best approach for answering the four research questions. This combination is believed to give a much more complete picture of both the content and process involved in nutrition blogging (McLeod et al., 1974; Hansen et al., 1994; Zeldes & Fico, 2007).

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Sampling

The sample of nutrition blogs was constructed based on a list of nutrition blogs compiled by Cision, a business and communication intelligence company that provides media research, distribution, monitoring and communication evaluation for public relations and internal relations purposes to various organizations throughout the world (CisionPoint, n.d.). The list of journalists/bloggers on Cision is compiled by blogger outreach and proactive research conducted by Cision, as well as client feedback. Cision's proactive research involves the emailing and mailing of more than one million requests for updated information each year. All media outlets and contacts are verified by phone, email or mail a minimum of twice per year, with the majority of outlets receiving a copy of their information at least four times per year. Thousands of top outlets are updated constantly throughout the year and assigned to specific media researchers who develop relationships with the journalists and outlets they are assigned. Additionally, Cision reviews more than 100 industry websites on a daily and weekly basis for breaking news occurring in the media industry. It also monitors more than 800 publishing company and owner sites looking for updates that need to be reflected in their database. All journalists/bloggers added to the database have been contacted or confirmed with someone at their organization. Consequently, while the Internet is used as an aid in Cision's research, any information obtained must be verified by a representative of a media outlet (Cision, 2012b).

The Cision list was compiled by searching blogs with a nutrition focus; therefore, included blogs had to have a primary objective of providing information related to nutrition. These included blogs could relate to an individual topic, or be focused on the nutrition community/industry in general. Only English-language, U.S. or Canadian nutrition blogs that provided direct contact to the author, either via email, phone number or online contact form, with

at least one post published within a month prior to the data collection end date, August 31, 2012, were chosen, to assure the blog was still active and could be properly analyzed by the coders. Additionally, the blog had to include an archive with at least one year of past posts because the analysis included a one-year census of posts, spanning from September 1, 2011 to August 31, 2012. Multiple-author blogs were eliminated, unless it was evident that there was one primary blogger and the rest of the authors were just contributing writers, in order to determine who the main blogger was for the purpose of the analysis. The blog could be supported by an organization or be independently hosted.

The original list consisted of 336 blogs. Twelve blogs were immediately eliminated for non-English language content, leaving 324 blogs. The list was then separated into women bloggers and men bloggers. With that separation, there were 269 women bloggers and 55 men bloggers. The list was then sorted by "average unique visitors per month," a web analytic calculated by Cision, in order to reach the most popular bloggers possible. Based on this final list, the first 10 women bloggers and first 10 men bloggers that fit into the inclusion criteria and were available for interviews were chosen for the study sample. Twenty-four men bloggers and 28 women bloggers were eliminated because they either did not respond or did not agree to participate in the study (see Appendix 1 for a complete list of blogs utilized for the study as well as blog information).

In-Depth Interviews

Institutional Review Board (IRB) approval is needed for all research protocols involving humans to ensure compliance with federal, state and local regulations. Therefore, prior to contacting the bloggers, study logistics were read and reviewed by the IRB at Virginia

Commonwealth University. On May 16, 2012, the study qualified for exemption. After IRB approval was granted, the bloggers were contacted via the contact information available on the blog, and asked to set up a phone interview at a later date. All interviews were conducted via telephone, and they were conducted prior to the content analysis to eliminate researcher bias during the interview process. Interviews lasted between seven and 25 minutes, in which time interviewees were asked to describe their overall motivation for blogging as well as the frequency of which they use sources, the types of sources typically used, their process for finding and choosing sources and their conscious or unconscious choice of source gender. The questionnaire was flexible because follow-up questions were allowed as determined by the interviewer. The flexibility of the questionnaire along with the amount of detail the interviewees provided explains the varying lengths of times of the interviews (see Appendix 2 for a list of sample interview questions). The interviews were based on Baxter and Babbie's (2004) qualitative interviewing practices and were analyzed by transcribing the content and using Nvivo, a qualitative data analysis software program, to analyze the interview data and develop sourcing categories.

Content Analysis

Based on the same sample of blogs as the in-depth interviews, a quantitative content analysis was conducted to answer the remaining research questions as well as to increase the validity of the research findings. The quantitative content analysis was based on Neuendorf's (2002) guidebook for content analysis.

It was determined that a one-year census of blog posts would be drawn for the content analysis of this study. A census involves the selection of all units in the sampling frame, which

provides the greatest possible representation. Therefore, a content analysis of the 20 nutrition blog posts published from September 1, 2011 to August 31, 2012, resulting in 3,156 blog posts, was conducted.

Based on previously research, a scale was developed for the purposes of this study (Zoch & Turk, 1998; Messner, 2010). The unit of analysis for this content analysis was the source. Coding categories for each blog post included blog name, blogger title, blog post date, blogger gender (man, woman or other) and blog post number. For the purpose of this study, gender was defined as what it is to be a woman or a man and was determined by the bloggers' choice of categorization, alternatively known as the bloggers' self-identified sex category, based primarily on direct identification on the blog, typically found on the blogger profile. If direct identification was not provided, then language cues, such as referring to oneself as "mother, father, his, her, he and/or she" was utilized to determine gender. If neither direct identification or language cues were present, then the researcher based the decision on source cues such as name and picture identification, which is the method consistently used in previous studies conducted in mass communications (Zoch & Turk, 1998; Armstrong, 2004; Armstrong and Nelson, 2005; Zeldes et al., 2007; Freedman et al., 2010; Voinche et al., 2010).

On each day there could have been none, one or several posts on the blogs. The post could only contain one word or could be several paragraphs long. Each post was coded separately. The coder then identified sources within each post, counting from top to bottom, and each source was coded separately. Therefore, for most dates there were multiple entries on the coding sheet for each blog. It was important that the coder identified the direct news source for the blog. For instance, as noted by Messner (2010), a blog can quote a doctor, but can at the same time connect the quote with a hyperlink to WebMD, which conducted the interview with

the doctor. In this case, the news source of the blog was WebMD. It was the goal of this study to identify the sources that blogs rely on. Therefore, if the blogger had conducted the interview with the doctor, then the doctor would be considered the source. In case of an embedded video link, the source of the blog was the producer of the video, e.g. CNN or ABC News.

For each source, source characteristic (i.e., direct quote, direct quote with hyperlink, indirect quote, indirect quote with hyperlink, hyperlink only, embedded video, citation, other) was coded. Sources of a blog differ from one blog to the next, sometimes appearing as a direct or indirect quote, or at other times appearing as a hyperlink, an embedded video, or boxed item. For the purpose of this study, direct quotes were identified either by quotation marks or boxes. Indirect quotes were identified by the attribution without a direct quote. Hyperlinks were identified by being able to transfer the coder to another website or another page on the blog, and video links were identified by being able to transfer the coder to a video whether the video was embedded on the current blog page or directed the coder to another website or another page on the blog. A citation is a source description that typically appears at the end of the blog post and includes the appropriate bibliographic information: author, title, place of publication, publisher, date of publication.

Additionally, for each source, source identification by name and source gender (man, woman, both, cannot tell/other) was coded. As with blogger gender, source gender was determined by the self-identified sex category of the source, followed by language/source cues. "Other" included research institutions and corporate organizations. "Cannot tell" included those that the researcher was unable to determine.

Source affiliation/identification was coded, which included any identification of the sources employer or organization the source represented. The qualifying question of "Is the

source health-related?" was added to determine whether the source was a medical doctor, nutritionist, healthcare affiliate, medical professor, scientist, or medical institution. Title description of the source, which refers to any official title used, as well as type of source were also identified. Type of source included politics and government (e.g., politician, political organization, government official), business (e.g., executive, institution), non-government organizations (NGOs), education and science (e.g., academic publications, scholars), traditional news media (e.g., print, TV, radio and online formats), Internet-only media (e.g., Google, Yahoo, Huffington Post), unaffiliated blog/blogger, non-official, multiple (to be specified), other (to be specified) and cannot tell (see Appendix 3 for the coding protocol that was utilized).

After training and an intercoder reliability check, one coder examined the blog posts. Intercoder reliability was established with approximately 10% (n=304) of the coding content. Intercoder reliability was determined by using PRAM, a program that calculates reliability in content analysis coding, and percentage agreement was based on *Scott's Pi*, a statistic for measuring intercoder reliability that accounts for chance agreement (Scott, 1955). Overall, intercoder reliability was assessed at .94 for *Scott's Pi* (1955), with the coefficients for individual variables ranging from .83 to .99.

Triangulation

Based on the above in-depth interviews and content analysis, the research questions below were considered:

RQ1: How frequently do nutrition bloggers use sources?

Through the content analysis, it was determined how often nutrition bloggers were using sources by the number of sources coded for each blog post in the 20 blogs.

RQ2: Which sources do nutrition bloggers use?

The content analysis also helped to determine which sources nutrition bloggers used by coding for source identification by name, source gender, source affiliation/identification used, title description of source and type of source. The in-depth interviews further investigated this question by asking about sources typically used, and what sources were favored by the blogger.

RQ3: How do nutrition bloggers find and choose sources?

Finding and choosing sources was analyzed through the in-depth interviews by asking bloggers directly where they go to find sources and how they typically determine which sources should be utilized. With specific interest in gender of sources chosen, bloggers were asked if they consciously chose sources based on gender.

RQ4: Is there a difference in the sources selected by women and men nutrition bloggers?

To determine whether there was a difference in source selection by women and men nutrition bloggers, the content analysis coded for gender of the bloggers to determine if there were differences in type of source and/or source gender.

The results of the in-depth interviews and content analysis answered these four research questions and helped to draw various conclusions around nutrition blog sourcing, specifically related to source frequency and selection, in order to better understand the source of the information provided.

Findings

The goal of this study was to analyze the sources of nutrition blog information. This was attempted by analyzing the frequency and type of sources used by nutrition bloggers. The study analyzed 3,156 blog posts by 20 nutrition bloggers during a one-year period from September 1, 2011 to August 31, 2012, yielding 5,263 sources. The nutrition blogger backgrounds ranged from nutritionists/dieticians and doctors to trainers, traditional news journalists, chefs and unnofficial everyday consumers that blog about specific diets or their eating habits. On average, each blogger posted 157.8 times and used 263.1 sources during the year. However, the distribution of posts varied greatly by blog. For example, the blog that posted most frequently, Eat Like Me, had 24.7% (n=781) of the total posts, followed by Modern Paleo with 11.7% (n=370) and Fooducate with 11.5% (n=364). The blog that posted least frequently, Eating to Live, only had 0.3% (n=10) of the total posts, followed by Random Acts of Cooking with 0.4% (n=12) and DrMirkin with 0.4% (n=13) (see Table 1).

The four research questions posed for this study will be answered separately in the following sections.

RQ1: How frequently do nutrition bloggers use sources?

Based on the content analysis, it was determined that sources were used in 57.5% (n=1,687) of the posts, meaning that sources were not used in 46.5% (n=1,469) of the posts. As with blog posts, the distribution of sources varied greatly by blog. It was found that 1,687 blog

posts cited at least one source, 830 blog posts cited at least two sources and 525 blog posts cited at least three sources. Additionally, four blog posts cited 37 sources and two blog posts cited 38 sources, showcasing the range of sources cited. The average number of total sources used by all bloggers was 263.1, with an overall source count ranging from Random Acts of Cooking with 0.1% (n=4) to Modern Paeleo with 49.5% (n=2,607). Calculating average source per post, the overall average was 1.7 sources per post, with Modern Paleo averaging the most with 7 sources per post and Eat Like Me averaging the least with 0.1 sources per post.

Table 1: Blog Post and Source Frequency by Blogger

	Total Posts	Total Sources	Average Sources per Post
Celeb Fitness and Exercise Examiner	0.6% (n=19)	0.7% (n=36)	1.9
Celiac Disease Guide	4.6% (n=145)	1.0% (n=55)	0.4
Dave Grotto's Nutrition Housecall	0.5% (n=17)	1.0% (n=54)	3.2
DrMirkin	0.4% (n=13)	0.5% (n=29)	2.2
Eat Like Me	24.7% (n=781)	0.8% (n=41)	0.1
Eating to Live	0.3% (n=10)	0.1% (n=7)	0.7
Fit for Life	4.1% (n=129)	1.3% (n=68)	0.5
FitCity	5.0% (n=159)	3.9% (n=204)	1.3
Fooducate	11.5% (n=364)	9.6% (n=505)	1.4
High Chair Times	5.1% (n=160)	4.8% (n=250)	1.6
Modern Paleo	11.7% (n=370)	49.5% (n=2,607)	7.0
Nutrition Blog	3.6% (n=112)	0.6% (n=32)	0.3
PaulsHealthBlog	8.1% (n=255)	6.5% (n=341)	1.3
Random Acts of Cooking	0.4% (n=12)	0.1% (n=4)	0.3
Savvy Vegetarian	1.6% (n=49)	1.4% (n=76)	1.6
Spokane Healthy Living Examiner	1.0% (n=32)	2.7% (n=140)	4.4
Start/Finish	0.8% (n=25)	2.5% (n=132)	5.3
The Veg Blog	0.6% (n=19)	1.8% (n=96)	5.1
Weight Loss Examiner	5.8% (n=183)	2.3% (n=119)	0.7
Weighty Matters	9.6% (n=302)	8.9% (n=467)	1.5
Total	*100% (n=3,156)*	*100% (n=5,263)*	*1.7*
Average	*157.8*	*263.1*	*1.7*

This shows that frequent posters are not necessarily frequent sourcers, and visa versa. For example, Start/Finish only posted 25 times throughout the year but used 132 sources at the same time, therefore averaging 5.3 sources per post. Similarly, The Veg Blog only posted 19 times throughout the year, but used 96 sources, averaging 5.1 sources per post. Eat Like Me had 781 blog posts throughout the year. It was the the blog with the most posts, but only used 41 sources, averaging the lowest ratio with 0.1 sources per post. Beyond these outliers, there are also those bloggers whose average sources per post were closely aligned with the total average of 1.7 average sources per post. High Chair Times posted 160 posts and sourced 250 times throughout the year, averaging 1.6 sources per post. Savvy Vegetarian posted posted 49 times and sourced 76 times throughout the year, averaging 1.6 sources per post (see Table 1).

The blogging was distributed evenly throughout the one-year time period, with the bloggers most frequently posting in December with 612 total posts, and least frequently posting in July with 521 total posts. Similarly, bloggers most frequently sourced in December with 489 total sources, and least frequently sourced in July with 397 total sources.

RQ2: Which sources do nutrition bloggers use?

The content analysis uncovered that while 46.5% (n=1,469) of blog posts analyzed were not sourced at all, 53.5% (n=1,687) posts were sourced at least once. As noted earlier, it was found that 830 blog posts cited at least two sources and 525 blog posts cited at least three sources. Additionally, four blog posts cited 37 sources and two blog posts cited 38 sources, showcasing the range of sources cited. Overall, 5,263 total sources were cited in the 20 blogs analyzed throughout the year. In order to determine what type of sources nutrition bloggers use most often, the content analysis analyzed source characteristic as well as gender of source and

type of sources. Sources were most frequently characterized by hyperlink only (64.1%, n=3376). Hyperlinks were identified by being able to transfer the coders to another website. Hyperlinks only was followed by direct quote with hyperlink (27.1%, n=1426). Direct quotes were identified by either by quotation marks or boxes. Next, sources were most frequently characterized by direct quote only (3.0%, n=160) and embedded video (3.3%, n=175). Embedded video links were identified by being able to transfer the coder to a video whether the video was implanted on the current blog page or directed the coder to another website or another page on the blog. Overall, 92.2% (n=4,856) of the sources used a hyperlink, 30.1% (n=1,586) used a direct quote and only 1.5% (n=77) used an indirect quote. Indirect quotes were identified by the attribution without a direct quote (see Table 2).

Table 2: Overall Source Characteristic Usage

Direct Quote	3.0% (n=160)
Direct Quote with Hyperlink	27.1% (n=1,426)
Indirect Quote	0.5% (n=26)
Indirect Quote with Hyperlink	1.0% (n=51)
Hyperlinks Only	64.1% (n=3,376)
Embedded Video	3.3% (n=175)
Other	1.0% (n=49)
Total	*100% (n=5,263)*

Of the 5,263 total sources cited in the 20 blogs throughout the year, 19.3% (n=1,018) were women sources and 15.8% (n=832) were men sources. Most frequently, however, 64.5% (n=3,394) of the sources were categorized as "other/cannot tell," meaning that the gender was unidentifiable or the source was a research institution, corporate organization or could not be identified (see Table 3).

Table 3: Overall Gender of Sources Used	
Women	19.3% (n=1,018)
Men	15.8% (n=832)
Both	0.4% (n=19)
Other/Cannot Tell	64.5% (n=3,394)
Total	*100% (n=5,263)*

Health-related sources, which were defined as medical doctors, nutritionists, healthcare affiliates, medical professors, scientists or medical institutions, were used 26.6% (n=1,402) of the time, and non-health-related sources were used 73.4% (n=3,861) of the time. Overall, 39.4% (n=2,076) were "blog/blogger," which included any unaffiliated blogs or bloggers, followed by 21.1% (n=1,113) that were "Internet-only media," which were defined as media that only had an online format such as *The Huffington Post* and search engines such as Google and Yahoo!. In addition, 13.5% (n=709) were "other/cannot tell," which included those that the coders was unable to determine and 9.3% (n=490) were "education/science," which included academic publications and scholars. Also, 7.4% (n=389) were "traditional news media," which included print, TV, radio and online formats of the mass media that focus on delivering the news, and 4.8% (n=254) were "non-government organizations," which were defined as legally constituted organizations created by natural or legal people that operate independently from any form of government (see Table 4).

RQ3: How do nutrition bloggers find and choose sources?

During the in-depth interviews, all bloggers were asked to discuss their process for finding and choosing sources. The interviews found that bloggers find and choose sources in a variety of ways, but the analysis of the question could be categorized into one of three overarching ways: proactive and/or reactive reading, personal experience, and industry experts or

organizations. A majority of the responses to this question during the interviews disclosed that bloggers feel that credibility of a source is essential, but the way in which sources are found and chosen varies from one blogger to the other, and often times individual bloggers use various methods to select sources.

Table 4: Overall Source Type Usage

Politics/Government	2.4% (n=127)
Business	1.0% (n=54)
Non-government Organizations	4.8% (n=254)
Education/Science	9.3% (n=490)
Traditional News Media	7.4% (n=389)
Internet-only Media	21.1% (n=1,113)
Blog/Blogger	39.4% (n=2,076)
Non-official	1.1% (n=51)
Other/Cannot Tell	13.5% (n=709)
Total	*100% (n=5,253)*

Reactive/Proactive Reading

Several bloggers stated that their choice of which sources to use was often a result of reactive – reading something and then deciding to write about it – reading. While other bloggers stated that their choice of which sources to use was often a result of proactive – actively seeking out information to read in plans of writing about it – reading. In other words, they identify topics and sources by consuming a lot of information, regardless of whether they sought the information out or it came to them. Responses related to reactive and proactive reading could be further broken down into a number of subcategories including reactive reading only, pitches, consuming news, reading blogs, finding support sources, preferred sources, and reactive and proactive methods combined.

Reactive reading only.

Several bloggers stated that they come across information or that they are provided with information in various ways and that this determines what topics they write about and what sources they use. One blogger stated:

> Usually they come to me. Well, what I mean by that is that it's something that I've read; something that catches my eye. If I'm looking at a magazine and I see an article about something, then I'll say 'I should check that out.'

Similarly, when asked how sources are found and chosen another blogger stated:

> I do not have a particular source of information that I use for my blog posts. In fact, I often wonder where my next blog post will come from. Then the next thing I know, I read or hear something and it strikes me, 'That would make a good blog post.'

These responses showed that several bloggers read something and then decided to write about it.

Pitches.

While still a reactive approach, but different than reading, several bloggers mentioned pitches, which are attempts to promote or sell, that are sent to them, either by readers or public relations practitioners. For instance, one blogger stated the following:

> I have lots of people who send me articles at this point that they think I should cover. I'd say it's almost daily that I get a pitch. And every once in a while it will be a worthwhile topic. But it's rare that somebody finds something before me.

Specifically mentioning public relations practitioners, another blogger said, "I get pitches from PR people and newswires. And I get ideas from them."

Similar to pitches, product reviews were also mentioned by a few bloggers. One blogger stated the following:

Recently I've been sent a lot of different products to try, like nutritional supplements and stuff like that. Things people want me to try. If I like them then I'll mention them. But I won't mention anything if I don't believe in it and if I don't think it's true and helpful.

Another blogger said, "I get a lot of books to review. I'll read the books and I have a special tab for the ones I like on my blog."

This idea of pitches and product reviews was mentioned by several bloggers and shows that some bloggers are influenced by information they receive from public relations practitioners, readers or other people promoting books and products.

Consuming news.

Merely consuming a lot of news was a common approach to finding and choosing sources and topics mentioned by bloggers. Several bloggers mentioned this approach to finding and choosing sources. For example, one blogger said:

I find sources primarily from reading. I'll be reading a book or news article and it will hit me to do a quick blog post on it. Sometimes, people will send me links too about health subjects that they see in the news.

Another blogger reiterated this idea of finding and choosing most of his ideas and sources by paying attention to the news:

I just read a lot and watch the news. I try to relate to what's going on in the market, so like what's going on with the [Center for Disease Control] and what they are talking about. Or what we are trying to do in school systems, locally or nationally. I really just try to pay attention to what's going on.

Also mentioning consuming a lot of news from various channels, one blogger said, "I read studies. I get Google News reports on certain topics. I do research on things I see. I trust certain sites and use them often like WebMD, because I know that their stuff is vetted." Another blogger simply said, "News pieces, articles and interviews that catch my eye."

Therefore, regardless of whether they are reading books or articles, watching the news on television or searching websites, several bloggers stated consuming a lot of news as their main method for finding and choosing topics and sources.

Reading blogs.

Beyond traditional news media, bloggers mentioned reading other blogs. For example, one blogger stated:

> I read a lot of other blogs mainly because I think interaction is really good with other blogs and you get a lot of helpful information. But regardless of whether it's a blog or not, if I use information then I give proper attribution to the source.

Also mentioning other blogs, one blogger said, "Even though I don't read as many blogs as I used to when I first started out, there are a lot of good ones out there and the ones I read definitely provide me with ideas and direction." Getting ideas from blogs was mentioned by another blogger, "Other blogs will give me ideas for some of my stories. I am looking for credible information and sometimes it comes from blogs."

Finding information and sources from other blogs was a method mentioned by several bloggers, both because they are credible and because they are a good source of ideas.

Finding support sources.

A common trend that was found during the in-depth interviews was: deciding on a topic first, and then finding the sources to support it. One blogger mentioned that she often finds ideas through her daily readings or experiences, but then she will do additional research to find sources, if they are needed. When asked about finding and choosing sources, another blogger blogger stated, "If I write or say something that I feel needs to be sourced, then I will find a

source for the information." Similarly, another blogger stated, "I often notice myself reading something in a magazine and then searching for it online."

Other bloggers mentioned choosing a topic and then conducting research. One blogger specifically discussed doing research to find varying points of view on a topic before deciding what angle to take:

> My sources come from reading and then I will do research on different points of view and form my own opinion. And then I'll say this is what so and so and said and this is what I believe. Sometimes I'll do tests and trials to help with this. But, I don't really get into in-depth information and things I am not qualified to comment on.

There was also a blogger who moderated, a person who presides over a blog, a blog. He stated that encouraging the bloggers that write for him to source is important and sometimes necessary. "As a moderator of a blog I will also sometimes tell other bloggers that they need to find a source to make information posted more believable," he said.

One blogger mentioned level of depth as a factor in finding and deciding what sources he uses:

> It just depends what I am writing about. If it's a personal experience then I don't go into as much depth when it comes to sourcing, but if it's something more detailed then I'll often spend days researching before publishing it. I will read studies, look for supporting research that has been done on the subject and interview people whenever possible. I'll try to widen it as much as possible. The Internet is a tremendous resource to find out information.

Also mentioning the Internet as a good resource for finding additional information and sources after the topic is chosen, one blogger stated:

> I use the Internet a lot because there isn't anything you can't find on the Internet. I search a topic and then look for the most reliable source. So sometimes I'll hit a Wikipedia article but then I'll back up that information by looking at the A.D.A. or if I'm writing a story on raspberries then I could go to the National Raspberry Farmer's Association and find the best information there. So I use a variety of sources. There is no one resource I go to religiously.

Finding a topic and then searching for support sources was found to be a common way in which bloggers find and choose sources. Several bloggers stated that this was a good way to find reliable sources and to make a post more credible.

Preferred sources.

Other bloggers revealed having preferred sources that they tend to go to prior to searching for other sources. They were often referred to as "go-to" sources that the bloggers believed were trustworthy and credible. For instance, one blogger stated:

> Basically, I Google something and go to what I consider the most reliable source of information. And those would be WebMD, Dr. Gabe Mirkin, Dr. Neil Bernard, VegSource.com, The Vegetarian Society, The Mayo Clinic, The American Diabetes Association, and others.

Similarly, one blogger mentioned frequently used authors and websites that typically spur ideas:

> I have an interest in Michael Pollen books and I agree with his advice on eating real food. I am the same way with certain websites and blogs. I check them out regularly and although I haven't practiced all of the things that these places preach, I write about them and state that I am interested and so forth.

This idea of using preferred sources was mentioned by several bloggers, and was considered a good method for finding and choosing sources because the bloggers could rely on sources that they knew and already trusted.

Reactive and proactive combined.

Some bloggers mentioned a combination of reactive and proactive approaches when asked how they find and choose sources. For instance, one blogger said:

I often go straight to PubMed. Or sometimes I find something on a traditional news site or a blog and use it as a discussion point. I also get pitches from PR people or newswires that will give me ideas.

Another blogger said, "Things I see in my daily reading of magazines and newspapers, and also information that comes to me. A lot of which I've requested or signed up for, like email alerts. That's where I get a lot of ideas."

This combination of reactive and proactive approaches was stated by one blogger as the best way to get to the origin of the material:

I like to get to the root of information. I might find the topic in a newspaper or magazine, but I have literally had to email CEO's to get the right information. I am sort of a journalist; I go straight to the source.

Mentioning this focus on the original source, another blogger stated a combination of reactive and proactive approaches to finding and choosing sources:

Sometimes I interview people, other times I'll read something and go to the original source of the study or whatever they were talking about, but I'll be sure to source the original study as well as the place that I got it from, whether it was an Internet source, a magazine or a blog.

Combining reactive and proactive approaches when finding and choosing sources was mentioned by several bloggers and was stated as providing benefits such as helping to get to the origin of the material.

Personal Experiences

Beyond proactive and reactive reading, the in-depth interviews also revealed that personal experiences were a common way of finding and choosing sources. Bloggers often write about what interests them personally, meaning that sometimes the blogger is the only source because the blog post is based on a very personal experience. Other times the source comes to them through their daily activities, such as grocery shopping, playing on social media, reading

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for pleasure or watching television. This category of finding and choosing sources could be further broken down into subcategories including being intrigued by a topic or source, personal stories, not sourcing, supporting personal topics with sources and social media.

Intrigued.

A number of bloggers mentioned that their sources are often determined by what intrigues them. For example, when asked about how he finds and chooses sources one blogger noted:

> Sometimes it will be something that pops up that I find interesting and I write about it, or sometimes it will be something that pops up in my own personal experiences. And then I'll go out and do some more research on my own. More often it is something that I see pop through the stream of information that I'm reading.

Another blogger stated trying to find topics that might have more of a hit, but his choice is initiated by what intrigues him:

> Normally it will be something that triggers me. I'll definitely look for things that might have more hit. So it might be walking through a store, reading a magazine, hearing a commercial. Pop culture is the key to where I find my ideas.

Similarly, one blogger stated, "Most of the articles on my site are just plain-old inspired. Like 'Hey, that would be a neat topic to write about.' I actually do very little of looking up information in the newspaper and regurgitating."

While it does not necessary have to be a personal story, like the next subcategory, the in-depth interviews still found that this idea of writing about what grabs their interest was mentioned by several bloggers as a way that they typically find and choose sources

Personal stories.

A number of bloggers stated that they write about their personal experiences, or the experiences of people who are going through something similar to them. Therefore, they do not necessarily find and choose sources. Often times the source is just the blogger themselves or somebody they meet or something they see along their personal journey. As one blogger said:

> My main source is me, just because it's from my own personal experience. But I have several other people that I've met through blogging that also have rheumatoid arthritis, so sometimes they are my sources. Just through shared experiences.

Also emphasizing the importance of personal stories and experiences, another blogger stated:

> It's important to use credible sources, but then again the fitness and nutrition blogging community is a lot about people's personal stories and what works and doesn't work for different people, so who I source varies by my topic. Sometime it's just me, sometimes it's a client and sometimes it's just something I've just stumbled across.

Another blogger specifically noted that recipes were her main blog post topic, and noted that they are either things she creates or finds and adapts, often times making her the main source:

> A lot of what I post is recipes. I might find the recipe in a cookbook that I'm flipping through, but then I'll adapt it to fit my needs. So, if I source the recipe, then it would be the cookbook, but often times it's just me.

Personal stories often do not involve sourcing, because the posts are about personal experiences of the bloggers themselves, people that they know or people that are going through a similar experience to them.

No source.

Related to this idea of being ones own source, other bloggers mentioned being the originator of the information they post even if it's not related to personal experiences. For

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instance, one blogger said, "Quite frankly, I don't get a lot of ideas from traditional media or other blogs. I am a journalist by trade and I don't chase other journalists. I come up with my own ideas."

Similarly another blogger mentioned not sourcing traditional media or other blogs, however she noted that ideas are often generated from these places:

> I don't use traditional media or other blogs as sources, but I might use them to get ideas for what I might write about. But I do not quote them and I always verify and confirm anything that I write about. I consider myself to be my greatest source.

Not specifically mentioning where ideas and information come from, when asked how he/she finds and chooses sources one blogger stated that he consolidates and simplifies information consolidating and simplifying that he finds, which makes him the original source:

> Everything you get from me is original. I really know sports, medicine and nutrition. So I can take what other people say and really break down the mechanisms and why it works and why it doesn't work. I break down the experiments and research that the average person doesn't understand.

While it was not a common trend, one blogger stated that remembering where information came from was not always easy. "I read so much for fun that sometimes I forget where ideas come from, and I am not sure if it is my thought or if it came from something I read. A lot of times I'll just state that in my post," said one blogger.

As noted, forgetting where the information came from was not a common trend and is definitely problematic. As stated by other bloggers that may not source, it is typically because the topic does not lend itself to being sourced.

Supporting personal topics with sources.

While a number of bloggers mentioned the use of personal information and stories, they also recognized the importance of citing sources as support for their thoughts and opinions. For

example, one blogger stated, "I like to comment on things I read, but I find it important to always back up my personal thoughts and support my ideas with source information."

Another blogger noted that he does not feel the need to always cite information posted, but understands that citing is necessary at times:

> I think most people assume the information I am presenting is not coming out of thing air. If I write something and it seems to be ridiculous or new or my readership might find it weird, then I feel the need to discuss where I got it from. But if I don't feel the need then I don't feel a formal duty to source.

Once again related to sharing personal stories and topics that intrigue them, several bloggers mentioned supporter personal topics with sources in order to give them more credibility.

Social media.

Using a more nontraditional approach, the in-depth interviews found that bloggers are often using social media, such as Pinterest, a content sharing service, and Facebook, to find story ideas and sources. As noted by one blogger:

> I use a lot of Pinterest. I actually utilize a lot of social media in general, which isn't as common as what everybody is probably going to tell you. It's just the way that I do things and it's the business side of me. As well as being the everyday consumer. I mean, it can be professional or not. I think it goes to whom I trust.

Also mentioning Pinterest, one blogger stated, "I often cruise blogs for recipes and I use Pinterest a lot to find recipes, ideas, fun facts or simply to better understand what people are reading and seeing."

Pinterest was just one social media vehicle specifically mentioned. When asked about their process of finding and choosing sources, other bloggers discussed the importance of

Twitter. For example, one blogger said, "I'll use everything. I'll walk down the street and take a photograph and blog about it. I use Twitter and stuff like that to get ideas, too."

Also mentioning Twitter, another blogger said, "I am on Twitter and I follow a lot of health-related people and organizations. Everything from Doctor Oz to major hospitals to WebMD, and I get ideas through that."

Similarly, another blogger stated finding and choosing sources based on people that she follows on Twitter:

> My sources for fitness blogging would probably be a lot of people that I follow on Twitter that are also fitness bloggers. I don't necessarily look to *Shape* magazine for tips, there are just a number of fitness bloggers that I follow in my network.

Regardless of whether it is Pinterest, Twitter or another form of social media, the in-depth interviews found that these alternative methods finding and choosing sources are growing in popularity amongst the nutrition blogging community.

Industry Experts or Organizations

The idea of using credible sources was mentioned by various bloggers, and industry experts and organizations were highlighted throughout the in-depth interviews as a link to finding and choosing these credible sources. The importance of credibility, coupled with easy access to industry experts and organizations resulted in their common use as sources. Responses related to industry experts or organization could be organized into three subcategories: credibility, member benefits, and alerts and newsletters.

Credibility.

Pre-established credibility was a common response among bloggers when asked how they find and choose sources. As stated by one blogger, "My sources have to be credible. The company I work for has a board of experts that work with us, so I'll talk to those sources. Other sources are just noted in the industry like notable pediatricians, for example."

Similarly, another blogger said, "I work in public relations so I understand what credibility means. I look at stuff like *The Wall Street Journal* and *The New York Times*. I try to find the most credible sources."

Trustworthy traditional news media, as well as book authors were also noted as "dependable" sources by one blogger:

> Book authors are good sources. If I am sourcing something that has been written about in the media then it has to be *The New York Times*, *Time, The Huffington Post* or something like that, versus a random mom and pop website. My sources have to be dependable.

Also mentioning credibility, one blogger stated, "I try to go straight to the original source. They are the most credible. They are the ones that reference studies, and talk about studies and public information that comes their way on different studies."

Noting the importance of sourcing qualified, credentialed experts as well as academic journals, another blogger said:

> I try to focus on nutrition and wellness, so probably 98% of the time the sources I use are registered dieticians. And maybe 2% of the time I reference a physician. I think it's important to source people with the proper credentials. Aside from these dieticians and doctors, I generally try to include some nod towards a scientific journal, maybe 60% of the time.

This idea of credibility was found to be a common trend stated by bloggers when asked about their method of finding and choosing sources. Several bloggers felt that credibility of the source was the most important factor in their decision of who or what to source.

Member benefits.

Members of the Academy of Nutrition and Dietetics, a member-based organization of

food and nutrition professionals, mentioned the benefits available to them, which included

industry experts and organizations, among other things. For example, one blogger said:

> The great thing about being a registered dietician is that I am a member of the Academy
> of Nutrition and Dietetics, and they have what's called an evidence-based library within
> the member's benefits site. So that will be the first place that I go and search for a topic.
> Sometimes I'll use something like Google Scholar to do a search for research but I would
> say my number one place is that evidence-based library.

Also noting evidence-based research libraries as a good way of finding and choosing

sources, another blogger stated:

> I use something called Natural Standard, which is an evidence-based research
> collaborative that reviews research articles on natural and alternative medicine. There are
> a lot of things with nutrition there. And then I am comfortable with anything that is
> connected with the [National Institutes of Health]. Or anything connected with the
> [Academy of Nutrition and Dietetics].

Having a background in nutrition and dietetics was commonly identified by the bloggers

as providing access to sources:

> My background is in the field of dietetics and I used to be a spokesperson for the field of
> dietetics, so I am blessed with a fairly robust pool of resources that I can turn to. I get
> email alerts from Cision and I get sources from the daily news that the Academy sends
> out. I also get a lot of stuff from the food industry. And quite often that is fodder for my
> subjects.

Also mentioning her background as a resource for finding and choosing sources, another

blogger stated:

> I get information from the Center for Science in the Public Interest, The Physicians
> Committee for Responsible Medicine, The American Diabetes Association and The
> American Cancer Society. I am a retired doctor so I know where to go for good
> information. I also have the American College of Sports Medicine membership. They
> will extract literature for you for $100 a year. It's a special service.

These member benefits mentioned by nutrition bloggers were found to be a common and reliable way that the bloggers stated for finding and choosing topics and sources.

Alerts and newsletters.

Beyond specific academy and member-only services, other trustworthy industry services such as alerts and newsletters were mentioned by various bloggers. For instance, one blogger said:

I subscribe to a variety of services and pay attention to TeleMed, which lists the articles that are important in any field you want. I also think *The New York Times* is incredible! And I get lots of emails and magazines and so forth that I read.

Email alerts from various industry organizations were commonly mentioned by the bloggers as a valuable resource for finding and choosing sources:

I am on a lot of e-lists. I get one from the National Institute of Health called MedlinePlus. I probably get 20 or so emails from them a day. It gives me all sorts of studies and information on research that is gong on all over the country and internationally. And it gives me research that is normally printed in research journals so it's really a good source of ideas.

Another blogger said, "I get Google Alerts and other newsletter alerts from different places. I am signed up for various dietician newsletters and I get WebMD alerts a few times a week for different topics."

One blogger also noted finding and choosing sources through alerts and feeds, but then contacting the original source directly:

I subscribe to journal feeds that give me tables of contests for various journals that are in the field. When those come out, I look them over and see if there is a study that I want to cover and if there is then I contact the author or journal to get the full text of the study, and then once I have that I ask any questions of the researcher that I need to ask and then I write it up.

Also mentioning tables of contents, another blogger said, "I get tables of contents from medical journals and nutrition journals. There is no shortage of information out there."

Alerts and newsletters of various types were commonly mentioned by nutrition bloggers as a way that they find and choose sources. Some were member services, while others were subscription based. Regardless, the interviews found that they were understood as a good way to find and choose sources.

Overall, the in-depth interviews showed that nutrition bloggers find and choose sources in a variety of ways, and individual bloggers often use a variety of different methods to select sources. As noted, the analysis of how bloggers find and choose could be categorized into one of three overarching ways: proactive and/or reactive reading, personal experience, and industry experts or organizations. Regardless of the category, a majority of the responses to this question of how bloggers find and choose sources during the interviews disclosed that bloggers feel that credibility and reliability of a source is essential.

RQ4: Is there a difference in the sources selected by women and men nutrition bloggers?

In order to analyze gender differences and to help determine whether there is still a gender divide that exists in terms of sourcing, 10 men bloggers and 10 women bloggers were chosen for the study. Both the in-depth interviews and the content analysis helped to determine the difference in sources selected by women and men nutrition bloggers. Frequency of source usage as well as source characteristic used when sourcing, gender of source and type of source were identified during the content analysis. Additionally, both men and women bloggers were asked various questions during the in-depth interviews to further the analysis of this research question including how often they use sources, what sources they typically use, and whether they consciously choose sources based on gender.

Source Frequency

Of the total 3,156 posts, men bloggers posted 48.6% (n=1,536) and women bloggers posted 51.4% (n=1,620) of the time. Of the total 5,263 sources used, men bloggers used 84.3% (n=4,439) and women bloggers only used 15.7% (n=824).

The frequency of posts varied greatly by blog with blogs written by men ranging from Modern Paelo with 11.7% (n=370) and Fooducate with 11.5% (n=364) of the total posts to Random Acts of Cooking with 0.4% (n=12) and Dr. Mirkin with 0.4% (n=15) of the total posts. Blogs written by women ranged from Eat Like Me with 24.7% (n=781) of the total posts to Eating to Live with 0.3% (n=10) of the total posts. Similarly, the use of sources varied greatly by blog as well with blogs written by men ranging from Modern Paleo with 49.5% (n=2,607) to Random Acts of Cooking with 0.1% (n=4) of the sources, and blogs written by women ranging from High Chair Times with 4.8% (n=250) to Eat Like Me with 0.1% (n=7) of the sources. Calculating average sources per post, the overall average for men bloggers was 2.8 sources per post, and the overall average for women bloggers was 0.5 sources per post. For men, Modern Paleo averaged the most with 7.0 sources per post and Random Acts of Cooking the least with 0.3 sources per post. For women, Spokane Healthy Living Examiner averaged the most with 4.4 sources per post and Eat Like Me the least with 0.1 sources per post (see Table 5).

In addition, the in-depth interviews showed that, when asked how frequently they used sources, men bloggers almost always stated "all of the time" or "regularly." One man blogger said, "In terms of finding a subject to write about, all of the time or at least most of the time. In terms of linking to other sources, fairly regularly." Another man blogger stated, "I'd say at least 90% of my blog posts link back to somebody, something or some quote." Similarly, another man blogger said, "Every single blog post is sourced from somewhere."

Table 5: Blog Post and Source Frequency by Blogger Gender

	Total Posts	Total Sources	Average Sources per Post
Men Bloggers			
Dave Grotto's Nutrition Housecall	0.5% (n=17)	1.0% (n=54)	3.2
DrMirkin	0.4% (n=13)	0.5% (n=29)	2.2
FitCity	5.0% (n=159)	3.9% (n=204)	1.3
Fooducate	11.5% (n=364)	9.6% (n=505)	1.4
Modern Paleo	11.7% (n=370)	49.5% (n=2,607)	7.0
PaulsHealthBlog	8.1% (n=255)	6.5% (n=341)	1.3
Random Acts of Cooking	0.4% (n=12)	0.1% (n=4)	0.3
Start/Finish	0.8% (n=25)	2.5% (n=132)	5.3
The Veg Blog	0.6% (n=19)	1.8% (n=96)	5.1
Weighty Matters	9.6% (n=302)	8.9% (n=467)	1.5
Total	*48.6% (n=1,536)*	*84.3% (n=4,439)*	*2.8*
Average	*153.6*	*443.9*	*2.8*
Women Bloggers			
Celeb Fitness and Exercise Examiner	0.6% (n=19)	0.7% (n=36)	1.9
Celiac Disease Guide	4.6% (n=145)	1.0% (n=55)	0.4
Eat Like Me	24.7% (n=781)	0.8% (n=41)	0.1
Eating to Live	0.3% (n=10)	0.1% (n=7)	0.7
Fit for Life	4.1% (n=129)	1.3% (n=68)	0.5
High Chair Times	5.1% (n=160)	4.8% (n=250)	1.6
Nutrition Blog	3.6% (n=112)	0.6% (n=32)	0.3
Savvy Vegetarian	1.6% (n=49)	1.4% (n=76)	1.6
Spokane Healthy Living Examiner	1.0% (n=32)	2.7% (n=140)	4.4
Weight Loss Examiner	5.8% (n=183)	2.3% (n=119)	0.7
Total	*51.4% (n=1,620)*	*15.7% (n=824)*	*0.5*
Average	*162.0*	*82.4*	*0.5*

Men bloggers did, however, note that they sometimes write personal posts that may not

be sourced. For example, one blogger stated:

> I mean, I have my own opinion pieces that I'll pull out from time to time, but the vast majority of posting is commentatry on something or another. Whether it's a news article, advertisement or a research study. And I will undoubtedly link to those things or quote those things in order to make a point or work a point.

Another man blogger noted that the topics he posts about do not always need to be cited

from outside sources:

Most of my posts are about people reporting on their own self experimentation, whether trying something dietary or a new recipe. So it's not that often that outside sources are referred to directly with a link or a mention, but it happens because some posts are inspired by something that somebody else has written. Usually by other bloggers, or a scientific study or a healthcare practicitoner of some sort.

Also noting that use of sources is dependent on the the topic being covered, one man blogger stated:

It really depends on if the information relates to that particular topic. My blog focuses on cooking and the topics range from what's going on at the local Farmer's Market to recipes that could conincide to ingredients that are in season. So I focus on pushing people to think about cooking smarter, and that doesn't always need to be sourced.

Beyond those men bloggers that mentioned that source frequency was based on the topic, the value of sourcing and sourcing properly was also highlighted by men throughout the interviews. For instance, one man blogger said:

I think if people didn't source, then their blogs would be less valuable. I mean, if you're trying to make points either citing research or questioning research, then you need to include what you're citing or questioning so that people can make their own decisions.

Similarly, another man blogger stated, "I always source, 100 percent. You have no credibiltiy without a reference. Anybody who writes without referencing is a potential fraud."

This idea that the crediblity of a blog is dependent upon the sources cited was mentioned by another man blogger as well:

I think it's really important to be transparent with your blogging. I think confirmation bias and cognitive dissonance plague all of us, including me for sure, but to help with that it is important for bloggers to link back to sources so people can make their own calls. I think it is crucial to the credibility of the blog.

The responses from women bloggers when asked about the frequency at which they source tended to focus more on what the goal was behind a particular post. For example, one woman blogger stated:

It depends if I'm writing about a sutdy or product stuff. If I need to check with somebody then I will. If I'm just writing about a new protein bar or something then it's just a review

for me. But I'll definitely link to original studies and news reports sometimes, because I don't want it to look like I'm just pulling the stuff out of my head.

Another woman blogger said, "I use them fairly frequently. Not for my meal posts because really I'm just taking a picture and logging them. But for my topical posts, which I have about five of a week, I tend to use sources."

Also noting the use of both outside sources as well as personal views that do not need to be sourced, one woman blogger said:

> Almost 90% of the time. It's a combination of sourcing and my personal views. But a lot of times it's just trying to get information out about local events, health news, nutrition news, and other things that might interest my readers that I have come across in various ways.

Once again distinguishing between personal posts and other types of posts, another woman blogger stated:

> All of the time. I don't ever make a blanket statement about anything. I mean, if it's a really personal entry then I don't source anybody, but if I'm quoting some kind of study or something like that, then I always use sources.

Similarly, when asked how frequently she posts, another woman blogger stated, "I would say frequently. I have my own personal philosophy so I use a lot of personal knowledge. But I do look into other resources when I am looking for recipes or for details on a specific nutrient or vitamin."

However, similar to men bloggers, even though they aknowledged that sourcing was dependent on various factors, overall women bloggers believed that they sourced regularly. For instance, one blogger said:

> I use sources for all of my articles. Sometimes the blog post links to something else I've written and in that case I may not because the original article I am referring to has already been sourced. But if the blog entry is about something, then I'll definitely link to it.

Similarly, when asked about frequency of sourcing, another woman blogger mentioned that she cites often:

> Quite a lot. Whenever I want to check facts I go and do that. I like to back up my pronouncements with references as much as possible so that people don't think it's just me talking off the top of my head.

Another woman blogger stated, "I use sources freqently. I frequently write about research studies, and I not as frequently talk to the researchers themselves to get their input on whatever it is I am talking about."

Also stating that she frequently uses sources, while highlighting the variety of the sources she uses, one woman blogger said:

> I use sources all of the time. I try to blog multiple times a week and I'd say at least half of those posts have some kind of source, whether it's other media sites, experts, doctors, breast-feeding consultants, or somebody else.

While no men bloggers stated not using sources, a few women bloggers mentioned there are occasions when they may not source. Besides the previously mentioned woman blogger, who stated reading so much that thse sometimes forgets where ideas come from, another women blogger stated the following when asked about the frequency at which she uses sources:

> Rarely because my main source is me. My blog is about my experience and sharing that experience with others who are going through the same stuff as me. But I do have other people that I sometimes talk to that are my sources.

Similarly, another blogger said, "I hardly ever use sources. My blog is about me, what I eat, what I cook and my lifestyle so there is very little need for me to source."

Overall, it can be concluded that men bloggers source more frequently than women bloggers. The frequency of posts varied greatly by blog, regardless of gender. In addition, the in-depth interviews found that men bloggers feel that they source doften, but that they are aware of the fact that they sometimes write personal posts that may not be sourced. Similary, women

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bloggers felt that they soured often, however several women bloggers stated that sourcing frequency is directly related to the goal of the post, and several women bloggers also stated that there were times when they did not source at all.

Types of Sources

Type of sources was analyzed through the content analysis by coding for source characteristic, source type and gender of source. It was determined that the men bloggers used hyperlinks only 61.2% (n=2,716) for their sources, followed by direct quote with hyperlink 31.5% (n=1,399). Least frequently, men used indirect quotes 0.1% (n=2). Women bloggers used hyperlink 80.1% (n=660) for their sources, followed by direct quote 11.3% (n=93). Other, which included any source characteristic that was not identified in the coding scale such as references and images, were not used at all by women (see Table 6).

The content analysis found that the men bloggers sourced women 20.6% (n=915) and men 16.3% (n=721), but sourced "other/cannot tell," meaning that the gender could not be identified or the source was a research institution or corporate organization, most often with 62.9% (n=2,794) of the total sources cited by men (see Table 7). The men bloggers used non-health-related sources 77.7% (n=3,448) and health-related sources 22.3% (n=991).

The women bloggers often sourced "other/cannot tell" with 72.8% (n=600), followed by men with 13.5% (n=111) and women with 12.5% (n=103). It was found that women bloggers used health-related sources 49.9% (n=411) and non-health-related sources 50.1% (n=413).

While the content analysis found that both men and women were most likely to source "other/cannot tell," the in-depth interviews showed that neither men or women bloggers pay attention to gender when sourcing posts.

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Table 6: Source Characteristic Usage by Blogger Gender

Source Characteristic	Men Bloggers	Women Bloggers
Direct quote	1.5% (n=67)	11.3% (n=93)
Direct quote with hyperlink	31.5% (n=1,399)	3.3% (n=27)
Indirect quote	0.1% (n=2)	2.9% (n=24)
Indirect quote with hyperlink	0.9% (n=42)	1.1% (n=9)
Hyperlinks only	61.2% (n=2,716)	80.1% (n=660)
Embedded video	3.7% (n=164)	1.3% (n=11)
Other	1.1% (n=49)	0% (n=0)
Total	*100% (n=4,439)*	*100% (n=824)*

Table 7: Gender of Sources by Blogger Gender

Gender of Sources	Men Bloggers	Women Bloggers
Men	16.3% (n=721)	13.5% (n=111)
Women	20.6% (n=915)	12.5% (n=103)
Both	0.2% (n=9)	1.2% (n=10)
Other/Cannot Tell	62.9% (n=2,794)	72.8% (n=600)
Total	*100% (n=4,439)*	*100% (n=824)*

However, it was noted by several men bloggers throughout the interviews that while they do not choose sources based on gender, they feel that nutrition is a women-centered field, and that there are "more women as far as sources out there." For example, one man blogger said, "I probably tend to read and source more from female writers. Not by any conscious choice, I just think there is a higher percentage of women nutritionists and vegans than men." Another man blogger stated, "I can honestly say no to that. But still a vast majority of dieticians are female so a vast majority of people who write about the topic and comment are women."

During the interviews, the men bloggers repeatedly stated that most blog posts were sourced, and were often sourced by "official sources," such as registered dieticians, other health professionals and journal articles. One man blogger said:

> I will rarely use unofficial sources. I can't even think of the last time I used an unofficial source. I would be shocked if it was more than 1% of my posts that had sort of just a random person that I randomly used to support a point.

Also highlighting his use of registered dieticians that he considers reliable, another man blogger stated:

> I am very selective about who I link to and whose work I trust. There are a couple of registered dieticians that I tend to trust and follow because they don't tend to be sensationalistic and they don't tend to rely on studies that are very small in scope or aren't conducted in a good fashion.

One man blogger stated, "I can't remember when I haven't used a health professional or journal article. So I guess I never use unofficial sources. Not that it wouldn't happen in the future, but historically it hasn't."

Mentioning that it is important to use trustworthy sources, another man blogger stated:

> I don't have a background in research or anything like that so you have to be careful who you trust to give you information. And it's most likely not going to be some magazine on the shelf that gives you the five fastest ways to lose weight. It's going to be peer-reviewed journals and professionals that do it for a living.

When asked about using blogs as sources, one man blogger stated, "Never. I don't consider them official. Everything you get from me is official and original."

While men tended to focus on their use of official sources, when specifically asked about whether they ever use unofficial sources, a number of them said yes but only with a caveat. For example, one man blogger said, "Occasionally, but when it comes to nutrition I try to stick to the stuff that is most reliable and most carefully researched." In addition, another man blogger said, "I'll use official or unofficial sources. It doesn't really matter to me as long as it's clear what the source is. And then I'll comment on its potential of being correct or not."

Similar to men, it was noted by several women bloggers that there tend to be more women involved in nutrition than men, and that the "men category still needs to be tapped into." For example, when asked whether she ever consciously chooses sources based on gender, one woman blogger stated:

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Still a vast majority of dieticians are female so a vast majority of people who comment are women. I pride myself on writing for whoever wants the information and that can be men or women. Long-winded way of saying no.

One of the women bloggers noted that she does not choose sources based on gender, but has a couple of men guest writers that she asks to write about more "guyish" topics. She stated:

I have a lot of experience, and I can give advice on running a marathon or a kickboxing fight, but I've never shaved my chest or sat on my wallet. Our readership is about half and half so I want to have an equal amount of opportunities for guys to get information that pertains to them.

Additionally, a number of woman bloggers noted that their area of expertise was gender specific and that influenced their choice of sources, consciously or not. For instance, one blogger stated, "It just depends who the best expert is. Just happens that because my focus is on moms and I deal with pregnancy that gender sometimes plays a role, but never a conscious one."

While not specifically focusing on a solely woman-focused topic such as motherhood, but a disease that affects more woman than men, one woman blogger stated:

My readers tend to be predominately women, which is in part because more women than men are diagnosed with my disease. And just based on the demographics of who uses health websites, it tends to be women, so my readers are often women, which means I tend to quote women readers, but that's certainly not a conscious decision.

Another difference in men and women bloggers' choice of sources based on gender that was found during the interviews was women's tendency to note that their blog was written for women so their source selection was or should be swayed by that factor, regardless of whether or not it actually was. One woman blogger stated, "I try to focus on women so I try to include a lot of women as sources, but certainly not exclusively."

The in-depth interviews found that women's use of official and unofficial sources is based around the reason for sourcing. For instance, one woman blogger said, "I use unofficial sources for their personal experiences and stories. That's very valuable." Similarly, another

woman blogger said, "I occasionally use unofficial sources. I like to highlight individual people.

Just regular people improving their health or fitness in some way. They provide inspiring

stories." Another woman blogger said, "I always use official sources. But I always give tips from

real moms too. So I guess I use both."

When asked about using unofficial sources, one woman blogger said:

Sure, I mean I'll talk to people that are following the same diet as me but I am not going to quote them authoritatively. I will say that I had a reader who said she ran into this problem and here is how you might consider avoiding it. So I use them as subjects but not as sources if that makes sense."

Another woman blogger stated, "I definitely source my clients. I'll say one of my clients

does XYZ. So I definitely reference non-experts.

Although the in-depth interviews showed the importance women bloggers place on using

both official and unofficial sources, the interviews also found that women feel the trust of the

source is an important factor. For example, one woman blogger said, "I never use unofficial

sources if it has anything to do with medical stuff because trust is really important." Another

woman blogger stated, "I use trusted sources, stuff that I know is vetted." Another woman

blogger said, "I very rarely use consumers or other unofficial sources. I have on a couple of

occasions used other nutritionists, but I prefer organizational type of resources that I know I can

trust."

When analyzing type of source, men bloggers were most likely to source other

unaffiliated blog/bloggers with 45.8% (n=2,042) and Internet-only media with 23.4% (n=1,046),

followed much less frequently by "other/cannot tell" with 9.5% (n=424), education/science

sources with 7.8% (n=349), traditional news media with 6.9% (n=302) and non-government

organizations with 3.2% (n=156). For women bloggers, the content analysis found that women

bloggers were most likely to source "other/cannot tell" with 34.6% (n=285), education/science

sources with 17.1% (n=141), non-government organizations with 12.7% (n=105), Internet-only

media with 10.8% (n=89) and traditional news media with 10.6% (n=87) (see Table 8).

Table 8: Source Type by Blogger Gender

	Men Bloggers	Women Bloggers
Politics/Government	2.1% (n=93)	4.1% (n=34)
Business	1.0% (n=45)	1.1% (n=9)
Non-government Organizations	3.3% (n=149)	12.7% (n=105)
Education/Science	7.8% (n=349)	17.1% (n=141)
Traditional News Media	6.9% (n=302)	10.6% (n=87)
Internet-only Media	23.4% (n=1,046)	10.8% (n=89)
Blog/Blogger	45.8% (n=2,042)	4.1% (n=34)
Non-official	0.2% (n=11)	4.9% (n=40)
Other/Cannot Tell	9.5% (n=424)	34.6% (n=285)
Total	*100% (n=4,461)*	*100% (n=824)*

Aligning with the content analysis, during the in-depth interviews the use of news sources

and blogs were noted frequently by men bloggers. One man blogger stated, "I tend to use

research articles in terms of either discussing the paper directly or using the paper to help make a

point. And then certainly news pieces, articles and interviews that catch my eye." Similarly,

another man blogger stated, "I use a combination of traditional sources, blogs and personal

stories. I have a background in psychology so I know how to pick up a journal and read it also."

Specifically emphasizing Internet-only media, one blogger stated:

> I often look at the *Huffington Post* or search for things on Google. But I also tend to
> source traditional news media, like *The New York Times*. I have also been known to read
> and source studies. So I tend to use a variety of sources.

Discussing the use of blogs, one man blogger said: "It happens, and there is definitely a

link to the original source if possible." Another man blogger said, "I am totally open to other

blogs and I've actually gotten great information from other blogs, but I don't want to cover the

exact same thing as another blogger."

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Also highlighting that other blogs are an important resource for him when asked what types of source he typically uses, one man blogger stated:

> I see blogs as a great resource for finding ideas. I have a list of blogs that I read regularly and I often link to and from these blogs in my posts. I want to make sure to state where my information is coming from, even if it's another blog.

The women bloggers often noted during the interviews that they use a variety of sources regularly. For example, one woman blogger said, "I use all different types of sources. Traditional media, internet-only media and blogs." Another woman blogger said, "I tend to use a variety of sources, but it just depends on the circumstances." Similarly, one woman blogger stated, "While I source research studies a lot of the time, I read other blogs for ideas and often source traditional media too."

Although blogs were noted by some, when asked specifically about the use of other blogs as sources, a number of women bloggers stated that they do not choose to use them for various reasons, with a specific emphasis on reliability and trustworthiness. One woman blogger said:

> I never use another blog for a blog post of mine. Sometimes I'll refer to something I saw in the media and then I went and checked out myself, but then I'll state where I found it. But never other blogs.

Specifically mentioning the difference between sourcing as it relates to blogging and traditional journalism, one woman blogger stated:

> I try not to use other blogs because the problem with blogging is that there is no editing, there is no oversight on what people are writing about. I am different than that because I have a journalism background, so sources are important to me. I always make sure that what I link to is credible.

When asked about whether she used blogs, one woman blogger said, "No not often. Maybe on a more personal level, but if I want reliable information, then I go to the experts."

Similarly, another woman blogger emphasized credibility and trustworthiness when asked about her use of blogs as sources:

I try not to use other blogs because everyone has their own quick-fix ideas. I think it's really hard to find a website that is created by a trusted expert. So I tend to use associations and those type of things that I think are really good.

Beyond using other bloggers, this emphasis on using trustworthy and reliable sources was often highlighted by women bloggers throughout the interviews. One woman blogger said, "I prefer to use things that I search for on trusted sites, like PubMed or some of the better known universities like Harvard or other universities that have good nutrition programs." Similarly, another woman blogger stated:

I use sources out of evidence-based, peer-reviewed journals that I know I can trust. So things like the Journal of the American Medical Association, the Journal of Nutrition and Dietetics, those of things where there are very legitimate peer-reviewed studies.

Another woman blogger mentioned that she may get ideas from traditional media but always looks for more "official" sources to cite:

I will link to traditional media if I find something about a study in any newspaper and then I'll discuss it. I won't necessarily use it as a source but I'll mention it and if I want to find a source then I'll go back and search more official things like university or government sites.

Based on both the content analysis findings as well as the in-depth interview discussions, it can be concluded that neither men nor women bloggers consciously choose sources based on gender. However both men and women often souced "other/cannot tell" which meant that the gender of the source could not be identified or the source was a research institution or corporate organization. In addition, several men and women bloggers noted during the interviews that they felt nutrition was a women-centered field, leading to more women sources. Analyzing source charactersitics used, men and women bloggers most often used hyperlinks only when sourcing, followed by either direct quote or direct quote with hyperlink. Beyond these similarities, types of sources used by men and women varied greatly. Men bloggers most frequently sourced "other blogs/bloggers" and "Internet-only media." Women most frequently sourced "other/cannot tell."

The interviews found that men bloggers frequently noted using other news sources as well as blogs, whereas women bloggers frequently noted using a variety of sources.

Finding and Choosing Sources

During the in-depth interviews, both men and women bloggers were asked to discuss how they find and choose sources. While the overall answers could be broken down into three overarching categories – proactive and/or reactive reading, personal experience, and industry experts or organizations – the responses to this question broken down by gender revealed that regardless of gender, bloggers use a variety of different methods and sometimes a combination of these methods to find and choose sources. There were no overarching trends in this area based on gender.

The men bloggers mentioned industry experts and organizations most frequently as ways they find and choose sources, stating that they get tables of contents from medical and nutrition journals, organizations and The Academy of Nutrition and Dietetics. The men bloggers also stated that they find and choose sources by consuming a lot of news as well as researching ideas and topics. One man blogger stated, "I just read a lot and watch the news." Several other men bloggers mentioned reading something and then searching for more information online, or reading something and then finding the original source and/or the most credible source.

Women bloggers also mentioned industry experts and organizations most frequently, and were more likely than men to highlight what organizations and people they find to be most credible. Beyond using industry experts and organizations as a way of finding and choosing sources, consuming a lot of news in general and researching ideas and topics were also mentioned by women. Different from men, personal experiences were noted as a common way

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of finding and choosing sources for women bloggers. These experiences ranged from a personal experience with a specific disease to a personal experience with a diet choice that made the blogger her own main resource for finding and choosing sources.

Overall, the totality of these findings answer the four research questions posed that are related to frequency and type of sources used by nutrition bloggers. It was found that nutrition bloggers frequently use sources with over half of blog posts citing at least one source, and an overall average sources per post of 1.7. In addition, it was determined that nutrition bloggers cite sources in a variety of ways, ranging from "other" with 1.0% (n=49) and "indirect quote with hyperlink" with 1.0% (n=51) to "hyperlinks only" with 64.1% (n=3,376) to "direct quote with hyperlink" with 27.1% (n=1,426). Nutrition bloggers also use a variety of source types, ranging from "blog/blogger" with 39.4% (n=2,076) and "Internet-only media" with 21.1% (n=1,113) to "business" sources with 1.0% (n=54) and "non-official" sources with 1.1% (n=51). Analyzing gender of sources used, "other/cannot tell" was sourced most frequently with 64.5% (n=5,263), followed by women with 19.3% (n=1,108) and men with 15.8% (n=832). Finding and choosing was categorized into three overarching ways: proactive and/or reactive reading, personal experience, and industry experts or organizations. Lastly, when analyzing the possible difference in sources selected by women and men nutrition bloggers, it was found that men source more frequently than women, even though the interviews found that both men and women believe that they source frequently. Both men and bloggers used hyperlinks only for their sources, and sourced "other/cannot tell" most often when citing gender of sources. The in-depth interviews found that neither men nor women pay attention to gender when sourcing, although several men and women bloggers mentioned that they feel nutrition is a women-centered field. In terms of

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types of sources cited, men sourced "unaffiliated blog/blogger" most often with 45.8% (n=2,042)

and women sourced "other/cannot tell" most often with 34.6% (n=285).

Discussion

Agenda setting theory posits that the media's agenda influences the public's agenda, and therefore places great significance on the topics covered by the media and the sources of information in that coverage. This belief that sources of information are important was labeled by McCombs (2005) as agenda building: the process by which news organizations and journalists feature, emphasize, and/or select certain events, issues, or sources to cover over others. Therefore, while agenda setting can be influenced by the importance the media attaches to particular issues, it can also be influenced by the sources chosen.

While a number of studies have focused on the relationship between traditional media and sourcing (Brown et al., 1987; Stempel & Culbertson, 1984; Berkowitz, 1987; Soloski, 1989; Powers & Fico, 1994; Salwen, 1995), there has been less research conducted on sourcing as it relates to new media, such as blogs, which are quickly being understood as accessible sources of information and interaction (Deshpande & Jadad, 2006; Giustini, 2006; Kennedy, 2004). Based on the agenda building concept, the purpose of this study was to analyze the sources used by nutrition bloggers in order to determine the frequency at which nutrition bloggers are sourcing as well as the quality of the sources cited, to better understand the origination of the information available on nutrition blogs.

Source Frequency

The content analysis collected data from September 2011 to August 2012 and the in-depth interviews were conducted in July 2012 with the authors of all 20 blogs under study. As noted earlier, the original list of 324 English language blogs was separated into women bloggers and men bloggers. With that separation, there were 269 women bloggers and 55 men bloggers, which shows that a majority of nutrition bloggers are women. Regardless of this large gap in the number of women nutrition bloggers and the number of men nutrition bloggers, the first 10 women bloggers and first 10 men bloggers that fit into the inclusion criteria and were available for interviews were chosen for the study sample.

Overall, the results of the study showed that the nutrition bloggers frequently used sources, with over half of the blog posts citing at least one source and the average sources per post being greater than one. This suggests that the nutrition bloggers in the sample understand the importance of using sources, and more importantly, understand the necessity of citing sources.

Although it appears from the overall picture that bloggers understand the importance of using and citing sources, the distribution of sources varied greatly by blog, stressing that some bloggers could find the use of sources more important than others or that some bloggers understand the necessity of citing sources more than others. However, this is not necessarily the case. It could also be due to the fact that the frequency of posting did not directly relate to the frequency of sourcing. For example, the blog Modern Paleo averaged a post per day with 370 posts throughout the year, but sourced 2,607 times in those posts resulting in a high average of seven sources per post. But a blog such as Eat Like Me with 781 posts throughout the year and only 41 cited sources posted often but sourced rarely, which resulted in a low average for source

per post of 0.1. This means that without equating for post frequency, the frequency of sources cited could be skewed by those outlying bloggers that are citing very frequently, such as those that are citing multiple sources per post or those that are citing minimally. Therefore, while overall source count is important to consider, it is also important to look at average source per post to get a more accurate understanding of source frequency. In other words, frequency of sourcing can only be considered in relation to frequency of posting.

Therefore, as stated before, it appears that nutrition bloggers understand the importance of using as well as citing sources. However, the variation in blog sourcing frequency shows that some bloggers understand its importance more than others, and outlying blogs could have altered the overall findings in terms of frequency.

Source Type

Beyond looking at source frequency, source type was identified by analyzing source characteristics used. These source characteristics included "hyperlinks only," "direct quotes," "indirect quotes" and "embedded videos." Gender of the sources cited and overall type of source used were also analyzed. Type of source used included "traditional news media," "Internet-only media, government organizations," "non-government organizations" and "unofficial sources." Looking at these three areas helped to determine the various types of sources that nutrition bloggers use.

First, source characteristics used were diverse and included everything from "hyperlinks only" to "direct quotes only" to "embedded videos." Overall, a majority of sources where characterized by hyperlink showing that transferring the reader to another website or another page on the blog was the most common way to cite sources. This means that nutrition bloggers

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are not using a variety of methods for characterizing sources, but the one that they are using most often, hyperlinks, is a way to connect the reader directly back to the original source, and therefore a great way to source.

Second, gender of the sources cited showed that men and women were sourced at similar rates, but "other/cannot tell," meaning it was a research institution, corporate organization or the gender of the source could not be identified, was sourced far more often. Therefore, while men and women are both sourcing, they may not be providing information that details the gender of the source, meaning that gender is likely not an important factor to nutrition bloggers. Additionally, this shows that nutrition bloggers find research institutions and corporate organizations to be credible sources of information.

Third, as with source characteristics used, source types used were also diverse. "Other blogs/bloggers" were sourced most often, followed by Internet-only media. Sourced much less frequently were "other cannot tell," which included all sources that could not be clearly defined, "education/science" sources, "traditional news media" and "non-government organizations" (see Figure 1). This means that important streams of influence for nutrition bloggers as a whole are "other blogs/bloggers," "Internet-only media," and "other/cannot tell." The overall variety in source types used by all nutrition bloggers shows that different bloggers rely on different sources of information. However, the main streams of influence show that the sources that most heavily influence nutrition bloggers are less credible, meaning that they are non-traditional sources. While all of these could be credible sources of information, it is essential for bloggers to conduct further research on the reliability of these sources before citing them.

Non-health-related sources were utilized more often than health-related sources, which included any source that was a medical doctor, nutritionist, healthcare affiliate, medical

professor, scientist, or medical institution. This means that overall, regardless of the source type used, a majority of the sources were not health-related. As with the types of sources mentioned above, this also raises concern regarding the credibility of sources used by nutrition bloggers. Not to say that all sources cited should be health-related, but when covering a health topic such as nutrition, a larger majority of sources used should be health-related. When writing about any topic, sourcing experts in the field is an important way to increase the credibility of the information being disseminated.

While the variety in characteristics has no important implications for this study and gender of the sources selected will be discussed in more detail later, the variety in types of sources and the lack of health-related sources used shows that credible sources are being utilized some of the time, however there are still some less credible sources being utilized as well. As noted earlier, less credible sources are those sources that are non-traditional such as non-government organizations, other blogs/bloggers and non-official sources. While they may be credible, their credentials and level of reliability need to be studied further before they are sourced. When a blogger cites a book author or published article as a source, there are not many questions to ask about the credibility of that source because those sources have typically gone through an editing and evaluation process before publication. The Web, however, is different. Anyone can publish information on the Web, so credibility is questionable. Therefore, without proof of proper credentials and proof of reliability, sourcing other blogs/bloggers, non-government organizations and non-official sources is less credible. Additionally, those sources that could not be clearly defined are also considered less credible because the blogger did not cite them properly, therefore leaving the reader to have to conduct further research to determine the actual source of the information provided.

Figure 1: Frequently Used Sources by All Nutrition Bloggers

From most frequently used to least frequently used
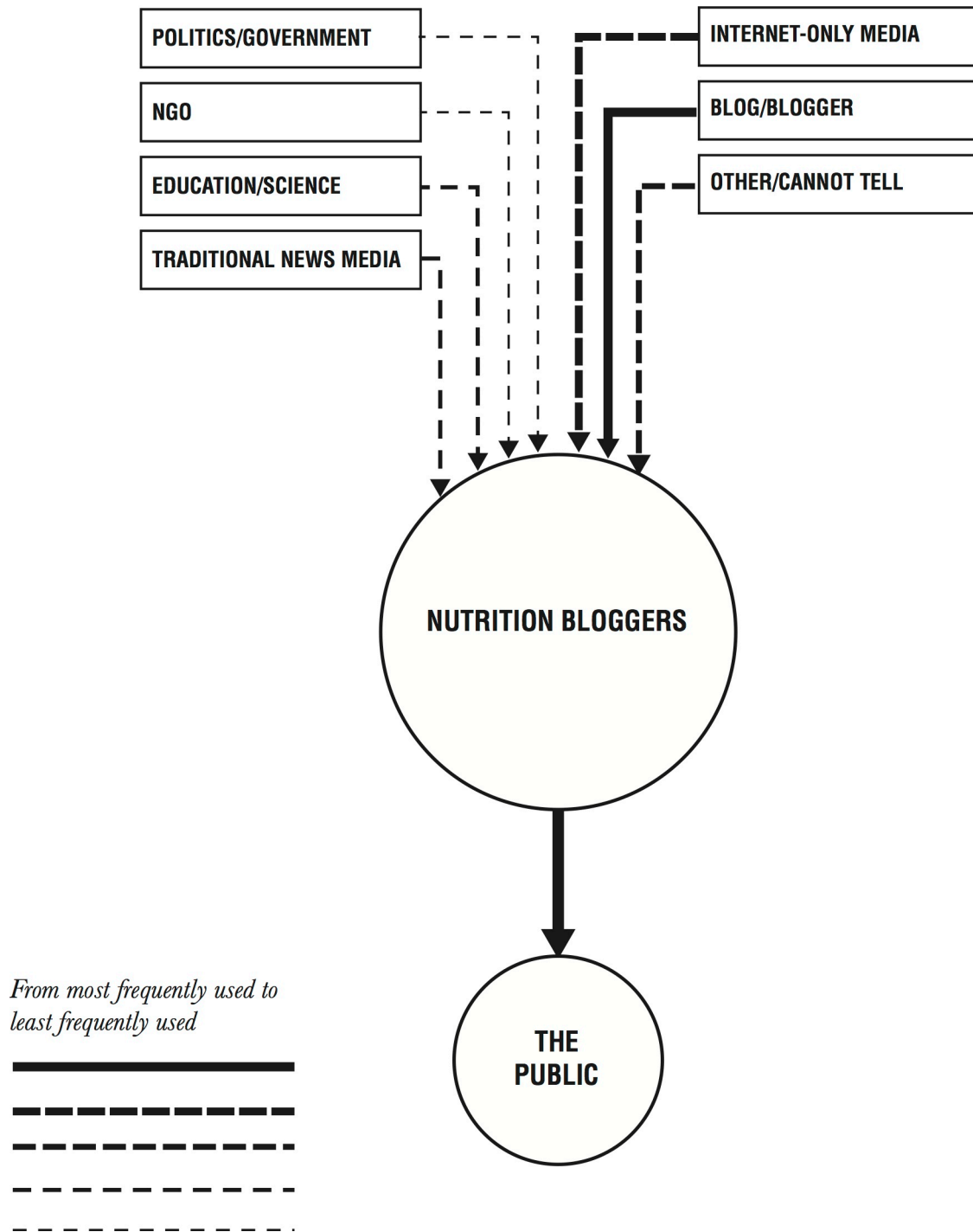
While there have been few other studies conducted on agenda building and blogging, the

ones that have been conducted drew similar conclusions to this one in terms of type of sources

utilized. These other studies concluded that bloggers use traditional sources, such as traditional news media, but they often diverge towards more non-traditional sources, such as other blogs and unofficial sources (Walejko & Ksiazek, 2010; Leccese 2009; Lowrey, 2006).

The in-depth interviews provided one possible explanation for the reoccurring conclusion throughout the research that there is still some need to understand the specific reasons behind not sourcing when needed as well as the use of less credible sources. This explanation is that there are different motivations behind blogging. The content of a blog depends heavily on the intentions of its author or authors, with some blogs serving as news aggregators and some as more personal diaries (Ekdale, Namkoong, Fung & Perlmutter, 2010). In other words, while almost half of posts were not sourced at all, it is important to remember that blogs are written with different purposes in mind and some blogs are written with a more personal tone that includes subjective opinions and/or individual experiences that do not necessarily need to be sourced. Therefore, the different frequencies of blogger sourcing and types of sources utilized could be a reflection of the different motivations nutrition bloggers have for blogging.

Similarly, another explanation behind this lack of sourcing and use of less credible sources is based on a conclusion made by Lowrey (2006): that blogs fill a void in news coverage that has been posed by external and internal factors in traditional news organizations, such as revenue needs and the tendency to ignore non-official sources in favor of official sources. These internal and external factors have forced traditional news media to neglect some types of news information, such as partisan expression, stories driven by non-elite sources and highly specialized content, that have been poached by bloggers and often times do not lend themselves to traditional sourcing methods.

In relation to these "traditional sourcing methods," it is often argued that blogs are ruled by different standards than traditional news media that could nullify or at least decrease the importance of strict sourcing (Johnson & Kaye, 2004; Smolkin, 2004; Hull, 2006). For example, bloggers are not bound by standards of objectivity. While this does not necessarily minimize the issues behind blogger sourcing, it cannot be ignored as a possible explanation as to why bloggers may not always source when needed and why bloggers often use less credible sources. And while to some this makes blogs less credible, to others it makes them more credible because they are independent, not controlled by corporate interests and free to discuss issues that are ignored by traditional news media (Johnson & Kaye, 2004).

Regardless of the varying motivations for blogging and different standards that bloggers are ruled by than traditional news media, the information and issues that bloggers feature and emphasize as well as the sources they choose to use still influence the public's agenda; therefore, placing great significance on the topics covered and the sources of information.

Finding and Choosing Sources

Finding and choosing sources differs from one blogger to the next, but each blogger tends to use a variety of strategies, including reactive and/or proactive reading, personal experiences and experts. As noted earlier, the variety in types of sources used highlights that while credible sources are being utilized some of the time, there are still less credible sources being utilized as well. This could partially be related to the way in which bloggers are finding and choosing sources. During the in-depth interviews some bloggers mentioned that they choose topics and sources from their everyday news consumption, such as reading the newspaper, watching the news on television and reading blogs. Bloggers also often mentioned using preferred sources or

choosing a topic and then finding sources to support ideas. Several bloggers mentioned conversations with industry experts or email/newsletter alerts from expert organizations. Other bloggers stated that they just blog about what they know. For instance, choosing topics and sources based on what intrigues them was a common response from bloggers. Another common response was writing about personal experiences that do not necessarily need to be sourced, or at the very least do not need to be sourced by what is likely understood as a credible source, such as traditional news media, government organizations and health-related sources. A new and different way of finding and choosing sources that was highlighted during the in-depth interviews was social media. A number of bloggers noted using Pinterest and Twitter to receive ideas and sources (see Figure 2).

Overall, the responses to the question of how they find and choose sources showed that there are three main ways: reactive and/or proactive reading, personal experience and industry experts or organizations. These three main categories can be further broken down in subcategories. Reactive and/or proactive reading included reactive reading, pitches, consuming news, reading blogs, finding support sources, preferred sources, and reactive and proactive combined. Industry experts or organizations included credibility, member benefits, and alerts and newsletters. Personal experience included intrigued, personal stories, no source, supporting personal topics, and social media.

All of these overall categories and subcategories were mentioned by several bloggers when asked about finding and choosing sources. This variety in the ways that bloggers find and choose sources draws a similar conclusion to the variety in type of sources used: that while credible methods of finding and choosing sources are being utilized some of the time, there are still some less credible ways of finding and choosing sources being utilized as well, such as not

sourcing at all, sourcing blogs and finding and choosing sources on Twitter or other social

media.

Figure 2: Finding and Choosing Sources by All Nutrition Bloggers
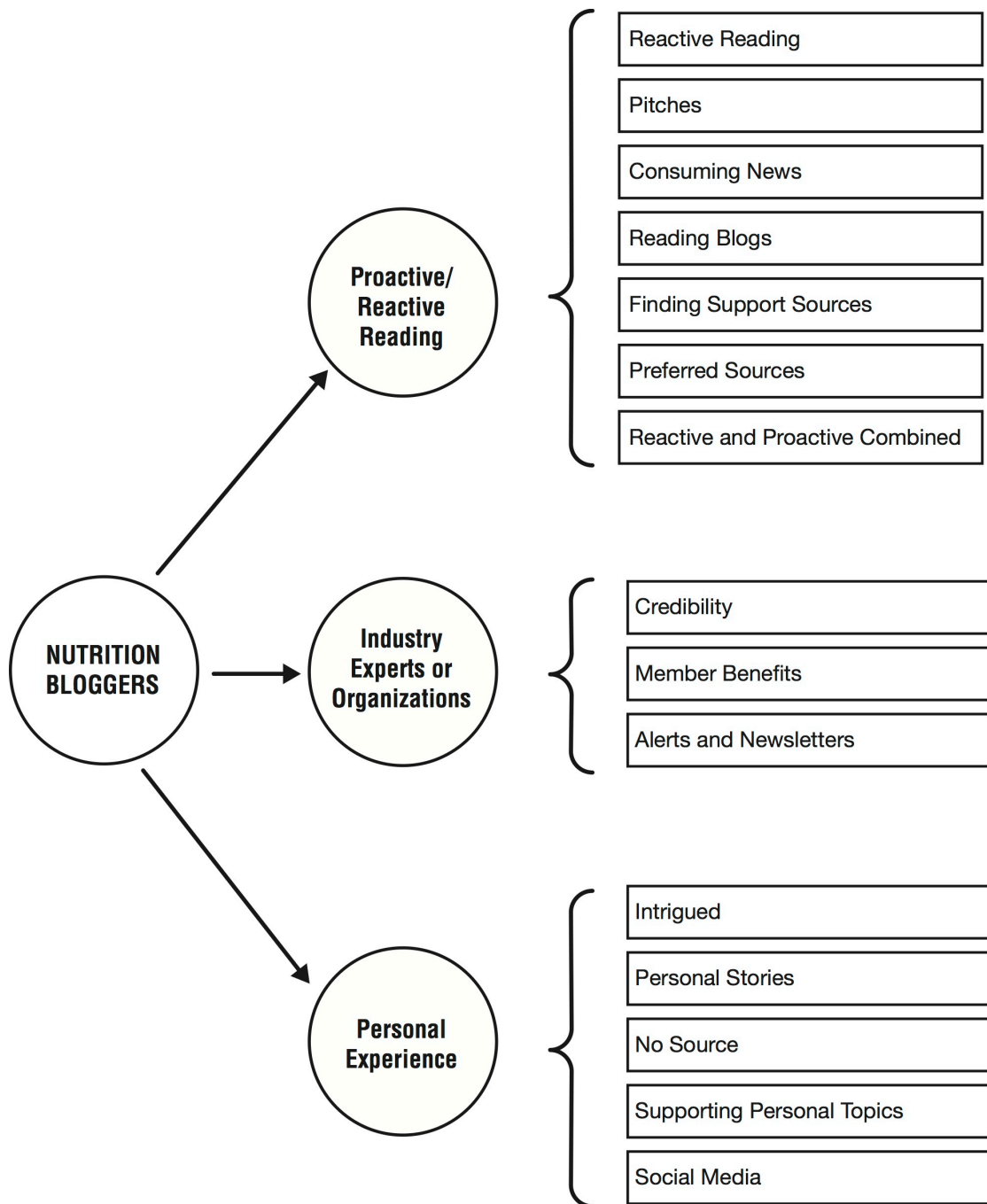
Similar to types of sources used, this could be related to a blogger's overall motivation for blogging as well as the more fluid "rules" that bloggers are governed by. The in-depth interviews found that some people are motivated to blog because it is their job or because it supplements the work that they do, while others blog because they simply enjoy it or because they want to share their personal experiences in order to educate, help and/or entertain people. The bloggers also highlighted that they do not always feel that it is necessary to cite sources, both because of the personal tone of their writings and because they do not always put a strong emphasis on remembering where information comes from, both being less credible and somewhat problematic. These ideas have been supported by research that concluded that the driving forces that motivate bloggers impact the type of content they post online and that bloggers do not subscribe to journalistic norms of objectivity, but rather their writings tend to be supported by strong moral assumptions (Hennessy and Martin, 2006; Huang, Shen, Lin & Chang, 2007; Ekdale, Namkoong, Fung & Perlmutter, 2010).

As noted by Boyd (2006), blogging encapsulates a "diverse set of practices that result in the production of diverse content" (p. 2). Further researching these practices, such as how bloggers find and choose sources, cannot only better our understanding of where blogger nutrition information comes from, but possibly our understanding of why bloggers are using certain types of sources. This is important because these sources used influence the media's agenda and ultimately the public's agenda.

Gender

As discussed earlier, overall, men and women were sourced at similar rates, but "other/cannot tell," meaning that it was a research institution, corporate organization or the

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gender of the source could not be identified, was sourced far more often. For this research study, gender was defined as what it is to be a woman or a man and was determined by the bloggers' choice of categorization, alternatively known as the bloggers' self-identified sex category, based primarily on direct identification on the blog, typically found on the blogger profile. If direct identification was not provided, then language cues, such as referring to oneself as "mother, father, his, her, he and/or she" was utilized to determine gender. If neither direct identification or language cues were present, then the researcher based the decision on source cues such as name and picture identification. It is important to note, however, that while this is how the study defined gender, the individual bloggers used gender and sex interchangeably, often referring to sources as men or male and women or female within the same conversation.

Gender of the blogger as a factor in the sources selected was analyzed in order to help determine, if the gender divide that was once apparent in terms of sourcing still is apparent, and to determine the potential agenda setting impact this divide has on consumers, if it still is apparent. It was found through the content analysis that while men and women bloggers posted at similar rates, men bloggers sourced far more often than women bloggers. The in-depth interviews uncovered that both men and women bloggers felt that they sourced frequently, however they also both acknowledged that at times they write personal posts that may not be sourced. It was also noted by both men and women bloggers that they find credibility to be an important factor when deciding what sources to use.

Based on this information and the lack of previous research on frequency of blogger sourcing separated by gender, concluding exactly why the content analysis revealed such a large discrepancy in the frequency of sourcing between men and women is difficult to determine. One possible explanation links back to overall motivation for blogging. As noted earlier, the in-depth

interviews uncovered that bloggers have different motivations for blogging. Some bloggers stated that they blog because it is their job or because it supplements the work that they do. Other bloggers stated that they blog because they simply enjoy it or they want to share their personal experiences in order to educate, help and/or entertain people. Although this study did not specifically look at sourcing in relation to motivation, it could be something to consider for future research. Overall motivations for blogging may be different for men and women bloggers. Additionally, there may be a difference in the topics covered by men and women, requiring varying amounts of sourcing.

While women were less likely than men to source overall, men were more likely than women to cite non-health-related sources. This leads to the conclusion that while women may choose not to source at all, men choose to source regardless of the crediblity of the source. As stated earlier, while not all sources cited need to be health-related it is important when covering a health topic such as nutrition that a larger majority be credible health sources.

Men heavily utilized "other blogs/bloggers" and "Internet-only media" as sources. Followed much less frequently by "other/cannot tell," "education/science" sources, "traditional news media," and "politics/government" sources. Women had a more even distribution of type of sources utilized when the source could be clearly defined. After "other/cannot tell," they most frequently used "education/science" sources, followed by "non-government organizations," "Internet-only media," "traditional news media," non-official" sources, "other blogs/bloggers" and "politics/government" sources (see Figure 3).

The in-depth interviews aligned with the content analysis, highlighting that men frequently noted using other blogs/bloggers when sourcing as well as new sources, and women bloggers noted using a variety of sources regularly. Women specifically mentioned not using blogs often, which

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was also found through the content analysis. However, not necessarily aligning with the content

analysis results, women emphasized the use of credible sources, which is questionable due to the

frequency of sources used by women bloggers that could not be clearly defined.

Figure 3: Frequently Used Sources by Gender of Nutrition Blogger
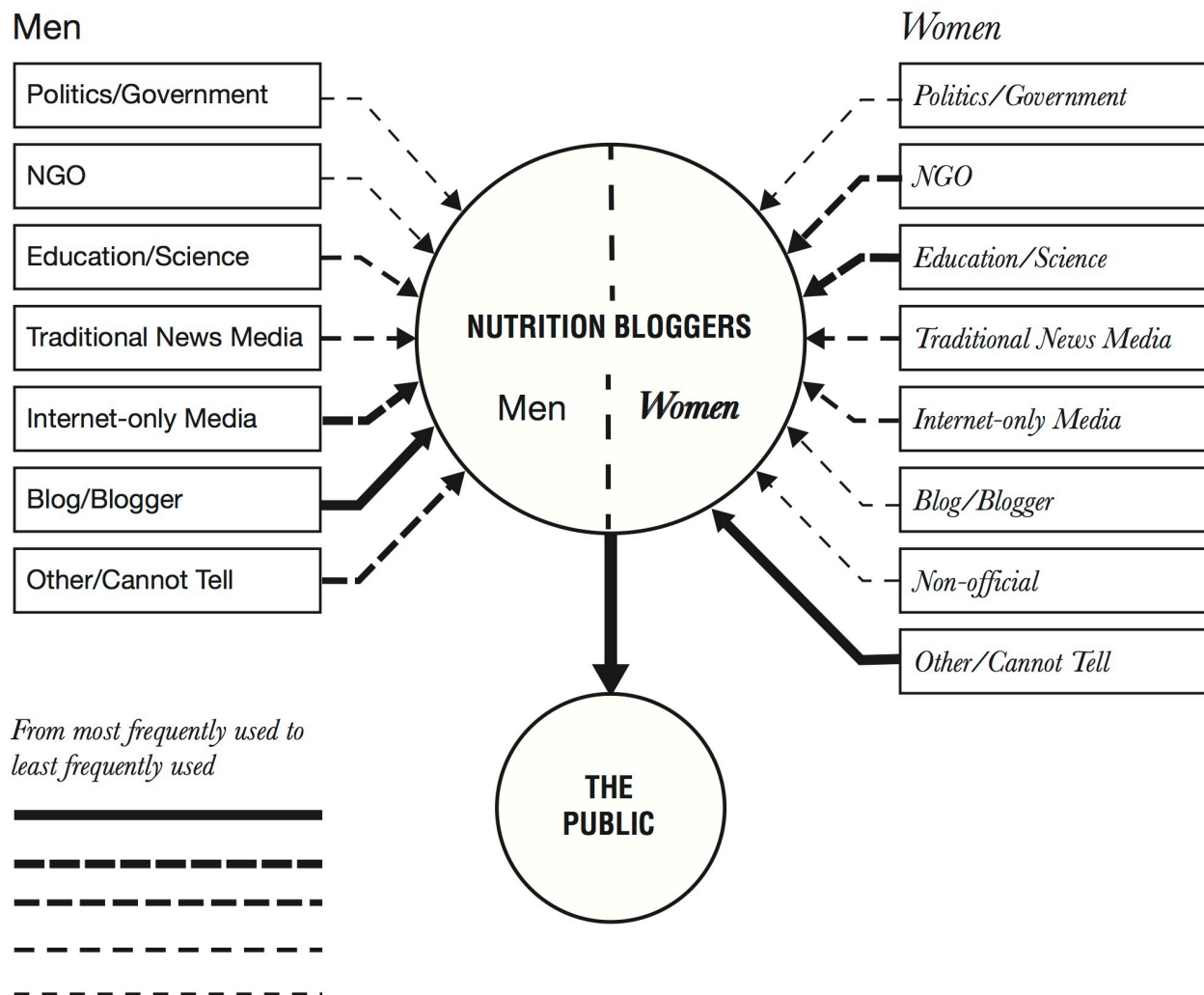
Combined, however, both the content analysis and in-depth interviews highlighted that

men and women bloggers cited various types of sources, both credible and less credible. Less

credible sources being understood as those sources that are either not health-related or those

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where credibility can be questioned. As stated earlier, in addition to non-health-related sources, non-government organizations, other blogs/bloggers and those sources that could not be clearly defined are less credible because they are not always non-traditional. These sources are different than book authors and published articles, because they have not gone through the same editing and evaluation process.

There was not a noticeable difference in the gender of sources selected by men and women bloggers, and the in-depth interviews reiterated that bloggers do not consider gender when sourcing. This shows that gender may not be a factor in source selection, which is different from research that has previously been conducted on this relationship between gender and sourcing and generally concluded that men expert sources were most likely to be sourced, and that gender played a role in gender of sourcing and source type (Zoch & Turk, 1998; Zeldes et al., 2007; Voinche et al., 2010; Freedman et al., 2010).

Overall, it can be determined that nutrition bloggers frequently use sources with over half of blog posts analyzed citing at least one source, therefore highlighting that bloggers overall understand the importance of sourcing and the importance of citing sources. It can also be determined that nutrition bloggers utilize a variety of source types, both credible and less credible, as well as a variety of methods for finding and choosing sources, once again with varying degrees of crediblity. This emphasizes that while blogger may understand the importance of sourcing, there is still a need to increase the use of credible sources. Lastly, it can be determined that bloggers do not consciously or unconsciously choose sources based on gender, hopefully underlying a changing relationship between power, information and gender.

All of these conclusions can be better understood by considering the blogging process, and its differences from other forms of news coverage, such as traditional journalism. One way

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to address the blogging process is by examining the overall motivations of bloggers. Another way to address the blogging process is to acknowledge that bloggers are governed by different standards that allow for more flexibility in choosing what they want to write about, when they want to source and whom they want to source.

This does not, however, mean that bloggers should not be conscious of how frequently they are sourcing and the credibility of their sources. To be recognized as credible sources of information, bloggers need to combine their freedom of topic choice, personal opinions and stories driven by non-elite sources with proper sourcing methods, in order to provide the most accurate information possible to readers and gain the respect of traditional news media and ultimately society in general. On the other hand, regardless of blogger motivations and standards, consumers need to remember to be aware of who the blogger is and what the motivation is for blogging as well as where the information is coming from.

Blogs can be valid sources of information. They often provide candid personal details, stories and experiences that are hard to find in traditional news formats. As long as the public is aware of the potential lack of credibility of some blogs and does research on the credentials of the blogger and trustworthiness of the blogs it is following, then blogs can be an informative source of nutrition information.

In conclusion, alternative sources of news, such as blogs, are becoming an important source for nutrition information, making the study of them increasingly important. According to Fox (2011b), 52% of Internet users searched for exercise or fitness information online and 33% searched for information about how to lose or control weight. Specifically related to blogs, almost 50% of U.S blog readers tap into blogs for finding new trends or ideas, 35% for finding out about new products and 25% for help with making a purchasing decision (Collins, 2011).

Overall, more than 70% of Americans get at least some of their news online (Mitchell et al., 2012). Additionally, the prevalence of this nutrition information is increasing online. The problem is that valid information is buried beneath irrelevant and sometimes even harmful information.

This growing importance of blogs coupled with the idea posited by the agenda building concept – that events, issues and sources chosen are factors that can set the media's agenda and subsequently the public's agenda – solidifies that continuing research on this topic can only better both bloggers and readers. Nutrition is a topic of widespread public interest and concern, and one that raises debates around the use of sources due to the important nature of the information disseminated. Previous research on health/nutrition and sourcing has been explored by several researchers, looking at both traditional news media as well as online media. This research has generally concluded that initial ideas for stories come from a variety of sources, that the medium under study influenced sourcing methods, and that journalists use audience members and themselves for story ideas more often than was typically believed to be the case. Additionally, it was concluded that various factors played a role in use of news sources, including individual characteristics such as credentials and years working, that organization size and structure played a significant role in news sourcing, and that science bloggers utilize some of the traditional sourcing methods, but also diverge towards other methods when necessary (Viswanath et al., 2008; Len-Rios et al., 2009; Hu & Sundar, 2009; Buis & Carpenter, 2009; Wallington et al., 2010; Walejko & Ksiazek, 2010; Tanner & Friedman, 2011).

This study fills a gap in both agenda building research as well as health/nutrition research as few studies have focused on agenda building and health, and the ones that have did not look at

specific health category, such as nutrition, or specifically focus on sourcing. This is an important area of scholarship that needs increasing attention.

Conclusion

This study focused on the frequency of sources and type of sources utilized by popular nutrition bloggers in order to better understand how the nutritional agenda is set. The study concluded that nutrition bloggers are frequently sourcing and utilizing a variety of source types, however sources used are a combination of both credible and less credible, meaning that non-traditional sources are being used. Over half of the nutrition bloggers in the sample sourced often. From a combination of past research on the topic as well as the in-depth interviews conducted for this study, it can be posited that the bloggers that are not sourcing frequently may not have a strong need to do so because of their overall motivation for blogging. Another reason that the bloggers may not feel the need to source frequently is because of the more flexible standards by which bloggers are ruled than other news media.

Based on the limited research previously conducted on the topic, typical agenda setting and agenda building results of traditional news media have been proven to have the same or similar results on new media. However, this study's findings concerning the use of both credible and less credible sources and methods for finding and choosing sources as well as lack of focus on overall blogger motivations and blogger background provide a number of opportunities for future research.

Overall, the results suggest that nutrition bloggers understand the importance of both using and citing sources, but may not understand the extent to which agendas are set by the sources utilized, and therefore the importance of using dependable and credible sources. This

makes it important for academics to continue research on the topic of agenda building and nutrition as well as other health categories, in order to better understand why bloggers make the sourcing choices they do.

Specifically related to the findings of this study, future research could focus on analyzing source types frequently used (see Figure 1 and Figure 3). For example, future research could help to determine why men nutrition bloggers source more frequently than women bloggers. Additionally, future research could analyze why men nutrition bloggers heavily source "other blogs/bloggers" as well as "Internet-only media" and why women bloggers most frequently source "other/cannot tell." This is important because determining why bloggers choose particular sources could help to determine bloggers' opinions around the importance of sourcing as well as sourcing credibility.

Beyond just looking at types of sources, future research could determine if there is any relationship between how nutrition bloggers find and choose sources and the types of sources they choose. The in-depth interviews uncovered various ways that bloggers find and choose sources, and the responses were organized into three overarching categories, with several subcategories under each (see Figure 2). Specifically looking at these categories – proactive/reactive reading, industry experts or organizations and personal experience – and subcategories could be a direction for future research.

Additionally, although this study coded for blogger title, as it was noted on the blog or determined through the blog, and asked the bloggers to explain their overall motivation for blogging, the study did not specifically analyze the credentials of the blogger or their overall motivation for blogging in relation to the amount or type of sourcing. Wallington et al. (2010) concluded that various factors played a role in use of news sources, including individual

characteristics such as education and years working as a journalist. Additionally, Buis and Carpenter (2009) concluded that there were distinct differences in patterns of content between credentialed and uncredentialed bloggers. Therefore, understanding why bloggers choose to blog is useful for expanding the understanding of the content found on blogs.

Along with credentials and overall motivations for blogging, the topics covered by bloggers could have an effect on the frequency of sourcing and type of sources utilized. Future research on the topic could look more specifically at overall blog topics as well as specific post topics in relation to sourcing.

Lastly, it has been emphasized throughout this study that online resources are a significant source of health information, which is exemplified both by the increasing availability of such tools and the desire of people to connect with others. Specifically related to social networking sites, 23% of social networking site users followed a friends' personal health experience, and 15% receive health information from these sits (Fox, 2011a). This study focused on blogs, which are just one form of new media. It would be important for future research studies to look at other new media and social media means, such as popular websites, Facebook and Twitter.

Beyond the need for continuing research on this topic, the results of this study indicate the possible need to create best practice guidelines for blog sourcing, with an emphasis on source frequency and credibility of sources, that serve as a guide for both bloggers and readers. Bloggers are unique communicators who create influential content which makes it essential for them understand best practices for sourcing, regardless of whether the best practice guidelines are more flexible than those applied by traditional sources of news. Additionally, readers need to understand best practice guidelines for sourcing in order to be aware of what they are reading

and where the information they are consuming is coming from. Specifically, for bloggers these best practice guidelines should begin with a focus on overall motivation for blogging, and for readers these best practice guidelines should begin with a focus on overall motivation for reading. Once the motivation behind blogging and reading is established, there should be understandable best practice guidelines that detail the importance of frequency of sourcing as well as credibility of sources used, based on this overall motivation.

As with all research, this study has limitations. The sample only included 20 nutrition bloggers and should be broadened to other health categories in the future. Looking at other categories could result in more diverse results, especially as it pertains to more serious health categories such as chronic diseases and cancer.

Additionally, accounting for the effect that outlying blogs have on results should be considered in future sampling methods and studies overall. As noted throughout this study, post counts and source frequency varied from one blog to another. Outlying blogs, such that posted often but sourced rarely as well as such that posted rarely but sourced heavily, influenced the results.

Regardless of these limitations, this study has added to the research on agenda building by analyzing blogger sourcing as it specifically relates to the health category of nutrition. There is much more room for discovery in the area of agenda building and blogging and specifically health blogger sourcing. This is an important area of research and future research should continue to provide insight into ways that bloggers can participate in the creation and distribution of more credible health information.

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Appendix 1

Blog List and Details

Below is a list of the blogs analyzed, broken down by gender and organized by popularity from highest ranking to lowest.

Men:

Fooducate

http://blog.fooducate.com/

Fooducate analyzes information found in each product's nutrition panel and ingredient list to help decrease the confusion around nutrition labels, ingredients lists, health claims and marketing hype.

The Veg Blog

http://www.vegblog.org/

A blog about that was started to provide a personal account about becoming vegetarian with the intention of helping other new vegetarians, or people just looking to cut back on meat.

Modern Paleo

http://blog.modernpaleo.com/

Modern Paleo offers information on the principles and practice of nutrition, fitness, and health broadly focused on a paleo approach.

Weighty Matters

http://www.weightymatters.ca/

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A blog written by an obesity medicine doctor for his patients, health reporters, policymakers, politicians, and researchers, amongst others. Focuses on a broad range of topics, including food policies, research discoveries and studies, and health, fitness and nutrition-related news

Paul's Health Blog

http://www.paulshealthblog.com/

PaulsHealthBlog.com was started in 2005 to help people who want to take charge of their life and control their health through proper nutritional choices.

Dr. Mirkin

http://drmirkin.blogspot.com/

News and tips for a healthful lifestyle from sports medicine doctor, fitness guru and long-time radio host.

You Are Not a Fit Person

http://youarenotafitperson.com/

A blog written to share thoughts on fitness and weight loss. The blog is an accompaniment to a book written by the blogger, and includes information provided in the book, as well as information and thoughts on scams related to diet, weight loss and nutrition.

Random Acts of Cooking

http://www.chefbernards.com/?page_id=448

Random Acts of Cooking is written by a chef who is interested in promoting his website and company, while also encouraging people to cook smarter and eat healthier.

FitCity

http://fitcityblog.com/

A blog about staying fit in New York City, including tips, advice, conversations, and more.

Dave Grotto's Nutrition Housecall

http://davidgrotto.wordpress.com/

Written by a registered dietician and the owner of a nutrition consulting firm, Nutrition

Housecall is about improving health and wellness "one delicious bite at a time."

Women:

Celebrity Diet and Exercise Examiner

http://www.examiner.com/celebrity-diet-and-exercise-in-national/fitz-koehler

A blog written to help people live better and longer. The focus is on personal knowledge from a

fitness expert, as well as information on celebrity health and fitness information.

Spokane Healthy Living Examiner/Happy Body Happy Life

http://www.examiner.com/healthy-living-in-spokane/tonya-bonin

Written by a woman diagnosed with Rheumatoid Arthritis, the author has done extensive

research on auto-immune diseases and uses the blog to share the wealth of information she has

acquired in order to help and encourage those with auto-immune diseases.

Weight Loss Examiner

http://www.examiner.com/weight-loss-in-national/gail-gedan-spencer

A blog focused on striving to find the perfect combination of diet, exercise and motivation.

High Chair Times

http://www.parents.com/blogs/high-chair-times/

A mommy blogger writing about making baby food and the humor behind feeding young kids.

Eat Like Me

http://www.self.com/fooddiet/blogs/eatlikeme

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Eat Like Me is written by a registered dietitian who gives fun insights on what tasty, balanced and healthy meals look like by posting what she eats every day.

Nutrition Blog

http://nutrition.about.com/b/

A blog written to provide nutrition information on foods, dietary supplements and other nutritional issues.

Eating to Live

http://www.tribtoday.com/page/blogs.listAll/display/50/Kathie-Evanoff.html

A blog about healthy eating that stems from things seen in newspapers, books and magazines, written from the perspective of an average person who is constantly bombarded with information on what to eat and what not eat.

Savvy Vegetarian Blog

http://www.savvyvegetarian.com/blog/

Savvy Vegetarian supports the vegetarian diet and lifestyle with vegetarian advice and articles, vegetarian and vegan recipes, free vegetarian reports, a newsletter, ebooks, products, and more.

Fit For Life

http://blogs.indystar.com/fitforlife/

Fit For Life is about health and fitness that focuses on physical activity, overall wellness and nutrition.

About.com Celiac Disease Guide

http://celiacdisease.about.com/

A blog that focuses on celiac disease and the gluten-free diet, in order to help celiac disease patients learn how to eat gluten-free and get healthy.

Appendix 2

In-Depth Interview Protocol, Introduction and Questionnaire

Instructions (Do not read aloud to interviewee)

This protocol is designed for a study of the use of sources in health blogs. The in-depth

interviews will examine how health bloggers choose sources and which sources bloggers use in

health coverage.

The study is guided by the following research questions:

RQ1: How frequently do health bloggers use sources?

RQ2: Which sources do health bloggers use?

RQ3: How do health bloggers find and choose sources?

RQ4: Is there a difference in the sources selected by women and men health bloggers?

Introduction

Hello, this is _____ from Virginia Commonwealth University in Richmond. As

discussed in my email to you, I am conducting an academic research study on how nutrition

bloggers choose sources and which sources bloggers use in nutrition coverage. I am using one-

on-one, in-depth interviews to collect this information, as well reviewing a sample of your blog

posts. You were selected to be questioned for this study because you maintain a nutrition blog. It

will only take a few minutes. I want to assure you that your identity and all information you give

me is strictly confidential. For the analysis of our study, we will separate all identifying

information from the answers. Okay?

 [IF THERE ARE QUESTIONS ABOUT WHO I AM, I WILL EXPLAIN THAT I AM A

DOCTORAL STUDENT AND THAT THIS IS A DISSERTATION RESEARCH PROJECT]

For the purpose of the study, I would like to record our conversation. Okay?

[TURN RECORDER ON IF AGREEMENT. END INTERVIEW IF DISAGREEMENT, FIND

DIFFERENT BLOGGER]

I have turned the recorder on. Could you please indicate again that you agree to the interview and

the recording by simply saying your name and that you agree with the recording.

Thank you.

1. What is your motivation for blogging?
2. How frequently do you use sources?
3. Which sources do you typically use?
4. Do you favor official or unofficial sources?
5. Do you source traditional news media?
a. If so, which media do you typically source?
6. Do you source Internet-only media?
a. If so, which ones?
7. Do you source other blogs?
a. If so, which ones?
8. How do you typically find and choose your sources?
9. Do you consciously choose sources based on gender?

Interviewer will ask additional questions during the interviews based on the answers of the

interviewees.

Thank you very much for your time. You have been a great help.

[HANG UP AND STOP THE RECORDING]

Appendix 3

Content Analysis Coding Protocol

Introduction

This protocol is designed for a study of the use of sources in nutrition blogs. This content

analysis examines how nutrition bloggers choose sources and which sources bloggers use in

nutrition coverage.

The study is guided by the following research questions:

RQ1: How frequently do nutrition bloggers use sources?

RQ2: Which sources do nutrition bloggers use?

RQ3: How do nutrition bloggers find and choose sources?

RQ4: Is there a difference in the sources selected by women and men nutrition bloggers?

Please read the following instructions closely before starting the coding process.

Procedure

The coders will code a one-year census of blog posts.

On each day there may be none, one or several posts on the weblogs. A post can only contain

one word or can be several paragraphs long. The coder needs to identify sources within the posts.

For some dates, there will be multiple entries on the coding sheet.

The unit of analysis for this content analysis is the source. Sources of a blog differ from one blog to the next, sometimes appearing as a direct or indirect quote, or at other times appearing as a hyperlink, including video link, or boxed item.

For the purpose of this study, direct quotes will be identified either by quotation marks or boxes. Indirect quotes will be identified by the attribution without a direct quote. Hyperlinks will be identified by being able to transfer the coder to another website or another page on the blog, and embedded video links will be identified by being able to transfer the coder to a video.

It is important that the coder identifies the direct news source for the blog. For instance, a blog can quote a doctor, but can at the same time connect the quote with a hyperlink to WebMD, which conducted the interview with the doctor. In this case, the news source of the blog would be WebMD. It is the goal of this study to identify the sources that blogs rely on. If the blogger had conducted the interview with the doctor, then the doctor would be considered the source. In case of an embedded video link, the source of the blog is the producer of the video, e.g. CNN or ABC News.

All coding material is available on the World Wide Web through the archives of the following blogs. Please search each article and code accordingly. Start coding with August 2012 and go back to September 2011.

Blog List:

Blog	URL
The Veg Blog	http://www.vegblog.org/
Modern Paleo	http://blog.modernpaleo.com/
Weighty Matters	http://www.weightymatters.ca/
PaulsHealthBlog.com	http://www.paulshealthblog.com/
drmirkin	http://drmirkin.blogspot.com/
You Are Not a Fit Person	http://youarenotafitperson.com/
Random Acts of Cooking	http://www.chefbernards.com/?page_id=448

Dave Grotto's Nutrition Housecall	http://davidgrotto.wordpress.com/
FitCity	http://fitcityblog.com/
Fooducate	http://blog.fooducate.com/
Celebrity Diet and Exercise Examiner	http://www.examiner.com/celebrity-diet-and-exercise-in-national/fitz-koehler
Spokane Healthy Living Examiner	http://www.examiner.com/healthy-living-in-spokane/tonya-bonin
Weight Loss Examiner	http://www.examiner.com/weight-loss-in-national/gail-gedan-spencer
High Chair Times	http://www.parents.com/blogs/high-chair-times/
Nutrition Blog	http://nutrition.about.com/b/
Savvy Vegetarian Blog	http://www.savvyvegetarian.com/blog/
Fit For Life	http://blogs.indystar.com/fitforlife/
Celiac Disease Guide	http://celiacdisease.about.com/
Eat Like Me	http://www.self.com/fooddiet/blogs/eatlikeme
Eating to Live	http://www.tribtoday.com/page/blogs.listAll/display/50/Kathie-Evanoff.html

Coding Process

The following steps should be taken in the content analysis. Please read the explanations

carefully before you start the coding:

v1.   Blog Name
      1 – The Veg Blog
      2 – Modern Paleo
      3 – Weighty Matters
      4 – Paul's Health Blog
      5 – Dr. Mirkin
      6 – Fooducate
      7 – Start/Finish
      8 – Random Acts of Cooking
      9 – Dave Grotto's Nutrition Housecall
      10 – FitCity
      11 – Celebrity Diet and Exercise Examiner
      12 – Spokane Healthy Living Examiner
      13 – Weight Loss Examiner
      14 – High Chair Times
      15 – Nutrition Blog
      16 – Savvy Vegetarian Blog
      17 – Fit For Life
      18 – About.com Celiac Disease Guide

19 – Eat Like Me
20 – Eating to Live

v2.   Month [As shown in post or header]
            1-12

v3.   Date [As shown in post or header]
            1-31

v4.   Blogger gender [Blogger gender should be coded as the bloggers' self-identified sex category. If self-identified sex category is not available then language/source cues, such as the name of the blogger or a picture of the blogger, located on the blog should be used to help determine the bloggers' self-identified sex category]
            1 – Man
            2 – Woman
            3 – Cannot tell

v5.   Blogger title [Blogger title refers to the bloggers' self-identified professional or personal title, if applicable]
            1 – Nutritionist/Dietician
            2 – Doctor (MD)
            3 – Journalist
4 – Scholar
            5 – Physical Trainer
            6 – Athlete
            7 – Chef/Cook
            8 – Non-official
            9 – Other: Specify

v6.   Post number
            1-XXX

v7.   Source number [count from top to bottom in each post]
            1-XXX

v8.   Source Characteristic
            1 – Direct quote
            2 – Direct quote with hyperlink
            3 – Indirect quote
            4 –Indirect quote with hyperlink
            5 – Hyperlink only
            6 – Embedded Video
            7 – Citation
            8 – Other: Specify

v9.   Source Identified by Name [Source (organization or person) identified by name]

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1 – Yes
2 – No

v10.   Source Gender [Source gender should be coded as the sources' self-identified sex category. If self-identified sex category is not available then language/source cues, such as the name of the source or a picture of the source, located on the blog should be used to help determine the sources' self-identified sex category]
1 – Man
2 – Woman
3 – Both
4 – Cannot tell/Other (e.g., research institutions, corporate organizations)

v11.   Affiliation/Identification Used for Source [Source affiliation/identification refers to any identification of the sources employer or organization the source represented. Always 'yes' if source is an institution/organization that is stated.]
1 – Yes
2 – No

v12.   Is the source health-related (e.g., medical doctor, nutritionist, healthcare affiliate, medical professor, scientist, institution)?
1 – Yes
2 – No

v13.   Type of Source
1 – Politics and Government (e.g., politician and political organization, government official and institution, incl. reports)
2 – Business (e.g., executive, institution, incl. reports)
3 – NGOs
4 – Education and Science (e.g., academic publications, scholars)
5 – Traditional news media (e.g, print, TV, radio and online formats)
6 – Internet-only media (e.g. Google, Yahoo, Huffington Post, Slate, etc.)
7 – Unaffiliated blog/blogger
8 – Non-official
9 – Multiple: Specify
10 – Other: Specify
11 – Cannot tell

Vita

Shana Leann Jodhan Meganck was born in Richmond, Virginia on August 18, 1981. She graduated from James River High School in Richmond, Virginia in 1999. She received her Bachelor of the Arts in Mass Communication from Mary Baldwin College in Staunton, Virginia in 2003. She received a Masters of the Arts in Journalism from the University of Georgia in Athens, Georgia in 2005. She worked for CRT/tanaka in Richmond, Virginia from January 2005 to March 2008. She then worked at Burson-Marsteller in Richmond, Virginia from March 2008 to July 2009. She taught as an adjunct professor at Virginia Commonwealth University from July 2009 to May 2011 while she was fulfilling the requirements for her Ph.D. in Media, Art and Text. She received her Ph.D. from Virginia Commonwealth University in Richmond, Virginia in 2013.