

## Media and the Public Perceptions of Vaccines

People are exposed to the media's influence from early on in life. Media here refers to all the types of technology that are used for mass communication (Internet, newspapers, radio, etc.) and those that control the technology. The primary media used to influence people concerning vaccination are public health publications, antivaccination websites, medically-related television shows, and Web 2.0 interfaces. We explored these media with respect to the public perceptions of vaccines and vaccination.

### Historical Contexts

In the past, images have been utilized by the media for a wide variety of reasons, such as recruiting troops for the US military (Flagg). Media images were also used to influence peoples' perceptions and views on health in the United States in as far back as the early 1900s. For example, "Typhoid Mary" images started to appear in newspapers in New York when Mary Mallon, a healthy carrier of typhoid fever, started to accidentally infect people through her cooking. These images served not only to mock Mallon, but also to warn people of typhoid and how it could be spread (Leavitt 135, 140). In 1916, the New York City Department of Health created a pamphlet rich with images that warned mothers to increase sanitation of both their children and their houses in order to prevent polio (Department of Health of New York City).

It was not until the diphtheria vaccine was introduced in the 1920s, however, that the prevalence of media images portraying vaccination increased (most likely because of innovations in technology, an increased awareness of public health, or both). For example, the Metropolitan Life Insurance Company promoted immunization in

New York by publishing a photograph that showed school children lined up to receive an immunization shot (Metropolitan Life Insurance Company). The line of children extends to the edge of the image and gives the impression that there are more children in line than are in the image. The vaccine seems more credible because it appears that a large number of children are receiving it, and as a result, it must be safe. School children were the targeted group to receive this vaccine because they were most at risk.

Jonas Salk developed the first polio vaccine created for mass distribution in 1955. Elvis Presley was photographed getting his Salk vaccine in an attempt to get more people vaccinated (March of Dimes Birth Defects Foundation; Hinman, 1118). In 1961, an oral, attenuated vaccine was created (the Sabin vaccine). Posters from the Centers for Disease Control and Prevention (CDC) sported the iconic “Wellbee” that told families to “Be well” and “immunize your family now” (CDC, *Wellbee and OPV*). The CDC even released an image of a woman dressed up as the “Wellbee” and posing with a few members of the Red Sox baseball team at Fenway Park, the baseball players holding cups containing the oral vaccine (CDC, *Early OPV*). In 1963, there existed billboards in Oklahoma City that showed a wheelchair next to the phrase, “Stamp out polio” (CDC, *1963 Polio Campaign*).

The measles vaccine became available in 1963. Soon after, the media images followed suit. For example, characters such as “Dr. Immunity” (a small, Caucasian cartoon doctor in a white lab coat and black tie) and “Mean-Ole Measles” (a short, menacing, ghastly blob with giant eyes) became popular recurring images in the media, working to promote vaccination (CDC, *Promotion of Measles Vaccination*). With the rubella vaccine in 1969, images containing women and children under a “rubella umbrella” were released

to encourage vaccination (CDC, *Rubella Public Service Campaign Illustrations*).

Contemporary examples also exist. For example, images from the “One Less” campaign to promote HPV vaccination can be quickly found on the Internet (*Gardasil Scan*).

The role of images in the media discussed so far has just been one side, however.

Although the images mentioned have functioned to either raise awareness about vaccines or to instill a sense of duty to become vaccinated, not all images in the media follow this route. Some images in the media exist for the purpose of discouraging people from getting vaccines or warning people about the dangers of vaccines.

Sometimes, there are images associated with conspiracy theories (WeAreChange Wichita). One image showed an outstretched hand next to a syringe with the words “Swine Flu Vaccine Will Kill You!” plastered on the front (*No to Swine Flu Poster II Infowars Dot Com*). Images in the media against swine flu vaccination could explain why the Vaccine Adverse Event Reporting System (VAERS) had higher numbers of reported adverse events following the 2009 H1N1 vaccine opposed to the 2009-2010 seasonal influenza vaccine, despite the lack of one vaccine having more serious adverse events than the other (Vellozzi et al.).

### Media Images

Images in the media are a “powerful mechanisms for communicating ideas” (Sementelli 608). Images will invoke reactions in people consistently when presented, which is the reason they have been used in many psychological studies (608). *The New England Journal of Medicine* reports that media images can strongly influence the public’s beliefs concerning medicine and illness (Diem, Lantos, and Tulskey 1580). This is a possible reason why images promoting vaccination were so prevalent when vaccination was

taking hold in the United States as a routine preventative health practice in the 20th century. Additionally, the efficacy of images and the words on those images promoted by organizations that were strongly linked to science (like the CDC) gave the viewer “the impression that ‘the authoritative voice of science is speaking,’ ” working to increase the overall ethos of the message (Hornmoen 92).

Many anti-vaccination websites have images and pictures whose purpose it is to influence and persuade. A study published by the *Journal of the American Medical Association* observed that 32% of antivaccination websites surveyed had pictures of “menacing needles” and 23% of antivaccination websites surveyed had pictures of children who were reported to be harmed or killed by adverse reactions to a vaccine (Wolfe, Sharp, and Lipsky 3247). Social psychology explains that disturbing visual images can cause parents to fall victim to “false consensus bias” in which they place more emphasis on personal and emotional experience at the expense of scientific evidence when making decisions (Wolfe, Sharp, and Lipsky 3247). Such bias could be a contributing factor to the antivaccination movement in the United States today, since it has been shown that 80% of adults in the US with Internet access use it to look for health information, and 52% believe that “almost all” of the information they find is credible (Wolfe, Sharp, and Lipsky 3247). Relying on the media for health information could be a contributing factor to the increased prevalence of public fear reactions to a variety of medical practices and advice (Nicholson 226).

## Television Programming

With the increasing popularity of television in the 1960s, there arose the need for programs that introduced important information in entertaining ways. Medicine was a field also growing during this time period with technological advances and new discoveries. With both medicine and television expanding, medical television shows exploded onto the social media scene. However, instead of focusing on the medical advances and information, prime time television shows tended to focus on the social lives and anxieties of physicians. This trend is still prominent today. By focusing on medical practitioners' personal lives, television producers and writers glorify the profession and leave the public with an unrealistic idea of doctor's lives. This misinterpretation either heightens or decreases real physicians' credibility and may influence people's trust in their doctors to provide accurate information about vaccination. We aim to explore how popular medical shows influence public perception on physician's credibility and the influence they may have in spreading in/accurate information about vaccines.

A primary concern of Pfau and Mullen, in 1995, was whether TV shows that emphasize physician's negative characteristics would decrease patient satisfaction (Pfau and Mullen, 1995). The prediction was studied in 2003 by Chory-Assad and Tamborini. The study found negative relationships between prime-time doctors and positive perceptions of physicians. Thus, the more prime-time television one watches, the more likely one will have negative perceptions about physicians (Chory-Assad and Tamborini, 2003). These negative perceptions hinder a patient's trust in his or her physician's authority, demonstrating that a lot of television watching diminishes

physician ethos. As doctors are a primary source for vaccination information, distrust in physicians may lead to a distrust in the preventative measures they suggest. However, these results and negative perceptions of physicians are not consistent with all medical television dramas.

The Chory-Assad and Tamoborini study was conducted in the middle of the reign of *ER* as the nation's most popular medical television program and concerned, at least in part, its content. *ER* aired from 1994-2009 and centered on the social and professional lives of a group of emergency room doctors in Chicago. The show had an affinity for heroic medicine, a concept that focused on taking whatever extreme measures necessary to save a life. *ER* often portrayed physicians as cold, emotionless, and business-oriented. While *ER* is a harsh and demanding show that emphasizes the need for fast-paced decisions, *Grey's Anatomy* focuses more on the social and communication processes doctors go through with their patients. *Grey's Anatomy* is a television drama that follows the lives of five surgical interns and their supervisors through their residencies in Seattle Grace Hospital in Seattle. Dr. Brian L. Quick conducted a study in 2009 to identify the relationship between watching *Grey's Anatomy* and changing perceptions of physicians. Quick found that heavy viewers of *Grey's Anatomy* thought that the program was a credible source. They also, in a separate question, identified a positive association between credibility and courageousness of doctors. Indirectly, one can conclude that *Grey's Anatomy* (at least for avid watchers) encourages the public to view doctors as compassionate heroes. Although this relationship was not directly observed, it is meaningful in that a positive association was also observed between the perception of a heroic physician and patient satisfaction (Quick, 2009).

In other words, the glorification of medicine may be leading patients to unrealistic perceptions of physician bravery, and exaggerated satisfaction of the doctor. This trend would seem to give the physician more ethos in transmitting information about vaccines and contradicts previous reports about *ER*. Such conclusions could be due to the differing levels of personable character within the two shows, suggesting that the personable nature of a physician is a primary factor in positive patient perceptions and the believability of vaccination information.

If physician personality is the primary factor in patient satisfaction, one might expect that the television show *House M.D.* impacts viewer ideas of physicians negatively. The International Movie Database ([www.imdb.com](http://www.imdb.com)) summarizes the show *House M.D.* as a medical drama about “an antisocial maverick doctor who specializes in diagnostic medicine [and] does whatever it takes to solve puzzling cases that come his way using his crack team of doctors and his wits.” This drama is about the extreme and improbable cases in medicine. Gregory House, the elitist, sarcastic, and genius physician, is known for his manipulating tactics and unusually perceptive diagnostic capacity. We were interested to see if his manipulative techniques and overall despicable personality decreased patient trust in their physician’s motives. Although there was no research to support or deny the claim, some Internet bloggers are also confused about Dr. House’s appeal (Why Does America Love Dr. House?). Dr. Richard Fogoros, a blogger on the website MedHelp.com, argues that Dr. House is so popular for two reasons. First, he practices beneficence in its most extreme form and even at the cost of the patient’s autonomy. Second, people recognize that sometimes they do not have enough knowledge to know what is truly best for them. Using this analysis, Dr. House is a unique television character in that he takes on a super-human quality; he is

invariably, always right. This view of the infallible physician exists in tension with his less than superb personality. In the show, the reassurance of his eventual correct diagnoses is tempered by his hubris. His knowledge may be comforting, but he never makes his patients feel comfortable.

If Dr. House is a prime example of the concept of physicians as the educational elite, then maybe a physician's education level is more important than personality in terms of patients listening and trusting her or his judgment. Although physician personality does play a factor in building relationships and gaining trust, education and the ability to always act in the patient's benefit may be the most important factor. *ER*, *Grey's Anatomy*, and *House M.D.* all create images of heroic and all knowing doctors that alter perceptions of real life physicians that potentially affect lay views about vaccination.

### Social Media

Social media increasingly influences the American public. When asked which informational means of vaccination education best reached the study participants, many students responding to the H1N1 and seasonal flu survey could not distinguish the difference between an entertainment source and a news source. Many students mentioned walking backwards as a side effect of being vaccinated, which is consistent with the supposed side effects described by a Washington Redskins cheerleader, evident in a viral video on YouTube. However, when asked where they received their facts, they neglected to mention sources such as Facebook, YouTube, Microblogging, Weblogs and other social media, which brings an interesting question: do forms of social media have a higher impact than traditional media or traditional medical sources on the credibility of health information? Why would a viral video have a higher ethos

than a health care professional in a population of young educated individuals? It has been said that the more a concept is mentioned, the more believable it seems regardless of its actual trustworthiness; perhaps this phenomenon is at work in this case.

Social networks, such as Facebook, have become important components in public discourse regarding civic issues. The article “Youtube and Facebook: Online Video “Friends” Social Networking” discusses how “social networking and online videos in the context of political discourse are tightly connected by user-generated interlinking” (Robertson et al. 174). The authors of this study believe that individuals who use social media are intrinsically connected to a multidimensional communication environment subjecting all users to a variety of video or news related posts on their social networking site. An individual’s ability to increase his or her knowledge about civic issues through a connection with a friend’s social networking environment increases the overall distribution of published information.

In the study “YouTube as a Source of Information on Immunization: A Content Analysis,” professors at the University of Toronto School of Public Health conducted an analysis to determine what information individuals receive about immunization from Internet-based sources. They emphasized YouTube, the free video-sharing Internet website, to assess what information was posted with regard to the risks and benefits of immunization and found that out of the 153 videos, 48 percent of them portray vaccinations in a positive light, 32 percent in a negative light, and 31 percent ambiguously (2007, p. 2482). Negative videos, when compared with positive videos, had a higher likelihood of receiving more positive user ratings and more overall viewing. The lowest rated and watched videos by the viewers were public service

announcements. The authors state, “the video ratings and view counts suggest the presence of a community of YouTube users critical of immunization” (“YouTube as a Source,” 2007, p. 2482). Thus, although there are more videos on YouTube that support vaccinations, there seems to be a negative feeling connected to them. The study suggests that health care providers should be aware of these Internet video-sharing sites and that they need to be prepared to answer questions and discuss information with patients who receive their information from these sources. Public health officials should target their messages to appropriately reach and spark interest in this technologically savvy audience to introduce the benefits of getting vaccinated (“YouTube as a Source,” 2007, p. 2484). The amount of support given to the negative vaccination videos might be correlated with the fact that people who search for vaccination information online primarily search for negative facts (or find negative facts in their searches).

In the article “Wag the Blog: How reliance on traditional media and the Internet influence credibility perceptions of weblogs among blog users,” Thomas Johnson and Barbara Kaye surveyed Weblog users online to examine how credible they view blogs as compared to traditional media sources (2004, p. 622). The study revealed that the weblogs (interactive unedited online opinion entries) were more credible to blog users than any other online source, such as: online broadcast television, online cable television news, online newspapers, and radio news (Johnson and Kaye 2004, 630). Importantly, the study’s finding indicated that 73.6 percent of the participants reported high to very high levels of trust in Weblogs while 30.9 percent of the participants reported high to very high levels of trust in the government (Johnson and Kaye 2007, 629-630). Noting that this survey was taken by people who visit Weblogs often, the finding suggests that social media influence people who use that particular form most

often; thus, such forms have inherent ethos for their most frequent users. As the public becomes more influenced by social media, public health officials might consider adapting their messages to the media that the public perceives as the most credible.

Micro-blogging is a “hybrid of blogging and instant messaging” (Schmierbach, 2010). Twitter is an example of micro-blogging. In the article “A little bird told me, so I didn’t believe it: Twitter, credibility, and issue perceptions” the credibility of micro-blogs like twitter are shown to be less than that of major news papers, such as the *New York Times*, as well as other social media. The study demonstrated that internet-based sources are perceived as more credible if they originate from an organizations official website rather than the organization official micro-blogging site. This finding suggests that public health officials can more productively benefit from posting their information on websites such as the CDC and NIH rather than create a micro-blogging sites to share their information. Such a finding might be in direct contrast with Johnson and Kaye, and should be explored more fully.

### Conclusion

The effects of various media—traditional print media, television, and emerging forms of social media on the Internet—on public perceptions of vaccines is a topic of continuing interest. We have discussed how images, television, and social media can influence people or increase the credibility of vaccination information. Images are powerful ways to communicate ideas about vaccination, be it encouraging vaccination or warning against unknown dangers. Television influences the public perception about physicians and alters the reality of the profession. This altered reality can help or harm the vaccination movement depending on the credibility each show portrays. Credibility of

information is also affected by the media in which it is published or disseminated.

Creating awareness of what influences individuals' beliefs and behaviors with respect to media will provide a clearer understanding of how to effectively communicate with them.

#### References:

Centers for Disease Control and Prevention and Smith, Stafford. *1963 Polio Campaign*. 1963.

The Historical Medical Library of The College of Physicians of Philadelphia. Web. 11 April 2011. <[http://media.historyofvaccines.org/images/000340\\_540.jpg](http://media.historyofvaccines.org/images/000340_540.jpg)>.

Centers for Disease Control and Prevention. *Early OPV*. 1963. The Historical Medical Library of The College of Physicians of Philadelphia. Web. 11 April 2011. <[http://media.historyofvaccines.org/images/000335\\_540.jpg](http://media.historyofvaccines.org/images/000335_540.jpg)>.

Centers for Disease Control and Prevention. *Promotion of Measles Vaccination*. The Historical Medical Library of The College of Physicians of Philadelphia. Web. 11 April 2011. <[http://media.historyofvaccines.org/images/000505\\_540.jpg](http://media.historyofvaccines.org/images/000505_540.jpg)>.

Centers for Disease Control and Prevention. *Rubella Public Service Campaign Illustrations*. The Historical Medical Library of The College of Physicians of Philadelphia. Web. 3 March 2011. <[http://media.historyofvaccines.org/images/000728\\_540.jpg](http://media.historyofvaccines.org/images/000728_540.jpg)>.

Centers for Disease Control and Prevention. *Wellbee and OPV*. 1963. The Historical Medical Library of The College of Physicians of Philadelphia. Web. 3 March 2011. <[http://media.historyofvaccines.org/images/000336\\_540.jpg](http://media.historyofvaccines.org/images/000336_540.jpg)>.

Chory-Assad, Rebecca M. and Ron Tamborini. "Television Exposure and the Public's Perceptions of Physicians". *Journal of Broadcasting & Electronic Media* 47.2 (2003): 197-215. EBSCO. Web. 4 May. 2011.

Department of Health of New York City. *NYC Polio Pamphlet, 1916*. 1916. The Historical Medical Library of The College of Physicians of Philadelphia. Web. 3 March 2011. <[http://media.historyofvaccines.org/images/000328\\_540.jpg](http://media.historyofvaccines.org/images/000328_540.jpg)>.

Diem, Susan J., Lantos, John D. and Tulskey, James A. "Cardiopulmonary Resuscitation on Television." *The New England Journal of Medicine* 334.24(1996): 1578-82. Web. 19 April 2011.

Flagg, James Montgomery. *I Want You for the U.S. Army*. 1916. Library of Congress. 9 April 2011. <<http://www.loc.gov/exhibits/treasures/trm015.html>>.

*Gardasil Scan*. Web. 12 April 2011. <[http://www.magnetreps.com/wp/wp-content/uploads/2008/06/gardasil\\_scan.jpg](http://www.magnetreps.com/wp/wp-content/uploads/2008/06/gardasil_scan.jpg)>.

Hornmoen, Harold. " 'Making Us See Science': Visual Images in Popular Science Articles and Science Journalism." *Journalistica* (2010). Web. 24 April 2011.

"House M.D." *IMDb.com*. n.p., n.d. Web. 4 May. 2011.

Johnson, Thomas J., Kaye, and Barbara K. "Wag the blog: How reliance on traditional media and the Internet influence credibility perceptions of weblogs among blog users." *Journalism and Mass Communication Quarterly*, 1.3(2004): 622-642. Print

Keelan, Jennifer., Pavri-Garcia, Vera., Tomlinson, George., and Wilson, Kumanan. "YouTube as a Source of Information on Immunization: A Content Analysis or social good was countered by negative experiences." *The Journal of American Medical Association* 298.21(2007): 2482-2484. Print.

Leavitt, Judith W. *Typhoid Mary: Captive to the Public's Health*. Boston: Beacon Press, 1996. Print.

March of Dimes Births Defects Foundation. *Elvis Presley Receives the Polio Vaccine*. 28 October 1956. Web. 3 March 2011.  
<<http://www.achievement.org/autodoc/photocredit/achievers/sal0-011>>.

Metropolitan Life Insurance Company. *1920s Immunization*. The Historical Medical Library of  
The College of Physicians of Philadelphia. Web. 11 April 2011.  
<[http://media.historyofvaccines.org/images/000253\\_540.jpg](http://media.historyofvaccines.org/images/000253_540.jpg)>.

Nicholson, P J. "Communicating Occupational and Environmental Issues." *Occupational Medicine* 50.4(2000):226-230. Web. 18 April 2011.

*No to Swine Flu Poster II Infowars Dot Com*. 2009. Infowars.com. Web. 4 April 2011.

<<http://www.infowars.com/images/poster-contest/NO-to-SWINE-FLU-POSTER-INFOWARS-DOT-COM.jpg>>.

Pfau, Michael, and Lawrence J. Mullen. "The Influence of Television Viewing on Public Perceptions of Physicians." *Journal of Broadcasting & Electronic Media* 39.4 (1995): 441-459. Print.

Quick, Brian L. "The Effects of Viewing Grey's Anatomy on Perceptions of Doctors and Patient Satisfaction". *Journal of Broadcasting & Electronic Media* 53.1(2009): 38-55. EBSCO. Web. 4 May. 2011.

Robertson, Scott P., Vatrapu, Ravi K., and Medina, Richard. " Youtube and Facebook: Online Video "Friends" Social Networking." *The Journal of Information Technology and Politics Annual Conference* (2009): 159-175. Web. 28 April 2011.

Robertson, Scott P., Vatrapu, Ravi K., and Medina, Richard., ed. *YouTube and the 2008 Election Cycle, "Conference Proceedings"* 16-17 April 2009. Amherst, MA: The Journal of Information Technology and Politics Annual Conference, 1 April 2009. Print.

Schmierbach, Mike., and Oeldorf-Hirsch, Anne. "A little bird told me, so I didn't believe it: Twitter, credibility, and issue perceptions" 4 Aug. 2010. Denver, CO: Paper presented at the annual meeting of the Association for Education in Journalism and Mass Communication. The Denver Sheraton. Print

Sementelli, Arthur. "Images in Public Administration: Using Popular Media to Bridge Theories and Practices." *Journal of Management Development* 28.7(2009): 607-621. Web. 18 April 2011.

Vellozzi, Claudia et al. "Adverse Events Following Influenza A (H1N1) 2009 Monovalent Vaccines Reported to the Vaccine Adverse Event Reporting System, United States, October 1, 2009-January 31, 2010." *Vaccine* 28.45 (2010): 7248-7255. Web. 9 November 2010.

WeAreChange Witchita. *H1N1/Swine Flu Vaccine Propaganda Infects the Nation*. 3 March 2011. <[http://1.bp.blogspot.com/\\_xcoa9BYtFZE/TLP0I9LZYRI/AAAAAAAAAARE/DOfkRZSKSPk/s1600/Swine+Flu+Vaccine+Equals+Poison+-+Truth+is+Out.jpg](http://1.bp.blogspot.com/_xcoa9BYtFZE/TLP0I9LZYRI/AAAAAAAAAARE/DOfkRZSKSPk/s1600/Swine+Flu+Vaccine+Equals+Poison+-+Truth+is+Out.jpg)>.

"Why Does America Love Dr. House?" *MedHelp.org*. Richard Fogoros, M.D., 19 April. 2009. Web. 4 May. 2011.

Wolfe, Robert M., Sharp, Lisa K., and Lipsky, Martin S. "Content and Design Attributes of Antivaccination Web Sites." *Journal of the American Medical Association* 287.24(2002): 3245-3248. Web. 23 April 2011.