

THE USE OF EMOTION IN HEALTH RELATED MESSAGES: EMPLOYING THE
EXEMPLIFICATION THEORY TO EXPLAIN THE MMR-AUTISM DEBATE

by

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Abstract

Health communication messages have been found to have a significant positive impact on audiences. However, numerous situations exist in which the general population is exposed to information from non-credible sources. This initial exposure can often bias or impact subsequent searching for more information.

Vaccinations have been considered effective as a result of the number of lives that have been saved by preventing life threatening diseases. However there is also a growing group of anti-vaccine sources. The rise of the internet has resulted in the growth of numerous unqualified anti-vaccine sources.

Nearly 70% of the health information that people find on the internet is from non-credible sources. These messages often take the form of videos in which a person who makes a passionate claim about the side effects of vaccines uses personal experiences (exemplars). These exemplars are used to counter the volumes of scientific and clinical research which show the effectiveness of vaccinations (base-rate information).

This study manipulates the usage of passionate and dispassionate exemplars and base-rate information by simulating a real-world situation. Passionate exemplars were the most likely to create fear in our audience. Increasing the passion of our base-rate presenters exhibited both positive and negative side effects.

Key Words: vaccines, exemplification, emotion, media

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Dedication

I am dedicating this thesis to my amazing mother, Millicent Thanji Muiru. Mom, you stood by me and sacrificed a lot for me to be where I am today. You took care of my daughter Abbie Naima Thanji while I was pursuing my advanced degree and she has grown up to be a smart and beautiful girl because of you. Your invaluable support and prayers, even when I entertained thoughts of quitting and moving back to Kenya, kept me going. Thank you for being my rock when I had no one else to lean on. This degree is yours, I love you.

Chapter 1 - Introduction

The successful discovery and introduction of the smallpox vaccine in 1796 revolutionized the world of public health by ensuring communicable diseases were eradicated or rather effectively managed. Over the years, numerous vaccines have been introduced and through the herd immunity concept (Fine, 1993), the majority of populations have been rendered free of diseases, which were previously a burden in society. Herd immunity is the proportion of subjects with immunity in a given population. Immunity is defined as the state in which an individual's immunity system of the body reacts to specifically defined immunogens (T. Jacob John & Reuben, 2000). However, the massive introduction of new vaccines has faced growing amounts of criticism and has been a point of dissension among a cross-section of individuals. The disapproval has stemmed from research studies (Wakefield, 1999) that have linked the development of diseases to these vaccines, thus giving birth to the famed anti-vaccine movement. The Wakefield study (Wakefield, 1999) was one of the first well-known research efforts to link the measles, mumps and rubella (MMR) vaccine to autism. The world's oldest and most prestigious medical journal, The Lancet, later retracted the Wakefield study due to skepticism of several of its claims. However, research indicates that numbers of those vaccinating their children not just against measles, but also other communicable diseases took a downward trend in most western countries with a section of some populations rejecting uptake of vaccines (Fry, 2002; Offit & Coffin, 2003; Goodyear-Smith, Petousis-Harris, Vanlaar, Turner, & Ram, 2007). The massive rejection of vaccines meant there has been a breach of trust between the public and the healthcare fraternity. Hence the need for further research on the missing link between the two parties (Gerend & Shepherd, 2007). Numerous studies have identified potential explanations as to why parents have refused to vaccinate their children. Some studies cite

religious reasons, perceptions of a lack of severity of the disease, poor doctor-patient communication (Alfredsson, Svensson, Trollfors, & Borres, 2004; Fredrickson et al., 2004), sociodemographic dispositions (Prislin, Dyer, Blakely, & Johnson, 1998) and limited understanding of vaccines (Downs, de Bruin, & Fischhoff, 2008).

However this study sought to approach this issue from a different perspective. Rather than focusing on the content of the message, the goal was to focus on one aspect of how the message is presented. The researcher stumbled across a video on YouTube, a popular social media platform, which included a segment of a debate regarding the safety of vaccinations from the popular talk show *Larry King Live* (CNN). This debate pitted Jenny McCarthy, a celebrity whose son was diagnosed with autism, against a panel of doctors. The researcher was dismayed that despite all of her knowledge about healthcare and vaccinations, it appeared that the scientifically unfounded position presented by Jenny McCarthy was winning the debate. Further, it appeared that the talk show host was also being swayed by her presentation, and during the debate he devoted more and more time to this one side of the issue. After showing the video to a group from her fellow healthcare academics, the researcher sought out their opinions from what transpired during the debate. They agreed that Jenny's rendition of her side regarding the safety of vaccines overwhelmingly seemed to depreciate the value of information the qualified panel of doctors presented.

So why and how did one individual, despite an overwhelming mountain of research that indicates there is no causative link between MMR and autism, debate decades of accountable scientific research? This study examined one of many explanations as to why similar media accounts can be persuasive — exemplification theory. In exemplification theory, sources of information are considered to originate from one of two sources – exemplars and base rate

information. Exemplars could be defined as a person or thing that serves as a typical example or excellent model of that thing (Zillmann, 2006). As an example, if a person who is not familiar with ranching or the Wild West of the 1800s was asked to imagine a cowboy, their first reaction might be to think of the actor Clint Eastwood, who starred in over a dozen Westerns. In this example Eastwood serves as the exemplar for a cowboy, or a specific instance of what a cowboy might be. At the opposite end of the spectrum is base rate information, which is considered to be limited to certain general events. Base-rate information is usually presented as numerical representations or quantifiable events, and are often associated with events that people have little direct knowledge of, unless they are an expert in that field.

According to exemplification theory, visual and emotional representations of exemplars, allows individuals to group themselves with people they feel are similar (Zillmann, 2006). If pitted against information that is deemed quantifiable, exemplars can affect the judgment process of an audience by creating an affective and empathetic experience (Aust & Zillmann, 1996; Zillmann, Gibson, Sundar, & Perkins, 1996). If one refers back to the previous example of the Jenny v. Doctors debate, exemplification theory suggests that the emotional connection an audience may make with Jenny could have been the reason her claim outweighed the overwhelming medical evidence presented by the doctors. Medical findings are traditionally presented as base-rate information. It is powerful in that it usually contains numerous studies that have been replicated. However, media portrayals of this information can be easily swayed – as in our example of Jenny. One of the purposes of this study is to examine this phenomena and to examine what the outcome may be if the base-rate information is presented in a similar manner as our typical exemplar. Is this strategy enough to overcome the natural attraction of an exemplar

when knowledge of a topic is low, or does this presentation format negatively affect the positive outcomes of volumes of data?

This study evokes a great sense of gratification in trying to understand how individuals make decisions regarding their child's health. As a mother, I fear any circumstance that may cause pain, trauma or injury to my child. More so as a young mother, I am scared when parents my age do not know where to find accurate and validated information when it comes to the health of our children. This study hopes to identify how we as media researchers can aid the field of public health on how to counter the fast growing population of individuals who are resistant to health information on the basis of how it is presented.

Chapter 2 - Literature Review and Conceptual Framework

Introduction

Vaccination is considered a worldwide success story in the field of public health due to the efficiency and efficacy it has had in saving the lives of 2 to 3 million people per year against life threatening preventable diseases (World Health Organization, 2012). An estimated 2.5 million deaths among children under the age of 5 years are prevented through the use of vaccines every year (World Health Organization, 2012). For every birth cohort vaccinated, 14 million cases of disease are prevented, health care costs are reduced by \$9.9 billion, and \$33.4 billion indirect costs are saved (Healthy people 2020). However, with the significant advancement against the fight to combat infectious diseases, adoption of vaccines has faced some major setbacks in the last decade among a subset of populations in the United States.

A gap in the literature suggests an effective strategy needs to be formulated to communicate to parents effectively on the impact of vaccinations (Downs et al, 2008; Gust et al., 2004), and that this strategy should be targeted towards those who are resistant to this process. The study is structured from a communication perspective and therefore the depth of this project will focus on the content of media messages geared towards vaccination. .

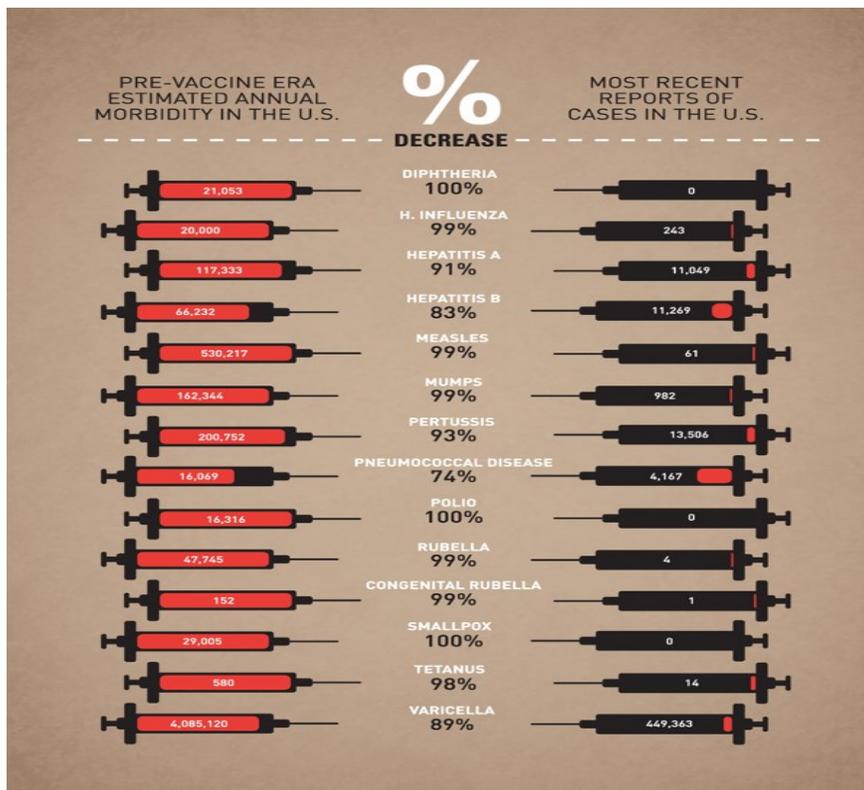
History of Vaccines

In the 18th century, smallpox was a worldwide scourge which resulted in more than 400,000 deaths and other corneal infections (Gordis, 2009). Edward Jenner in 1796 observed that dairy maids developed cowpox and during smallpox outbreaks they were immune to the disease. From this observation, Jenner hypothesized that there was a link between the two outbreaks. To test his hypothesis, Jenner took pus from a cowpox lesion of a milkmaid and inoculated an 8-

year-old boy (Stern & Markel, 2005). As a result the term vaccination was coined which is derived from the Latin word, *vacca*, meaning cow (Gordis, 2009). The discovery of the smallpox vaccine led to a fast and rapid development of the public health field with the invention of other vaccines.

The successful organization and massive investment towards the eradication of smallpox was a major breakthrough in the field of public health. An increase in life expectancy has been attributed to the introduction of new vaccines which have seen many people survive life-threatening childhood diseases (Rappuoli, Mandl, Black, & De Gregorio, 2011). The extent of the morbidity shift both prior and after the scheduling of vaccines is illustrated in Figure 1.1 with data obtained from the Center for Disease Control and Prevention and an infographic created by Leon Farrant (Herper, 2013)

Figure 2.1 Vaccine Infographic



The efficacy of vaccines has seen a remarkable shift in the focus of modern health initiatives from communicable diseases to non-communicable diseases. Gordis (2004) identified the leading cause of death in 1983 was influenza. By 2010, chronic illnesses such as heart disease followed by cancer are the leading cause of deaths in the United States for both young and older populations (Center for Disease Control and Prevention, 2014). This paradigm shift can be mostly attributed to the innovation and evolution of vaccines.

So why have vaccines been a major success in protecting populations from disease? Herd immunity (Fine, 1993) is ‘the protection of populations from various infections brought about by the presence of immune individuals’ (Fine, 1993). This concept traces its inception back to 1840 during the smallpox epidemic when a portion of the population was protected by a sample of smallpox bacteria disturbed to the public by the means of a vaccination. The ability to vaccinate in masses leads to the reduced circulation of infection (Brisson & Edmunds, 2003). Group immunity is based on the resistance to infection among a proportion of individual of members in a group.

The massive introduction of vaccines in the developing world has seen 112 million children vaccinated in more than 183 countries. This overwhelming increase in the availability and distribution of vaccines means that 84% of this children in these countries has been vaccinated (World Health Organization, 2013). Despite this success, the developing world is still hard-hit by the severity of communicable diseases. The World Health Organization (2013) estimates about 1.5 million children did not reach their fifth birthday, and that their deaths resulted from vaccine-preventable diseases. As compared to the Americas where measles and polio have been regarded as diseases of the past, the developing world is still grappling with a huge amount of disease burden with the rates of mortality, morbidity and disability still high in

these countries, particularly in Africa (Boutayeb, 2010). The poor and fragile health systems combined with a struggling economic system in some of these countries have been core factors contributing at least 70% (World Health Organization) to the increasing numbers of deaths among children. The lack of proper sanitation services, poor nutrition values, and lack of access to proper medical care still continue to affect the nearly 3 billion people who live on less than \$2 dollars per day (Anderson & May, 1985).

As of 1985, the United States vaccine schedule aims at preventing seven childhood diseases including: diphtheria, pertussis, tetanus, measles, mumps, rubella and poliomyelitis (Boutayeb, 2010). The Center for Disease Control and Prevention has changed the vaccine schedule between 1983 and 2013. The number of recommended and catch-up vaccines for children has increased overtime from four recommended vaccinations in 1983 to approximately over thirteen vaccinations in 2013. Yet, the new vaccines introduced into this schedule have been a point of controversy among many groups of people who contest that with the invention of numerous vaccines, more disease have developed. This then has given birth to the ‘anti-vaccination’ movement.

The Anti-Vaccine Movement

The History. The anti-vaccine movement has been present since the 1830s when most people in the movement viewed the compulsory laws set by the government as an invasion to their privacy and bodily intrusion (Schuchat, 2011). Public health jurisprudence was set in 1965 in the Supreme Court case *Jacobson v. Massachusetts* (Stern & Markel, 2005). In this case, the plaintiff Reverend Henning Jacobson had gone to court to contest the state of Massachusetts from forcing him to take a vaccine in 1902 when there was an outbreak of smallpox. The Massachusetts Supreme Court ruled against Jacobson as did the United States Supreme Court in

a subsequent appeal. The U.S. Supreme Court upheld that mandatory vaccinations did not violate the individual's rights, and that due process of an individual and their freedom of choice was subordinate to the protection of a community from an epidemic (Colgrove & Bayer, 2005; Padian et al., 2005). The case sets precedence in cases opposing vaccinations and by the end of the 20th century most of the states, including the District of Columbia, required children to be vaccinated for entry into the public school systems. However, nearly every state has provided exemptions to vaccinations, as 48 states allow exemptions based on religion, and 18 states allow exemption based on philosophy (Colgrove & Bayer, 2005; Fredrickson et al., 2004).

The anti-vaccine movement believes that modern medicine has not played any significant role in improvement of life expectancy and survival of disease. Instead they claim that improvements in combating disease over the last two centuries can be attributed to an increase in the standards of sanitary living conditions (Centers for Disease Control and prevention, 2014). Cognitive biases in the processing of incomplete data are cited as an influence in the growth of the anti-vaccine movement (Child Health Safety, 2010). This bias, or shortcut, in cognitive processes often stem from an individual trying to use incomplete data to fit their own theories and expectations.

Skepticism on Safety Of Vaccines

It is critical to identify that no vaccine is 100% effective. This is because the Center for Disease Prevention and Control (CDC) indicates that any vaccine, as with any other medicine, can cause side effects. However, the CDC monitors the adverse effects of vaccines and notes that by-and-large the safety record for vaccinations is impeccable as most children do not experience any problems.

Under immunization of children has been affected by the attitudes and beliefs of vaccine safety in a portion of the population (Gust et al., 2004; Jacobson, Targonski, & Poland, 2007). This process is often attributed to the growth of misinformation found in the mass media (Alfredsson, Svensson, Trollfors, & Borres, 2004). In a study conducted to identify the tone of coverage of the HPV vaccine on YouTube, researchers found that most of the videos were negative in tone and they received more likes and views as compared to those which were positive (Briones, Nan, Madden, & Waks, 2012). The videos evaluated in this study were news content and consumer generated videos. The open dialogue forum created by this social platforms has been found to affect the personal perceptions and opinions on the effectiveness and safety of vaccines. This group of researchers also suggest that the power of YouTube can shift attitudes toward controversial topics in a short duration of time.

However, a different group of researchers found that most parents had confidence in the safety of vaccines, although this confidence was not uniform across all parents (Briones et al., 2012). The study classified parents into four groups: vaccine believer, cautious parents, relaxed parents and unconvinced parents. The researchers found that the parents whom were relaxed, characterized by a less involved parenting style, were more skeptical about vaccines (Keane et al., 2005).

One of the largest factors found to affect the level of skepticism toward vaccine safety is the lack of time spent by doctors or medical professionals regarding the safety of vaccines (Keane et al., 2005). More so, doctors are often seen as lacking proper communication methods to address the concerns of parents. The necessity to identify loopholes in the belief system toward the safety of vaccines is an area that needs grounded scientific research (Alfredsson et al.,

2004). Communication efforts between the media, medical professionals and the public needs to be continuously assessed.

Link between diseases and Vaccine. The skepticism of the safety of vaccines can be associated to the supposed link between vaccines and the development of disease in children. One study chose to focus on the link between the MMR vaccine and the development of autism (Poland & Jacobson, 2001). The MMR vaccine is not the only vaccine to be linked to the development of disease and regression of the immune and neurological system in children. Links have been made between the Dtap (Diphtheria, Tetanus and Pertussis) vaccine and the Sudden Infant Death Syndrome (SIDS) among infants between month and 1 year old (Wakefield, 1999). Another study found no causative link between the uptake of the DTap vaccine and SIDS (Think Twice Global Vaccine Institute, 2010b). The study's findings assert that the DTap vaccine would have no adverse reactions in premature babies whom had chronic diseases and were still in therapy.

In media reports, the Human Papillomavirus Vaccine (HPV) has been erroneously linked to the infertility and possible development of cervical cancer (Faldella, Galletti, Corvaglia, Ancora, & Alessandrini, 2007; Think Twice Global Vaccine Institute, 2010b). The vaccine is recommended for preteen boys and girls at the age of 11 and 12 (CDC, 2014). The vaccine is given in three shots and is said to protect children from developing cervical cancer and vaginal and vulvar cancers in women, as well as penile cancer in males, and genital warts in both sexes (CDC, 2014) One study posits that there is a gap in information regarding whether males, females or both should receive the vaccine (Associated Press, 2013). In 2007, intense lobbying to introduce mandatory vaccination of the HPV vaccine on behalf of vaccine manufacture Merck was faced with immense opposition from concerned parents, consumer advocates and the media

(Giles & Garland, 2006). According to this study, opposition of the HPV vaccine was based on previous encounters with other vaccines.

Recent Outbreaks in the United States. The Center for Disease Control and Prevention indicates that between January 1st and October 31st, 2014, the United States experienced the highest number of measles outbreak since 2000 with a record number of 603 confirmed cases. These outbreaks have been reported in 22 states and the majority of people who contracted measles were unvaccinated. Media reports affirm outbreaks of measles in the last year within specific religious groups, particularly the Amish (Agorastos, Chatzigeorgiou, Brotherton, & Garland, 2009). In September 2014, cases of pertussis were reported in Pottawatomie County, Kansas with reports indicating 172 confirmed cases (Bernstein, 2014; Bush, 2014). In 2010, the CDC affirms 17,325 cases in all 50 states, including the District of Columbia, of which 20 pertussis-related cases resulted in death. Recently, ‘about 20’ instances of possible poliomyelitis, where patients exhibited a polio-like syndrome, were identified in California (Dashe, 2013). However the study did not obtain any official data from the CDC verifying this report.

Developing World and Resistance to Vaccines

The developing world faces numerous challenges in terms of policies, finance, literacy and perhaps most important, environmental factors that expose their population to more diseases compared to the West. Despite facing these numerous challenges, the developing world has also not been left behind in forming opposition to the use of vaccines. Although facing severe economic hardships, and an already “mediocre” level of medical care, these countries have been faced with religious, cultural and literacy barriers that have slowed down the development of public.

Ethiopia, Rwanda and the Democratic Republic of Congo have been found to have the poorest vaccination rates. These statistics are attributed to a variety of rumors that circulate through various media channels (Wilson & Hayes, 2014). In Nigeria, the polio vaccine was faced with resistance from the Muslim community (Parry, 2010). In Kenya, the Catholic church directly impacted a section of the country's faithful by opposing a government-driven tetanus vaccine drive alleging it could be a contraceptive (C. Otieno, 2013).

Why do Some Parents not vaccinate?

As previously stated, a majority of the population vaccinate their children. However, this study chose to focus on one aspect of the sizable number whom chose not to vaccinate their children with some, or all the vaccines. A recent study found that parents rarely refused all vaccines but often resisted just some of the vaccines (Fredrickson et al, 2004). Results from a series of focus groups indicate reasons for resistance ranged from religion, belief of lack of severity of the disease in question, and the parent's cognitive process to the distortion of information from television and the internet. Doctor-patient communication seemed to have been the most important factor identified through these focus groups (Fredrickson et al, 2004). Findings from this study indicate that most of the participants desired a personal relationship with their doctor on a level where the doctor would disclose whether he/she vaccinated his/her own children. Most of the parents believed the word of the physician over information they received from the internet, word of mouth, or other non-medical sources. Similar results have been found in other studies. The ability to create an enabling and open interpersonal communication environment between the doctor and patient has been found to empower parents and reduce their level of skepticism in vaccinating their children (Alfredsson et al., 2004; Davis et al., 2002; J. Otieno, 2014;).

Sociodemographic characteristics, such as ethnicity and education level, influence parents' beliefs and as a result often determine their attitude towards vaccination (Smith, Ellenberg, Bell, & Rubin, 2008). In 1994, the Vaccine for Children implemented a program where low income earners could vaccinate their children for free. In addition to income level, the number of children in the household, and the race of a household affected their beliefs and attitudes towards vaccines (Prislin, Dyer, Blakely, & Johnson, 1998). Other reasons cited for under immunizing their children were potential side effects of the vaccine, the parents stated that the vaccines required too many shots, and many did not believe the disease was serious.

Limited understanding of vaccines, attributed to naivety, eroded information, and lack of knowledge of the procedures involved, was found to be another reason why parents had unfavorable attitudes towards vaccines (Gust et al., 2004). Information on the MMR vaccine from the Center for Disease and Prevention website was found to be poorly structured and most of the parents preferred a doctor, or a health care professional, to explain it to them.

The societal impact on the decision making process is another contributing factor in the reasoning process of those who choose not to vaccinate. The imbalance of information from the society and the media on the benefits versus probability of harm, may be voiced by a minority of the population whom believe to have experienced harm from the vaccine (Downs et al., 2008). Individually, cultural affiliations, combined with the heuristics available when they recall a side effect discovered through various societal platforms, has led parents to lose confidence in the process, which may result in a faulty decision to not vaccinate (Poland & Jacobson, 2001). Some of those who choose to vaccinate their children have been found to do so in order to join a bandwagon effect and not feel as if they have been 'left out.'

The MMR Vaccine and Autism

In February 1998, the famous Wakefield study published by *The Lancet* was one of the most controversial research studies to be ever undertaken. The study linked the measles-mumps and rubella (MMR) vaccine to the development of autism in children (Poland & Jacobson, 2001). Following its publication, national rates of MMR in Britain fell from 92% to 73%, while some portions of the population fell as low as 50% (Wakefield et al., 1998). *The Lancet*, the oldest and most prestigious medical journal, later retracted and discredited the controversial study after significant flaws were identified in the study's methodology and reporting procedures.

Despite tantamount evidence indicating there is no causal link between the onset of autism in children and the MMR vaccine, the public has still remained alarmed about the possible link (Smith et al., 2008). The hysteria has been mostly associated to intensified coverage of the media mostly in the United Kingdom and the United States (Clarke, 2008; Speers & Lewis, 2004).

In the United States, the Wakefield study was found to have significant effects among the medical fraternity and parents as well (Goodyear-Smith et al., 2007; Smith et al., 2008). Medical professionals reportedly became more hesitant to administer the MMR vaccine, and the growth of websites promoting an anti-vaccine attitude increased significantly (Offit & Coffin, 2003).

With the growth of the internet, more and more sites which can be found using search terms such as "anti-vaccination websites" have grown with incredible speed. Websites such as 'Vaclub' (Zimmerman et al., 2005), 'Vactruth' (Vaccination liberation.2014), and 'Think Twice' (Vactruth: Your child, your choice.), are some of the sites labeled as anti-vaccine websites steering masses towards the negative effects of vaccines. These sites use claims from parents which state the MMR vaccine led to regression in child development once the triple shots were administered. These sites do not acknowledge that the Wakefield study has been debunked, but

instead clearly state “Listen to Dr Wakefield and his world class team of medical experts.’ Think Twice has identified 22 studies (Think Twice Global Vaccine Institute, 2010b) which they deem credible and that link the MMR vaccine to autism including the Wakefield study as one of the 22 studies. The robust growth of the media coverage of the controversial link between the MMR vaccine and autism has sparked a sense of distrust in the public pertaining to vaccines (Think Twice Global Vaccine Institute, 2010a). This explains the powerful role the media can play in the persuasion and change in behavioral intention to the public.

Power of the Media

The power of experiences through sound bites and visual imagery should not be underestimated. The media and mainly the use of television has become a symbolic environment that interacts with most of the things we think and do (Parikh, 2008). Media over the years has proven to be reactive and has set agendas in the public and cultivated a global village among different publics. The theory of agenda setting hypothesizes that the media may not be successful most of the time in telling people what to think but it tells people what to think about. One powerful effect of the media has been in politics where political candidates meet voters through the media. The pledges and promises they make in news stories constitute a lot of the information on which the public makes a voting decision (Gerbner, 1998). The media by making some issues more salient than others influence by the standards by which political figures or public office holders are judged (McCombs & Shaw, 1972).

Common perceptions of reality are cultivated by the pattern of television programming which individuals are exposed to over periods of time (Scheufele, 2000). The most studied literature was the extent to which the prevalence of violence of crime in television affects perceptions or real world incidence of crime and victimization (Gerbner, Gross, Morgan, &

Signorielli, 1994). This means that at times the media cultivates unrealistic beliefs about the environment one lives in.

Jenny McCarthy

Jenny McCarthy is a ‘comedian, actress, host, best-selling author and influential activist in the world of healing and preventing autism’ (McCarthy, 2014). Jenny McCarthy, grew up in a catholic home in the suburbs of Chicago, and she first came into the limelight when she became a Playboy model. Jenny gave birth to her son Evan in 2003, and in 2007 Jenny announced that her son was diagnosed with autism after bouts of seizures. In a Twitter post she published on January 4th., 2014, Jenny attempted to debunk rumors that her son did not have autism. She was quoted as stating “Stories circulating online, claiming that I said my son Evan may not have autism after all, are blatantly inaccurate and completely ridiculous. Evan was diagnosed with autism by the Autism Evaluation Clinic at the UCLA Neuropsychiatric Hospital and was confirmed by the State of California (through their Regional Center).....” (McCarthy, 2014).

Across numerous media platforms, Jenny attributed the development of autism to the MMR vaccine that was given to her child. In 2013, Jenny said she cured her son’s autism through developmental and environmental upgrading, and she declared her son was completely cured from autism using non-conventional scientific methods. With her prominent media exposure, Jenny is still viewed as the face of the anti-vaccine movement in the United States.

The current research study was developed after critically analyzing a video on YouTube, a popular social media platform. In this video dated 4/2/2008, Jenny McCarthy took part in an interview/debate on the Larry King Show, which aired on the mainstream media station CNN. The purpose of her appearance was to share her views on the role of vaccines, and tell her personal story of her son Evan, who she claimed developed autism after being administered the

MMR vaccine. Dr Jay Gordon, Associate Professor of Pediatrics at UCLA Medical School, was also a panelist invited to participate and his beliefs were aligned with Jenny's. The opposing side of the debate was composed of a panel of three doctors, Dr Harvey Karp, a fellow from the American Academy of Pediatrics; Dr David T. Tayloe, JR, President-elect, American Academy of Pediatrics, and a third unidentified doctor. These three healthcare professional were invited to present their medical expertise on vaccines.

The caption uploaded under the video was "Aired 4-2-08 Jenny McCarthy debates doctors on vaccines and autism" (Sieczkowski, 2014). After viewing this video with 10 graduate students, the consensus was that Jenny single-handedly beat the panel of three accredited, experienced doctors by a score of 10- nil. So why did Jenny, an individual, challenge and debase decades of accountable scientific research? This research project focused on one possible explanation of this phenomenon – exemplification.

Exemplification Theory

Entrenched in cognitive heuristics, the exemplification theory 'addresses the formation and modification of beliefs about phenomena and issues on the basis of samplings of experienced and directly or indirectly witnessed concrete, unitary occurrences that share focal characteristics.' (Zillmann, 2006) The theory focuses on the effects under which an aggregated exemplar represents a whole phenomenon or issue (Zillmann, 2006). Zillmann (2006) also suggested that the presentation of exemplars in messages allowed individuals to group themselves with others of their kind.

In media, journalists have for years followed the premise that there are two types of information, which influence the audience: the use of base rate information (numerical, and verifiable) and the use of exemplars (specific, easy to remember). Base-rate information refers to

the specific quantification and measured assessment of occurrences or occasions. However a powerful tool, as suggested by recent work, illustrates that one particular tactic that can influence judgment is through accessing judgment-related constructs (Brosius & Bathelt, 1994; Zillmann, 2006;). These judgment related constructs have been defined by Zillmann and Brosius (2000) as exemplars. Exemplars affect the judgment of media consumers due to the arousal of emotion (Busselle & Shrum, 2003a), the attributes of an exemplar such as vividness and realism, ease of recall of an exemplar (Aust & Zillmann, 1996) even in the presence of base-rate information. The ease of retrieving exemplars from memory can be traced to the availability heuristic (Busselle & Shrum, 2003a) The heuristic of the exemplar pops quick into one's mind due to the convenience that individuals tend to rely on highly salient and available information when faced with complex decisions. The ease with which people recall particular exemplars is related to the level of television viewing. Exposure to media increases the accessibility of an individual to an exemplar (Read, 1995; Riddle, 2010; Tversky & Kahneman, 1973). However, despite the exposure to media, the availability of direct experience seems to prime individuals to be more affected by examples due to the activation of recency or exposure to an event.

In the media, when professionals report on negative issues, the usage of a highly emotional victim can evoke greater perception of danger than reports with unemotional or victimless testimonials (Busselle & Shrum, 2003b). Despite inclusion of base rate information, personal experiences of exemplars have been found to erroneously affect the judgment process of media consumers.

Despite the systematic order it carries, base-rate information creates a gap between the journalist and the audience. Often a lack of understanding on the part of the journalist leads to difficulty incorporating base-rate information into the story. Even when the journalist is able to

manage this difficult task, as they are not a medical professional, it is even more difficult for the viewer to absorb (Aust & Zillmann, 1996). One reason base-rate information is difficult to process, and is often ignored, is the simple premise in the mind of the humans that, more is not always superior to less (Daschmann & Brosius, 1999). When only base-rate information is presented, the audience will try to incorporate that information into judgments, but the acceptance of this evaluation is tenuous at best. As is often the case, the moment an exemplar is presented, the judgment based on the base-rate evaluation is altered (Bar-Hillel, 1980).

The effect of popular exemplars has a significant impact on the trustworthiness, and vividness of an expert's account. The speed with which these easy to process exemplars is retrieved from memory tends to signal to the audience that the source and whatever they're saying can be trusted. Further studies on the effects of exemplars in news stories have raised additional concerns. The increased use of exemplars by journalists to illustrate stories may create issues in determining the fairness of exemplified opinions (Bar-Hillel, 1980). The media may be opting for sensationalism over the representativeness of the information to attract an audience. More so, additional research indicates that experts and politicians often live with lower credibility and persuasiveness when the media use emotional exemplars.

The challenge facing most medical professionals, especially in addressing concerns pertaining to the relationship between the MMR vaccine, has been making the story informative, personal, emotional and compelling (Lefevre, De Swert, & Walgrave, 2011). The growth of the anti-vaccine movement is cited as being organized and passionate. The presentation of mothers and children on popular media platforms such as the Oprah Winfrey Show and Larry King Live have been used to make emotional appeals (Offit & Coffin, 2003) which are hard to forget. On the opposite side of the spectrum, doctors and scientific experts who try to counter arguments

with accurate evidence fail to persuade the audience due to the lack of emotional appeal (Parikh, 2008). By relating oneself to an exemplar, a person's assessment about health risks and protective behaviors can be changed (Parikh, 2008).

The extent to which one relates to an exemplar is also defined by other factors. Situational factors such as issue involvement are can influence how people think and explain how they understand message arguments. More so, cognitive measures such as the need for cognition (NFC) are factors that influence the processing of messages by individuals. The need for cognition is the extent to which an individual is able to enjoy in engaging in forceful cognitive activity (Cacioppo, Petty & Kao, 1984). Individuals who have a high need for cognition are more likely to scrutinize messages and make judgements after engaging in effortful cognitive activity. In addition, high need for cognition individuals recall more arguments from both the strong and weak side of the message (Cacioppo, Petty, Morris, 1983). High NFC individuals are influenced by a message as a result of thinking about advantages of issue-relevant arguments whereas low NFC individual's attitudes are likely to change as a result of simple cues in the persuasion context (Petty et al, 1992). In essence, for low NFC individuals, form can trump content.

Source credibility theories suggest that the more credible a source is, the more likely the information will be recalled by the audience and hence will be more persuasive (Yu, Ahern, Connolly-Ahern, & Shen, 2010; Zillmann, 2006). Expertise and trustworthiness are often the main attributes that researchers use to define credibility. One might assume that exemplars should be seen as less credible because they may not be an expert on the topic, and their passionate testimonials come from the heart rather than logic. However, the perceived similarity of the exemplar to the audience member counters the level of expertise and thus enhances

credibility of the messenger and their message (Hovland & Weiss, 1951). However, other studies indicate the relationship between the effects of exemplification and credibility are yet to be determined (Whitehead Jr, 1968; Wiener & Mowen, 1986).

The Health Belief Model and the Information Processing Theory

Mass media channels have not been reliable sources to effectively change behavior related to health practices (Cassell et al, 1998). Media has been mostly credited for creating awareness rather than prompting individuals to adopt and implement better health behavior (Cassell, 1998). Depending on the media platforms individuals engage in, people who refuse to vaccinate believe that the diseases associated with anti-vaccination cannot affect them. This construct can be explained through behavioral intention of the health belief model. Developed in the 1950s, the Health Belief Model was built on the premise that an individual's belief on susceptibility and severity of a health problem will predict the level of preventative action one takes (Strecher & Rosenstock, 1997). Perceived benefits and barriers are believed to be the most effective variables in predicting behavior when prevention of a negative health outcome is the goal (M, 2010). The health belief model assumes that the belief one has will affect their expectation on disease outcomes and this expectation in turn affects their motivation to react. The communication approach used by the medical practitioners may influence the cognitive processes and behavior a vaccine-resistant parent may take (Fredrickson et al., 2004). Combined with additional theories regarding health behavior, the health belief model provides a theoretical framework for measuring probability that an individual will make use of services from health professionals. According to the model one takes action to avoid disease if they believe 1) they are personally susceptible, 2) the disease will have a severe effect on a component of their life , 3) taking a particular action will be beneficial by reducing their susceptibility to a condition , 4)

the action doesn't include any barriers such as cost, inconvenience, or pain, and 5) a cue to action must be present for them to act (Nexøe, Kragstrup, & Søgaaard, 1999)

The persuasive effect to deliver an influential message is dependent on a number of input factors: the choice and credibility of the source, the type of message appeal, context of the channel, the characteristics of the audience and destination of the message (Arpan, 2009). The McGuire (1989) interdependence model predicts that the media influence varies according to the way each person processes messages in the news. The interaction between the message and the audience shapes the impact of the news. Message variables that increase persuasive input depend on the structure of the argument, the type of argument, and the type of appeal (Chaiken & Eagly, 1989).

For an individual to be persuaded by a message, they follow a communication process as explained by McGuire (1989) in the following order: one has to be exposed to a message, they have to attend to the message, they will like it or rather maintain interest in it; they understand the contents of the message; they are acquiring relevant skills on how to implement the new behavior; they are willing to change their attitude by agreeing with the communicator; they store or memorize the message content; they can easily retrieve the information from memory; their decision to act is based on the retrieved information; they are actually behaving in accord with their decision and they are receiving some positive reinforcement on how to maintain their behavior (McGuire, Rice, & Atkin, 2001) , .

Messages are designed to prime individuals to think about their behavior and despite the intent to persuade on the part of the communicator, they may fail to persuade the receiver even when the intention is present (Cassell et al, 1998). Individuals whom have attitudes consistent

with the persuasive message are more likely to be involved by the persuasion process (O'keefe, 2003)

Research questions

This study utilized an experimental design featuring four manipulated conditions. The primary focus was to create four combinations of an exemplar and a base-rate presenter in a video message in which the passionate portrayal was manipulated.

H1: Individuals who viewed the passionate exemplar and the dispassionate doctor (condition 1) will (a) have higher negative perception of the side effects of vaccines (b) higher perception of the scariness of the message and (c) lower perceptions on the effectiveness of vaccines than all other groups.

The first hypothesis should be supported, based on previous research in the area of exemplars, particularly in instances where participants have low subject familiarity.

RQ1: What will the impact be on an audience when the base-rate exemplar delivers their information with more passion? And what will be the outcome if the exemplar does not use a passionate delivery?

H2: Individuals with a high NFC will not be as highly influenced by the passionate exemplar as compared to those with a low NFC.

H3: Individuals who have a low NFC will perceive the passionate exemplar to be more trustworthy than the dispassionate exemplar.

H4: Individuals who watch more television will be more likely to perceive the message of the passionate exemplar as more credible than those who watch less television.

Chapter 3 - Methodology

This study employed a 2 (source: exemplar vs. base rate) x 2 (emotion: high: engaged and passionate vs. low: unengaged and unpassionate) between-subjects factorial design. This design allowed the researcher to contrast four scenarios related to the original source of inspiration for the study — the Jenny v. Doctors debate. As previously mentioned, this video was actually quite typical of many news talk formats regarding healthcare in which an educated, but non-communications savvy panel of experts is usually pitted against an exemplar of an individual who passionately pleads a simple case for one “exception” to volumes of research data. For the purpose of clarification we referred to the participants in the stimulus as Jenny, Doctor and Larry King. This study recreated four reproductions of this news segment where the emotional nature of both sides of the debate were manipulated.

Hence, the four conditions resembled:

- 1) Disengaged and unpassionate base rate (doctor) vs. engaged and passionate exemplar (Jenny).
- 2) Engaged and passionate base rate (doctor) vs. engaged and passionate exemplar (Jenny).
- 3) Disengaged and unpassionate base rate (doctor) vs. disengaged and dispassionate exemplar (Jenny).
- 4) Engaged and passionate base rate (doctor) vs. disengaged and dispassionate exemplar (Jenny).

A control group was also used as a pseudo fifth condition. These participants were still asked the same questions as to the effectiveness of vaccines, the perception of their side effects and how they view their current relationship with their doctor. However, they did not view the video, and therefore were not exposed to questions about the credibility of the message or the source. This fifth condition served the purpose of being able to compare general feelings about vaccinations to those that viewed any of the four message conditions. The inclusion of this fifth group is noted in the results section when they are utilized.

The first condition replicated the YouTube video of Jenny v. Doctors, while the fourth condition served as its bipolar opposite. The remaining two conditions served to further tease out how differences in emotional and vivid portrayals, or their lack of, would impact the processing of healthcare messages. The study design also allowed the examination of how these alterations to processing can lead to differences in judgments on the topic, message, source credibility and memory, and if these differences were also mediated by individual differences such as age, gender, amount of television and genre that are preferred.

Participants

The survey instrument was distributed to a random group of undergraduate students at a large Mid-Western university and to an “open option” course consisting of a diverse group of majors from the College of Arts & Sciences. The data obtained from the two samples was each exported to an excel file and the file was cleaned to erase any participants who did not fully complete the questionnaire. No significant differences existed between the two samples, therefore the files were merged into one data set with a total of 254 participants, including the control group.

The survey was distributed via Qualtrics and each respondent has received an email invitation to complete the questionnaire. A number of students failed to complete the full instrument and as a result were exempted from the analysis. Valid responses as coded totaled to 254 participants with each participant being assigned to one of the 5 conditions. Frequencies indicate that the distribution of participants in each of the 5 groups was random as Condition 1 ($n = 52$); Condition 2 ($n = 50$); Condition 3 ($n = 51$); Condition 4 ($n = 51$), and Condition 5 ($n = 50$).

Most of the respondents were female ($n = 150$; 59.1%) whereas males totaled to ($n = 104$; 40.9%). Representative of the Riley County statistics most of the respondents identified as White ($n = 153$; 60.2%), whereas the rest of the ethnic groups identified as follows: Hispanic ($n = 36$; 14.2%); Black ($n = 28$; 11%); Asian ($n = 12$; 4.7%); Native American ($n = 9$; 3.5%) and those who identified as other totaled to ($n = 16$; 6.3%) The respondents as chosen to represent a college sample ranged in age from 18 years to 15 years with a mean age of 20.27 years ($SD = 1.41$). . The majority of the respondents were single ($n = 232$; 91.3%) whereas those who were married totaled 22 (8.7%). Most of the undergraduates were domestic students ($n = 243$) representing 95.7%, while only 4.3% were international students ($n = 11$).

Stimulus

Four videos with running lengths of approximately five minutes were created for this study.. In order to simplify the creation of the videos, three actors were used in the study: a doctor, a moderator, and our exemplar. The same set of actors were used for all four videos to eliminate any potential differences.

The study recruited three graduate students from the communications department to re-enact the videos. One script (see Appendix A) was recreated using a cut out conversation from the debate aired on the Larry King Show and it was to be read for all the four conditions.

However the actors were prompted to raise their tone and dress according to the condition they were assigned at the time. The three actors role played all the four conditions with re-runs in between to be able to maximize their acting potential since they are not trained professional actors. The videos were created through making audio files and the study thereafter took pictures and laid them over the audio using final cut pro.

In Conditions one and three, the disengaged doctor wore a white lab coat and he hid behind a pile of research reports in folders on a desk. He was identified with a professional title as Dr. Boone (MD). In conditions two and four, the engaged and passionate doctor was dressed without a necktie and he had a white lab coat and will be referred to as Dr. Nathaniel Boone. He was manipulated to be relaxed, funny, enthusiastic and far more aggressive in relating his side of the debate.

The Jenny character in conditions one and three was dressed as if the show had been professionally prepared hair and makeup In conditions two and four, the Jenny character was dressed less provocatively and appeared calm, soft-spoken and down to earth. She still relayed the story of her son, but she did so with as little emotion and flamboyancy as possible. The narrator whom was identified as Larry remained neutral in all the four conditions.

Procedure

Two groups of samples were utilized for this study. A class took the survey for extra credit while a random sample of undergraduate students was obtained and an incentive of \$10 gift cards from target were offered to 5 random participants from those who completed the study and opted to be considered for the raffle. An email invitation was sent to the two sets of groups and they were then prompted to review the terms of participating in the study and after accepting to participate in the study read through the IRB documentation. They were then presented with a

series of instructions to follow however the intent of the study was not revealed. Participants were then shown one of the four videos via a randomized process within Qualtrics.

The video was timed to ensure the participants viewed the whole video and upon finishing the video the 'next' button appeared for them to continue with the questionnaire. The questionnaire contained five blocks of questions: perceptions of the issue, perceptions of the message, perceptions of the source, and an extended set of demographic measures. The order of the question blocks was determined to be critical to eliminate any priming effects. Questions within each block were randomized to prevent any primacy or recency effects.

Following the completion of all five blocks of questions, participants were thanked for their participation and advised that an email containing the purpose of the study (debriefing) would be anonymously sent once the study is to complete. The researcher believed this debriefing procedure would be important as participants would have respond to the questionnaire over a longer timespan than is generally administered in on-campus studies, and the very nature of the highly charged videos would have lead to sharing of views while the study was still being run.

Dependent Variables of Interest

A few scales on the questionnaire (see Appendix B), eg the Need for Cognition were reverse scored, which follows standard procedure. The reverse scores were recoded to ensure that a higher score was denoted with a higher value for ease of explanation. The following procedures were conducted before further analysis.

Scale items were combined to be able to measure their reliability using a Cronbach's alpha. Following procedures of previous studies, it was determined that any item with an alpha

of more than 70% would constitute a reliable scale. Cronbach's alpha for each of the scales used in this study are indicated in the following sections.

Perception of the Issue: the first block of questions assessed the individual's attitudes and intention to vaccinate a child. Questions included, 'How serious is the issue of vaccinations?' 'How likely is the possibility that anti-vaccinations will become an issue where you live?' Ratings were made on a 7-point Likert scale and are modified versions of questions used in previous studies (Entman, 1989). Participant responses to the individual scale items borrowed from previous studies was found to be consistent with all of the scale items for the effectiveness of vaccines and their side effects ($\alpha = .910$).

Perception of the Message: The second block of questions were structured to evaluate the individual's judgment on informative message contained in the mock program. Questions included, 'How important is the issue addressed in this news show?' 'In your judgment how informative was this show?' This variable measured affective appeals contained within the message. These measures were adopted from a prior study (Dinh et al., 2007). Respondents were asked to rate their feelings based on 9 statements using a 7-point Likert scale: It made me nervous; It made me sad; It scared me; I found it depressing; I found it entertaining; It worried me; It disturbed me; I found it upsetting; I found it interesting. Participants were administered the abbreviated 9-item Need for Cognition scale (Aust & Zillmann, 1996) Recent work in the area of individual differences in people who favor or disfavor using base-rate information identified that a person's Need for Cognition (NFC) can be a factor that predicts judgments (Cacioppo & Petty, 1982). Scale item responses for the participants was consistent for message distress ($\alpha = .919$).

Perception of Source: The items used to measure source credibility focused on the two primary dimensions of credibility used in numerous previous studies, including the level of

expertise, and the level of trustworthiness of the source. Participants rated the source on five 7-point Likert-type scales to measure trustworthiness, expertise, honesty and attractiveness. These scales have been combined from previous studies by (Eisend, 2010; Callison, Gibson, & Zillmann, 2012) and Hastak and Park (1990). Three additional 7-point Likert-type scales will be administered to tap into the source credibility dimension of expertise. These scales, were borrowed from previous work by Hunt and Smith (1987), contain ratings of: expert/not an expert, knowledgeable/not knowledgeable, sincere/not sincere.

The primary items use in our source credibility scales for Jenny ($\alpha = .816$), and for Dr. Boone ($\alpha = .795$) were consistent and none of the traditional scale items needed to be deleted. McCroskey (1996) evaluated source credibility to be a multi-dimensional concept which includes trust, expertise, honesty, knowledge, attractiveness, intelligence, honor, morality, competence and other factors. However due to the complexity of the measure, studies have broken down the composite measure to primarily focus on the dimensions of expertise and trust. This study in the questionnaire asked participants to evaluate the expertise, trust, honesty and attractiveness of the sources. An initial Cronbach's alpha achieved a moderately acceptable score ($\alpha = .697$), but by eliminating "attractiveness," the subsequent reliability measure generated a higher score ($\alpha = .812$), which was ultimately used for analysis.

Media Usability: Questions such as number of television hours watched in a day were asked. Participants were also be asked to rate the genre of television programming they prefer using the categories of game shows, reality television, soap operas, news shows, sports shows, and late night comedy shows (Hastak & Park, 1990). Media consumption was measured through a series of questions asking individuals how much television they watched in 10 different genres per week (Busselle & Shrum, 2003a). The median television consumption reported by our

participants was 12 hours, which was used as the cutoff to determine high versus low media usage.

Demographics: Since this study sought to identify and target the perceptions and judgments of a specific target audience, an extended set of demographic questions were asked. These questions tapped on their age, ethnicity, marital status, gender and domesticity. The Need for Cognition scale was also included in the demographics section. After select items were reverse scored, the NFC scale was found to be consistent ($\alpha = .872$) and no individual items needed to be deleted. A median split was run to identify the high and low scores for all the scales that were combined as a composite measure. Responses to the NFC scale had a median of 4.833. Therefore individuals who scored greater than 4.833 were coded as high NFC individuals, while those who scored less than or equal to 4.833 were coded as low NFC individuals.

Chapter 4 - Results

A one way sample t-test was then conducted to tease out any significant differences of age, domesticity, ethnicity, marital status and gender and had any potential influence on the message, vaccine effectiveness and vaccine severity. There was no statistical significance between the independent samples t-test run for the following: vaccine effectiveness and gender ($t = 1.323, p > .05$); vaccine effectiveness and marital status ($t = .601, p > .05$); vaccine effectiveness and domesticity ($t = .354, p > .05$); vaccine severity and gender ($t = 1.229, p > .05$) and message distress and gender ($t = 1.186, p > .05$). A one way ANOVA was conducted to test vaccine effectiveness and ethnicity ($F = .651, p > .05$). Thus, individual differences in the sample conditions was determined to not play a major role in the study. Instead, we propose that the primary driving force behind responses can be attributed to the differences in the stimulus themselves, or by factors outside the control of the study.

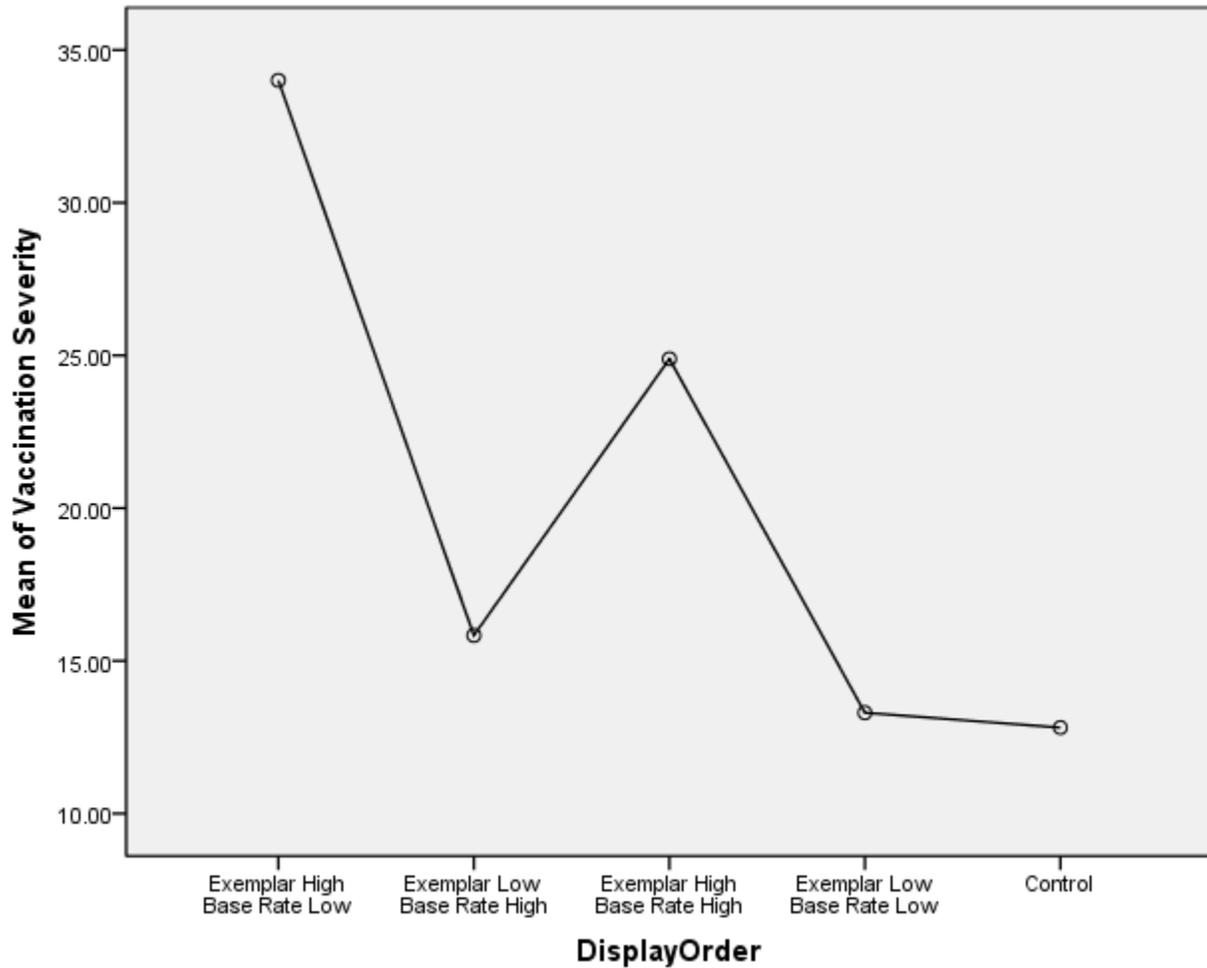
In all subsequent analysis, the equality of the dependent variable for two or more groups was assessed using Levene's Test of Equality of Variances. If the assumptions of normality were not violated in an ANOVA, Tukey HSD post hoc analysis was used. If the assumption was violated, post hoc analysis was used with the Games-Howell test.

For Hypothesis 1 (a), it was proposed that participants from Condition 1 (passionate exemplar and the dispassionate base rate presenter) would have higher perceptions of the negative aspects of vaccines and their side effects, and lower perceptions of their overall effectiveness than all other conditions. A one-way between subjects ANOVA analysis was conducted comparing the effects of the passionate exemplar. There was a significant effect of the passionate exemplar on the severity of side effects [$F(4, 249) = 22.80, p < .05$]. Post hoc comparisons using the Games-Howell test found participants who viewed the passionate

exemplar and non-passionate base rate presenter (Condition 1) viewed the side effects of vaccines as more “scary” than those from the other conditions. Despite the fact that the mean from Condition 3 where both presenters were passionate is higher than Condition 2, 4 or the Control, no significant differences between the remaining experimental conditions was found. Taken together, these results suggest that a passionate exemplar is key to increasing perceptions of the severity of the side effects of vaccines when compared with other presentations (See Figure 4.1).

If the base-rate presenter was passionate, it did little to increase the negative perceptions of the severity of vaccinations. Similarly, if both presenters were passionate there was no increased perception. Therefore, a figure such as a Dr. Oz type personality can lessen the effects of a passionate exemplar, such as our original example with Jenny. On his own (Condition 2), Dr. Oz does not increase the negative perception of the side effects of vaccines.

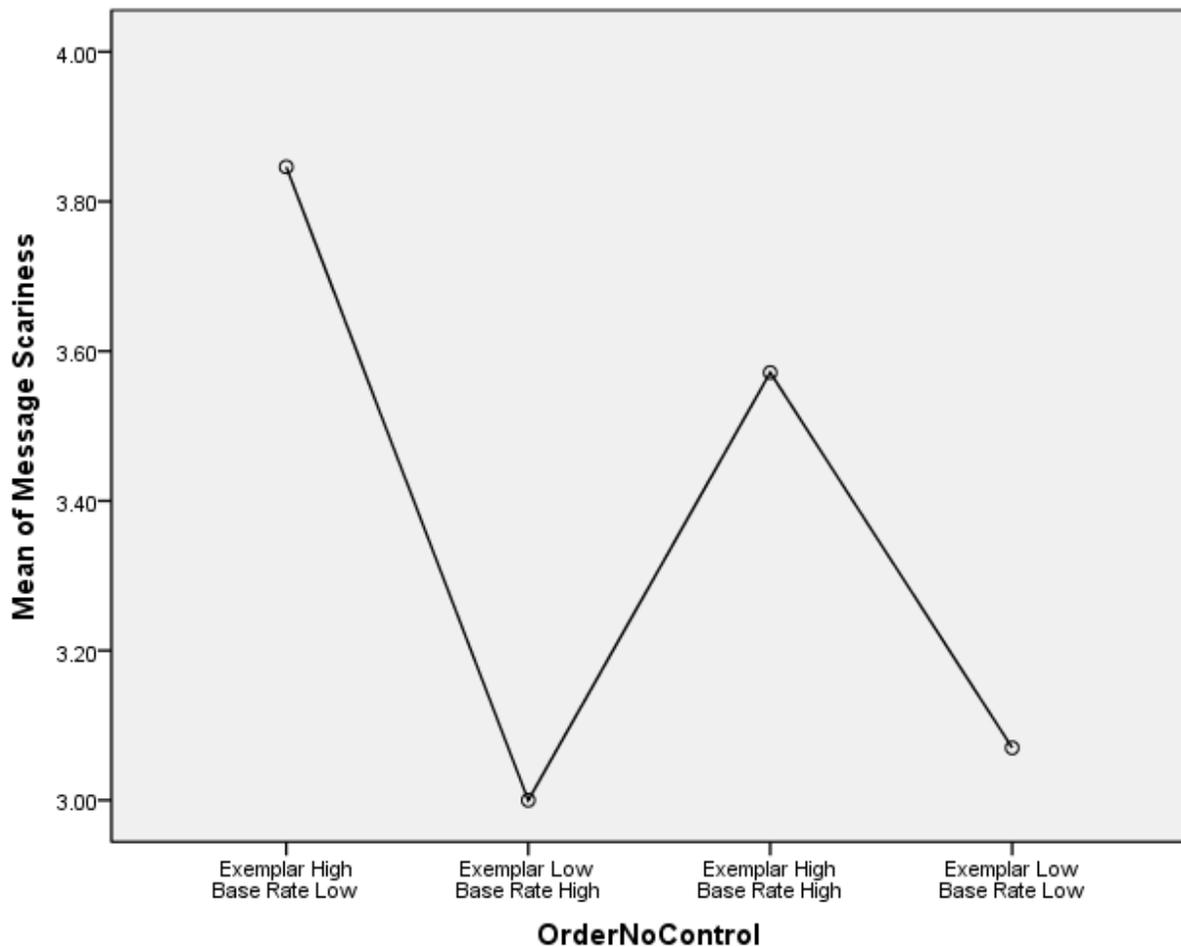
Figure 4.1 Message Presentation Effect on Severity of Vaccines



Hypothesis 1 (b) stated a passionate exemplar would have a similar effect on the perception of the scariness of a message. A one-way ANOVA between subjects analysis was conducted comparing perceptions of the scariness of a message between the four experimental conditions – the control group was not included for analysis as these participants did not view the actual message. There was a significant effect of the passionate exemplar on the perception of message scariness [$F(3,200) = 6.28, p < .05$]. Post hoc comparison using the Tukey HSD test show a significant difference between Condition 1 (passionate exemplar, non-passionate base rate presenter) and the remaining conditions ($p < .05$).

There was no significant difference between the remaining conditions, despite a higher mean from Condition 3. This appears to indicate that the inclusion of a passionate exemplar significantly increases the perception of how scary a message is. Once again, when the base-rate presenter exhibits passion, they are able to lessen the impact of the passionate exemplar (See Figure 4.2).

Figure 4.2 Effect of the Exemplar on the Scariness of the Message

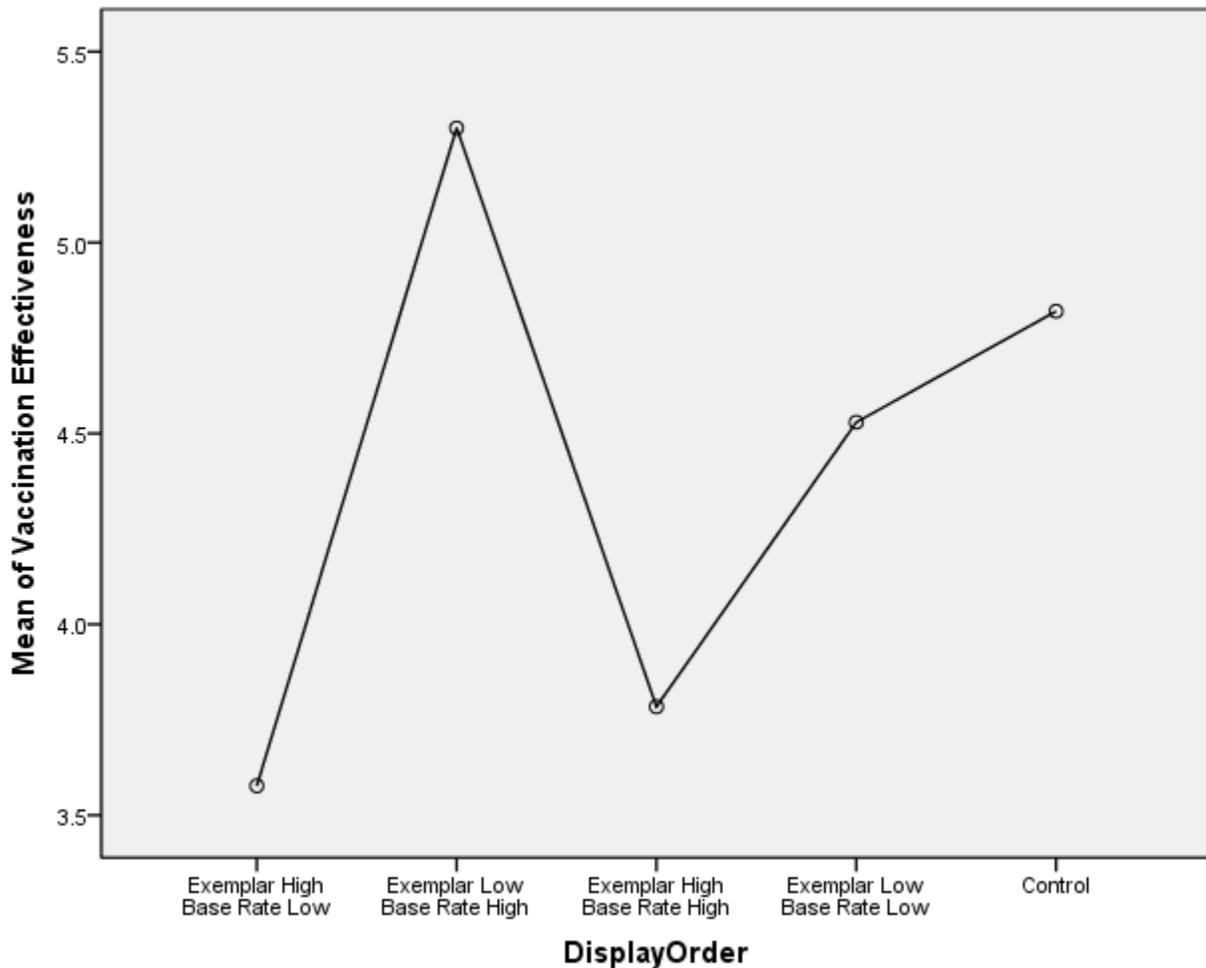


Hypothesis 1 (c) stated that a passionate exemplar would decrease the perception of the effectiveness of vaccines compares to messages containing a non-passionate exemplar. A one-way ANOVA between subjects analysis was conducted and a significant effect of the passionate exemplar was found on the effectiveness of vaccines [$F(4, 249) = 18.01, p < .05$]. Post hoc

comparisons using the Games-Howell test indicate that Conditions 1 and 3 did not differ significantly ($p < .05$), whereas these two conditions differed significantly ($p < .05$) from the remaining conditions. This strongly indicates that the inclusion of a passionate exemplar plays a large role in reducing the perception of the effectiveness of vaccinations.

However, in this case the passionate portrayal of base-rate information from someone such as a Dr. Oz figure was not able to overcome the power of a passionate exemplar. In Conditions 1 and 3, where the exemplar was passionate, participant's perceptions of the effectiveness of vaccines was compromised (See Figure 4.3).

Figure 4.3 Message Presentation Effect on Effectiveness of Vaccines



Taken together, the findings support all three portions of Hypothesis 1 and seem to indicate that the individual most responsible for changing perceptions about the effectiveness of vaccinations and the potential side effects lies with a passionate exemplar.

Details of the overarching answer to Research Question 1 are contained within the more detailed results of Hypothesis 1. A dispassionate exemplar does not alter the perceptions regarding vaccines, as responses did not differ significantly from the control group. A passionate base-rate presenter also does not increase perceptions of the negative side effects of vaccines, nor do they appear to diminish the perception of the effectiveness of vaccines. In the case of our first two factors, if a base-rate presenter exhibits some of the qualities typically found with a passionate exemplar, they can overcome diminished perceptions brought about by the passionate exemplar. To put it simply, a Dr. Oz figure when pitted against passionate Jenny decreases perceptions of the severity of any potential side effects from vaccines and helps to make the message less scary. However, the power of Dr. Oz is not able to over Jenny's ability to make an audience feel less confident that vaccines are effective.

Hypothesis 2 stated participants who have a high NFC would not be as highly influenced by the passionate exemplar compared to those who have a low NFC. An independent samples t-test was conducted to compare the effect of individuals who have a high NFC on their perception of the vaccine effectiveness, vaccine severity and message scariness. There was a significant difference on vaccine effectiveness among individuals who had a high NFC ($M = 4.63$, $SD = 1.42$) as compared to low NFC individuals ($M = 4.16$, $SD = 1.26$); $t = -2.81(252)$; $p < .05$. The higher mean average indicates individuals with a high NFC were more positive in their perceptions that vaccines are effective.

There was also a significant difference on the potential negative aspects of not being vaccinated among individuals who have a high NFC ($M = 22.78$, $SD = 14.41$) compared to low NFC individuals [$M = 17.76$, $SD = 16.94$]; $t = 2.55(252)$; $p < .05$]. In this case, the higher mean indicates that individuals with a high NFC perceived that the consequences of not being vaccinated are more harmful than those with a low NFC. However, there was no statistical significance on how scary the message was among high NFC individuals ($M = 3.53$, $SD = 1.28$) as compared to low NFC individuals [$M = 3.23$, $SD = 1.10$] $t = -1.84(202)$; $p > .05$].

Taken together, the results indicate partial support for Hypothesis 2. Participants with a high NFC were not as susceptible to the message presentation of the emotional exemplar in terms of the potential harmful effects of vaccinations, and they perceive vaccinations to be more effective. These results can be interpreted that individuals with a high NFC were less persuaded by the structure of the message and relied more heavily on the base-rate information, or quantifiable findings.

Hypothesis 3 stated that people who have a low NFC will perceive the passionate exemplar to be more trustworthy and have higher levels of expertise as compared to the dispassionate exemplar. A composite measure of Conditions 1 and 3 containing the passionate exemplars was combined to create a new variable, while condition 2 and 4 were grouped to create a dispassionate exemplar. An independent samples t-test was conducted to compare the effect of low NFC individuals on the level of trustworthiness and expertise of the passionate exemplar. There was a significantly higher perception [$t = 2.413(101)$; $p < .05$] of the passionate exemplar's trustworthiness among low NFC individuals ($M = 4.36$, $SD = 0.79$) compared to high NFC participants ($M = 3.89$, $SD = 1.20$). There was also a significantly higher perception of the passionate exemplar's expertise [$t = 4.644(101)$; $p < .05$] among low NFC

individuals ($M = 4.17$, $SD = 0.785$) compared to those with a high NFC ($M = 3.35$, $SD = .99$). This indicates that the lower the need for cognition, the more likely an individual would be persuaded by the passionate exemplar's claims and would view that they were more of an expert and more trustworthy. Consequently, low NFC individuals viewed the dispassionate exemplar as less honest and as less of an expert. Hypothesis 3 was supported.

Hypothesis 4 stated that individuals who watched more television would be more likely to perceive the exemplar to be more credible than those who watch less television. An independent samples t-test was conducted to measure the effect of television watching on the credibility level of the exemplar. There was no overall main effect [$t = -1.446$ (202); $p > .05$] of the level of the exemplar's honesty between those who watched more television ($M = 4.02$, $SD = 1.22$) and those who watch less television ($M = 3.78$, $SD = 1.19$). There was also no significant overall main effect [$t = .761$ (202), $p > .05$] on the exemplar's expertise between those who watched more television ($M = 3.62$, $SD = 1.07$) and those who watched less television ($M = 3.50$, $SD = 1.16$).

A further analysis was conducted to evaluate the effect of amount of television watched within the four conditions. In Condition 1 (containing a passionate exemplar), there was a significant difference [$t = 2.296$ (50); $p < .05$] of the exemplar's honesty between those who watched more television ($M = 4.54$, $SD = 0.85$) and those who watched less television ($M = 4.02$, $SD = 0.80$). There was also a significant difference in Condition 3 [$t = 2.33$ (49); $p < .05$] where the exemplar's honesty differed between those who watched more television ($M = 3.96$, $SD = 1.58$) and those who watched less television ($M = 3.04$, $SD = 1.25$). No significant differences existed in Conditions 2 and 4 where the exemplar was not passionate.

Therefore, in messages where the exemplar was emotional, the amount of television watched seemed to have a significant impact on the credibility of the exemplar. Those who watch more television perceived the passionate exemplar to be more credible than a less passionate exemplar. Hypothesis 4 was supported.

Chapter 5 - Discussion

Health communication messages have proven to be effective when administered correctly (Snyder, 2007). However, with the advent of the internet, the health communication profession cannot always guarantee that people see messages from a qualified source. When left to their own devices, people rely on search engine responses from providers such as Google, Bing, and YouTube. Search results are not qualified by expertise and credibility. Instead they are derived from complicated algorithms that give more credence to popularity than other factors. This leads to a large number of unqualified sources dominating the top pages of a search request, particularly when we consider that hits on the second page of Google results deliver less than 2% of all clicks (Goodwin, 2011).

This study aimed at evaluating the impact of emotion on the perception of vaccine messages and the source presenting the message. More so, this exploratory study used the exemplification theory tried to explain the controversial link between the MMR-vaccine and the development of autism in children. The emotional appeal of the exemplars according to the theory, has been the overriding factor in affecting the judgement process of individuals whom are presented with information containing exemplars. This study manipulated emotional appeal to identify the effects it had on the participants' perceptions on vaccines. Previous studies have emphasized on the need to identify the emotional connection presenters use to reach to the audience. Health information has been viewed from only one perspective in terms of only the gain and loss frame. However, other variables influence the receipt and retention of health information. Emotional appeals are variables that are commonly overlooked in health communication and this study creates a need to investigate more variables by stakeholders and researchers in the field of health communication.

The current study shows that the emotional exemplar exerted the greatest effects in relation to the scariness of the message, severity of side effects of vaccines and the least on the effectiveness of vaccines. Among all the four conditions, the exemplar had the most influences on the participants, which illustrates the powerful nature of the exemplar when it comes to presenting health information. The emotional exemplar because of her empathetic and visual appeal made it easier for the audience to relate to her. This is a result of the numerous amounts of exemplars whom appear on the mainstream media to present their stories. In this study, Jenny, the exemplar, had a passionate appeal to the audience because of the choice of show used in this study and more so because it is a platform used to sensitize and create sensational stories for the media.

The findings mentioned above were expected and indicate the power of an emotional exemplar. However, what may be even more interesting are the findings from Research Question 1. These findings indicate that the passionate base-rate doctor, when pitted against the passionate exemplar in Condition 3, appears to have negated much of the effects of the passionate exemplar, with few side effects. No significant decreased perceptions were observed regarding the participants' views of the doctor's credibility or level of expertise. In essence, Dr. Oz can negate the media portrayal of an exemplar such as Jenny. Perhaps this further illustrates that a less passionate base rate presenter – the norm – is less likely to appeal to an audience.

The effects of a passionate presentation were further magnified for those with a low NFC and in those who watch more hours of television per week.

Medical information is typically presented in the mainstream media as unemotional, systematic, and apathetic. Most medical professionals seek to give out medical information in

technical terms since they are more precise and more often tend not to have equivalent non-technical words available to communicate with.

This is a distinction between a passionate example of one compared to “hiding behind” mounds of data and research. On the other hand, what is the medical profession to do as they can not really take the role of an exemplar by pointing out one success story? They are somewhat bound to the rules of research in that their findings have power with hundreds, if not thousands, or even millions of successful cases wrapped up in a statistical number.

However, this study shows that a providing an emotional appeal from the doctor can change the perception of some of the individuals whom are less likely to trust medical information. Of course, an equilibrium measure needs to be determined to ensure that the doctor does not hurt his credibility as he tries to be more persuasive. Even though this study did not find a diminished credibility perception of the passionate base-rate doctor, this study did use just one message exposure to an audience that was not overly familiar with the topic consequences of determining whether or not to vaccinate children.

According to the McGuire theory, communication is a transactional process where both the receiver and presenter of the message are actively engaged. For an individual to be persuaded, they must be able to tune in to the message, attend to it, understand the content of the argument, agree with the argument and retrieve adopted attitudes that shaped their attitudes and decisions. A presenter can send persuasive message without the sole intention of persuading the audience and on the other hand the audience can choose to participate or not participate in the process of persuasion. Therefore, a logical conclusion would state that most health communication messages only provide a stimuli for participants to persuade themselves (Casell et al, 1998).

Public health practitioners need effective communication tools to persuade the public on better health practices. The current study suggests that the use of entertainment education can be utilized as a powerful strategy to expose audiences to health information and provoke behavior change. Entertainment-education has been shown to create positive attitude change toward health behavior practices (Brown et al., 2004), and the amount of television consumed can impact the relatability to health information. In an environment that is saturated with entertainment media, health practitioners can use these avenues to reach a larger audience, particular people who do not believe that a specific health behavior may be salient to them. This would allow practitioners to impact people with low or no knowledge on a topic and disrupt the pattern of negative bias in subsequent learning that the anti-vaccine movements are likely to reach. This would also allow practitioners the opportunity to keep the overall content of the message similar to their current goals, but instead focus on the mode or format of their campaign. Audiences who consistently tune in to a program can give credible health practitioners a means to communicate to the public and to provoke behavior change as well. However, it would be interesting to further see whether the audience could have some type of emotional connection to the passionate doctor as presented in entertainment programs overtime. In the current study, the passionate doctor did not suffer from a lack of credibility. It will be interesting to see if this effect would carry over to multiple exposures or stand up to the rigors of a long-term health campaign.

The impact of one exposure to a message in this study did yield some startling and significant results. Even though health communication messages are tailored to appeal to a certain demographic, with the growth of the internet, a secondary audience that is not necessarily being targeted is often exposed to messages similar to those used in this study. Secondary audiences whom have no prior opinions about such health messages are more likely to be easily

persuaded and form opinions, which may not necessarily motivate them to change their behavior. And at the very least, an incidental exposure to a message such as the one that inspired this study, have been repeatedly shown to bias subsequent exposure and motivation to future messages.

The need for cognition of the participants played a large role in this experiment. The emotional exemplar seemed to evoke the greatest appeal among individuals who had a low NFC. This can be interpreted to mean that the more health information is disseminated, the more the need to segment individuals and their cognitive ability.

A study by Pew Research (2015) identified that 72 % of internet users looked for health information between 2014 and 2015. Seventy-seven percent of online users indicate that they began their search for health information from a search engine such as Google, Yahoo or Bing. Only 13% searched for health information directly from a site that specialized in health information, eg WebMD. This means that most people do not have access to credible information. More so, the search they conduct on the search engines exposes them to such information as presented in the study. Despite the lack of regulation of internet data available to consumers, individuals are faced with information from emotional exemplars. This means they are likely to be influenced by them in their decisions that pertain to health issues, are at the very least, that these initial exposures are incorporated by users in keywords they type into search engines on a conscious or unconscious basis

Programs such as Dr Phil and Dr Oz are some of the common medical shows that are aired on the mainstream media. Their aim it so highlight certain medical conditions. However, most of these shows have failed in creating an effective dialogue platform of medical information. Studies show that these programs have been loaded with content that criticizes,

conventional health messages or contain inaccurate information (Korowynk, et al, 2014). Most of the individuals who consume such media follow advice presented on these platforms based on the trust of the host and the guests rather than the benefits, harms and costs presented by the issue at hand. This means that they pay more attention to the presenter of the message than the actual message. Regardless of whether this seems like the best strategy to use to make potentially life altering decisions, the message presentation impacts how they perceive medical information. Television is an important source of health information for the public. Therefore, with individuals such as Jenny being used to present and argue about medical information with unemotional doctors, the content of the message loses its weight, and style can often trump substance with large portions of the audience.

This study was prone to several limitations. The demographic used in this study was college students whom necessarily had no interest in the issue presented. The participants spent an average of 10 minutes completing the survey, hence, most of them might not have been actively engaged in the study. In addition, the target audience had probably never been engaged with the topic. Therefore they did not have any pre-disposed attitudes or opinions which could have been used to counteract the power of the passionate exemplar. The participants' opinions were quickly formed based on the single message that was provided and therefore may not be as enduring as multiple exposures over a longer period of time. With little prior knowledge, they had no basis to form counter-arguments to the information in the message. However, despite the single exposure of the message, the study yielded significant results. This indicates that one single exposure can be enough to negate the effect of a health communication campaign, or at the very least provides one more barrier that a successful campaign may have to overcome. A

follow-up study could expose an audience to 3-4 messages over a month-long period of time which might better simulate a real-world experience.

The current study leaves room for future research. This study focused on perceptions. An additional area of research could include whether these perceptions altered memory of the message. This might better create an understanding of the long-term effect of exposure to a message similar to those used in the study. Five memory questions were included in this study's procedure, however they were not used in the analysis. This was a result of the researcher identifying limitations after selecting the memory questions. Most of the questions used were quantitative in nature and therefore may not have served as the best backdrop for analysis in a study which compared a presenter focusing on quantitative numbers to one who included little, if no, hard facts. Therefore, a future study could utilize a more comprehensive set of both quantitative and qualitative memory questions.

A further limitation is that the videos were picture formats laid over the audio. This could have impacted the vividness of the messages. In fact, it is somewhat surprising to have seen such a high response to passionate presentation when using stimulus that was not nearly as passionate as these messages typically are when they air on broadcast television or the internet. Future studies could also control for factors such as age, gender, education level or academic concentration. Perhaps a study that explored the interaction between the literacy levels and the perceptions of the source and message in terms of vaccines would yield some interesting results.

The role of the anchor was not explored in this study. Due to the weight of the present study, the researcher opted to delay the analysis of the role of the anchor for a second study. The role of the anchor might act as cue for the audience on whom to pay more attention to. In the case of the present study, the anchor could have seemed to give more leverage to the exemplar,

hence influencing the audience perceptions of the issue. Another area for future research could be to examine to what extent the audience identified with the presenter. The more similar an individual perceives the presenter to be to their own “self” concept, the more likely they might be to listen and retain messages from those who look like them.

As noted earlier, people search for 77% of their health information online through keyword searches using Google, YouTube or Bing. This means that 7 out of every 10 people will receive medical information from an unqualified and unverified source. The internet has a myriad of information and stakeholders in the medical field have failed to realize that one message can create an army of misinformed individuals. Stakeholders and researchers in the field of health communication need to dig beyond framing of messages and delve into the presentation of messages. Emotion, may not be the only factor that can help negate some of the barriers that the medical professionals have in trying to persuade the audience, but this study confirms it is one potential factor that needs to be further examined. Health messages designed to persuade individuals need to evaluate the structure with which they present their messages. Some adjustment on the part of the health communication profession might help them reach and influence demographic they have failed to connect with up to this point

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Appendix A - Experiment Stimuli

Larry: Thank you for tuning in to our weekly show on the Live. Today , we are joined by Jenny, an actress, entertainment mogul and most importantly a mother who has been on the journey to help her son fight autism. Jenny has a 3 year old son, Ethan who was diagnosed with autism and she tells Ethans story in her best-selling passionate memoir, ‘A Mother’s Journey in Healing Autism’. How do you feel today Jenny? Larry grins and puts his hand on his chin)

Jenny: It’s about time and I think we need to deal with world autism day. It is a global epidemic and it’s not getting any better until change is implemented

Larry: You seem to have a very close relationship with your son, dam is he cute?

Jenny: He is (smiles)

Jenny: Ethan was diagnosed with autism just before the age of 3. His bouts of seizures is what made me try and look for more answers. After the bouts of seizures is when he was diagnosed with autism. Instead of you know leaving it as a dead end diagnosis, I went online. And I found a community called defeat autism now. And for 12 years, THANNKKK GODD this community of doctors and scientists who have been healing and treating kids with autism, I believed enough even though my pediatrician at the time was like this is bull and followed this treatment. My son got better. The amazing thing is what I want people to know first of is a lot of things that we are gonna talk about is vaccines. I am not nor is the autism community anti-vaccine. We are anti-toxin and we are anti-schedule. But the thing is the way I treated Ethan, a lot of this parents are treating their kids is not treating autism. We are treating vaccine injury and the kids are getting better.

Larry: What do you mean anti-schedule?

Jenny: Well (her voice gets higher) the schedule, back in 1983 was 10 shots given, today there are 36 shots given

Larry: That's too many

Jenny: Too many, too soon

Larry: Right. We are joined by DR Nathaniel Boone.. I have been calling it a a disease , is it a condition or disorder? Is that the correct term?

Dr Boone: It seems there are multi-factors that influence the onset of autism from perhaps some genetic and some environmental and so it seems more of a spectrum than a specific disease..(Larry cuts him off before he finishes off the word). Facts indicate that every 1 in 68 children develop autism and boys are 5 times more likely to develop autism.e

Larry: Dr Boone where is Jenny wrong?

Dr Boone: (his arms on the table) Stuttering—well, she. Well. Lets start with the right is that we need to do something now to find out the reasons for children developing autism because it is ramping up and its something that we need to be concerned about...

Larry cuts him off

Larry: Where is she wrong?

Dr Boone: Well she is wrong to say that uhhh we can uhhh number one she is wrong to say that the vaccine's are proven to cause uhhmmm autism.If you look at the studies amounting to over the last uhhhhmm uhmm 12 years you will see that the studies show over and over again that mercury is not associated with autism. The kids who have autism dont usually have an immunization that occurs right before the onset of the symptoms...

Jenny cuts Dr Boone

Jenny: All those studies are not independent studies though(smirks)

Dr Boone: Well, there are many many studies and some studies have flaws and some studies don't. For example in California if you look at what's happening with uhh we took mercury out of the vaccine's back in around 2002 annnd

Jenny: What your saying is there is no mercury in vaccines right now?

Dr Boone: When you when you look at .when you've taken out..

Jenny: Are there any? Is mercury still in the vaccine yess?

Dr Boone: (adjusts his coat) We have removed the mercury in the vaccines. You cannot ignore the aluminum content as well coz that's been going up and,....

Larry cuts the doctor off

Larry: What do you think about the vaccine's honestly Dr Boone?

Dr Boone: The childhood vaccine program is the most effective public health program in the history of mankind. And vaccines especially the MMR vaccine has not been scientifically proven to lead to development of autism in children. In addition to which no vaccine is 100 percent effective but I and the entire medical fraternity can attest to the success the vaccination program and schedule has been able to combat most communicable diseases...

Jenny: (Leans back in her char, crosses her legs) --- You know that isn't true

Dr Boone: anddd you must have immunization rates that approach 99% to keep diseases such as polio, measles, whooping cough and diphtheria from coming in here from countries that are 1 plane ride away and we are that close to an epidemic. Soo, for the American Academy of Pediatrics to want to change the immunization program there would have to be medical evidence, undisputable medical evidence that we ought to change it. Now...

Jenny: You know there is evidence (leans in and smirks)

Dr Boone: Now, we have changed it 6 times just in the last 10 years. We changed the whooping cough vaccine, we changed the polio vaccine, we changed the rotavirus vaccine... we

Larry: Why are there so many? (folds his arms and swings in his chair)

Boone: Silence. Because we've been able to develop ways to vaccinate children to prevent their pain and suffering. Just in my practice I've watched 3 children die of each of the different kinds of bacterial meningitis that we immunize for today and (camera will zoom in to Jenny who will lean forward and smirk) and it's tragic when that happens. I in my practice have not referred a child to the compensation program for vaccine related injuries. My practice....

Jenny: (*pulls out a spreadsheet of all the vaccines*). But do we really need all of this? Do we really need all of this. I mean honestly, let's look at this? Seriously??.

Dr Boone: Well which disease will you like your child to get? Pick one?

Jenny: I will let my history talk for me

Dr Boone: But you need scientific evidence that these vaccines cause harm

Jenny: You need to prove the vaccine is safe first, first

Appendix B - Survey Questionnaire

Exemplification in Health Communication

Q1.1 Welcome to a study about the usage of exemplars in health communication. A standard university disclaimer is noted below. Instructions for the survey and how to enter the drawing will start on the next page if you select the Yes button below. INFORMED CONSENT.

This study has been approved by the Institutional Review Board (IRB) document number 7648.

This study does not have a right or wrong answer, it is solely based on your opinions. The questionnaire will be accessible once you have watched the video. No identifying information will be recorded, the study is anonymous. The questionnaire should take approximately 20 minutes to complete. If you have any questions or would like further information about this

study, please contact Faith Thanji at muthonithanji@k-state.edu or Curtis Matthews at cbmatthe@ksu.edu TERMS OF PARTICIPATION: By agreeing to participate in this study you are acknowledging you are at least 18years old and you are currently a student at Kansas State University. I verify by clicking “I Accept” below, I indicate that I have read and understand this consent form, and willingly agree to participate in this study under the terms described, and that this acknowledges that I have received a copy of this consent form.

I Accept (1)

I Do Not Accept (2)

If I Do Not Accept Is Selected, Then Skip To End of Survey

Q2.1 Thank you for agreeing to participate in this study. Instructions for how to enter a drawing on May 13th are included at the end of this survey! Please remember that in order to participate you need to complete this survey by 11:59 pm on Tuesday, May 12th. You will watch a 5-minute YouTube video followed by a series of questions. The entire process will take you less than 15 minutes. The video is really a slideshow with an audio track. Please make sure you turn up the volume on your computer. You can click to enlarge the YouTube video if you would like, or you can click to view it on YouTube. However, if you do this, please remember to close the YouTube video when you're done so that you can return to the survey, click the NEXT

button, and continue. As you watch the videos, try to imagine that you are seeing a debate between a doctor and a mother on a talk show similar to Larry King Live. If you experience problems with this survey, including difficulty finding the "NEXT" button, please email cbmatthe@ksu.edu if you would like to continue helping and want to enter the Target card entry. Please click the "NEXT" button when you're ready to proceed.

Q3.1 Imagine you are watching a show similar to the Larry King Live Show. The simulation has three actors namely: Jenny- a famous actress, tv personality, passionate, go getter, animated, beautiful, gregarious mother Dr Boone- quiet, composed, intelligent, gentle researcher who spends all his days working in a research laboratory Anchor- a trendsetter in the mainstream media who is known to interview some of the most diverse, controversial and famous people on a wide variety of topics Please click the video to begin.

Q3.2 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

Q4.1 Imagine you are watching a debate on a show similar to the Larry King Live Show. The show has three actors namely: Jenny- a stay at home mother of three children who is quite, polite and her whole life revolves around her family Dr Boone- a famous doctor who is always in the media and is similar to Dr Oz. He is funny, animated, aggressive, loud, laid back, social and personable. Anchor- he is more like Larry King Live, he interviews people on controversial issues and he has interviewed famous personalities Please click the video to begin.

Q4.2 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

Q5.1 Imagine you are watching a show similar to the Larry King Live Show. The simulation has three actors: Jenny - a famous actress, tv personality, passionate, go getter, animated, beautiful, gregarious mother Dr Boone- a famous doctor who is always in the media and is similar to Dr Oz. He is funny, animated, aggressive, loud, laid back, social and personable. Anchor- a

trendsetter in the mainstream media who is known to interview some of the most diverse, controversial and famous people on a wide variety of topics Please click the video to begin.

Q6.1 Imagine you are watching a show similar to the Larry King Live Show. The simulation has three actors: Jenny - a stay at home mother of three children who is quite, polite and her whole life revolves around her family Dr Boone- quiet, composed, intelligent, gentle researcher who spends all his days working in a research laboratory Anchor- a trendsetter in the mainstream media who is known to interview some of the most diverse, controversial and famous people on a wide variety of topics Please click the video to begin.

Q6.2 Timing

First Click (1)

Last Click (2)

Page Submit (3)

Click Count (4)

Q7.1 Vaccines are 100% effective

- Strongly Disagree (56)
- Disagree (57)
- Somewhat Disagree (58)
- Neither Agree nor Disagree (59)
- Somewhat Agree (60)
- Agree (61)
- Strongly Agree (62)

Q7.2 What percentage accounts for the following in your opinion? For each of the next 3 questions below, please drag the vertical bar to the percentage you feel best represents your response.

_____ How severe do you think the side effects of a vaccine against measles are? (1)

_____ Do you believe the MMR vaccine has side effects that cause development of autism in children? (2)

_____ How scary are vaccines? (4)

Q7.3 I know of atleast one person in my family or friends who had dramatic side effects after vaccination.

- True (1)
- False (2)

Q7.4 What percentage of Americans do you think believe vaccine are a threat to the health of children?

Q7.5 In your opinion how serious is the issue of vaccinations?

- Strongly Disagree (11)
- Disagree (12)
- Somewhat Disagree (13)
- Neither Agree nor Disagree (14)
- Somewhat Agree (15)
- Agree (16)
- Strongly Agree (17)

Q7.6 How likely is it that anti-vaccination will become an issue where you live?

- Very Likely (23)
- Likely (24)
- Somewhat Likely (25)
- Undecided (26)
- Somewhat Unlikely (27)
- Unlikely (28)
- Very Unlikely (29)

Q7.7 How likely is it that you might personally become a victim of anti- vaccines movement in your environment?

- Very Unlikely (16)
- Unlikely (17)
- Somewhat Unlikely (18)
- Undecided (19)
- Somewhat Likely (20)
- Likely (21)
- Very Likely (22)

Q7.8 How strongly do you believe vaccines cause the development of physical and psychological health problems in children?

- Strongly Agree (30)
- Agree (31)
- Somewhat Agree (32)
- Neither Agree nor Disagree (33)
- Somewhat Disagree (34)
- Disagree (35)
- Strongly Disagree (36)

Q7.9 How would you rate the effects of lack of vaccinating children in your neighborhood?

- Very Effective (31)
- Effective (32)
- Somewhat Effective (33)
- Neither Effective nor Ineffective (34)
- Somewhat Ineffective (35)
- Ineffective (36)
- Very Ineffective (37)

Q7.10 How reliable and informative is your doctor about the side effects of vaccines?

- Very Ineffective (9)
- Ineffective (10)
- Somewhat Ineffective (11)
- Neither Effective nor Ineffective (12)
- Somewhat Effective (13)
- Effective (14)
- Very Effective (15)

Q7.11 How confident do you feel discussing vaccines with your doctor in the future?

- Not at all Confident (103)
- Very Little Confidence (104)
- Somewhat Little Confidence (105)
- Neither (106)
- Somewhat Confident (107)
- Very Confident (108)
- Extremely Confident (109)

Q7.12 How likely would are you to recommend a friend to visit the doctor to discuss vaccinations?

- Very Unlikely (10)
- Unlikely (11)
- Somewhat Unlikely (12)
- Undecided (13)
- Somewhat Likely (14)
- Likely (15)
- Very Likely (16)

Q7.13 How often do you visit your doctor for physical check ups?

- Never (48)
- Once a year (49)
- Once a Month (50)
- 2-3 Times a Month (51)
- Once a Week (52)
- 2-3 Times a Week (53)
- Daily (54)

Q8.1 What is the likelihood that you will search for more information related to vaccines after viewing this news show?

- Very Unlikely (24)
- Unlikely (25)
- Somewhat Unlikely (26)
- Undecided (27)
- Somewhat Likely (28)
- Likely (29)
- Very Likely (30)

Q8.2 How important is the issue addressed in this news show?

- Not at all Important (9)
- Very Unimportant (10)
- Somewhat Unimportant (11)
- Neither Important nor Unimportant (12)
- Somewhat Important (13)
- Very Important (14)
- Extremely Important (15)

Q8.3 In your judgement how informative is this report?

- Not at all Informative (11)
- Very Uninformative (12)
- Somewhat Uninformative (13)
- Neither Informative nor Uninformative (14)
- Somewhat Informative (15)
- Very Informative (16)
- Extremely Informative (17)

Q8.4 How certain are you that you can overcome anti-vaccine messages in the mainstream media?

- Never (9)
- Rarely (10)
- Sometimes (11)
- Most of the Time (12)
- Always (13)

Q8.5 Rate how the message in the news show made you feel

	Strongly Disagree (22)	Disagree (23)	Somewhat Disagree (24)	Neither Agree nor Disagree (25)	Somewhat Agree (26)	Agree (27)	Strongly Agree (28)
It made me nervous (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It made me sad (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It scared me (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found it depressing (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found it entertaining (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It worried me (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It disturbed me (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I found it interesting (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It was upsetting (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q8.6 Do you believe the anchor in this news show was objective?

- Extremely Subjective (50)
- Very Subjective (51)
- Somewhat Subjective (52)
- Neither Subjective nor Objective (53)
- Somewhat Objective (54)
- Very Objective (56)
- Extremely Objective (57)

Q8.7 Rate the following

	Strongly Disagree (51)	Disagree (52)	Somewhat Disagree (53)	Neither Agree nor Disagree (54)	Somewhat Agree (55)	Agree (56)	Strongly Agree (57)
The notion of thinking abstractly is appealing to me (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Thinking is not my idea of fun (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find satisfaction in deliberating hard for long hours (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I only think as hard as I have to (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I really enjoy a task that involves coming up with new solutions to problems (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Learning new ways to think doesnt excite me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<p>very much (6)</p>							
<p>I prefer life to be filled with puzzles that i must solve (7)</p>	○	○	○	○	○	○	○
<p>I like to have the responsibility of handling a situation that requires alot of thinking (8)</p>	○	○	○	○	○	○	○
<p>I would rather do something that requires little thought than something that is sure to challenge my thinking capabilities (9)</p>	○	○	○	○	○	○	○

Q9.1 On a scale of 1-7, with one being deceptive and 7 being honest How honest is...

	1 - Deceptive (1)	2 (2)	3 (3)	4 - Neither Honest nor Deceptive (4)	5 (5)	6 (6)	7 - Honest (7)
Jenny (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Doctor (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Anchor (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9.2 Please answer the following on a scale of 1-7, with one being not trustworthy and seven being trustworthy,

	1 - Not Trustworthy (1)	2 (2)	3 (3)	4 - Neither (4)	5 (5)	6 (6)	7 - Trustworthy (7)
Jenny (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Anchor (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Doctor (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9.3 On a scale of 1-7, with one being unattractive and seven being attractive, How attractive is...

	1 - Unattractive (1)	2 (2)	3 (3)	4 - Neither Attractive nor Unattractive (4)	5 (5)	6 (6)	7 - Attractive (7)
Jenny (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Doctor (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Anchor (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Q9.4 Please answer the following on a scale of 1-7, with one being not expert and seven being expert,

	1 - Not Expert (1)	2 (2)	3 (3)	4 - Neither (4)	5 (5)	6 (6)	7 - Expert (7)
Jenny (1)	<input type="radio"/>						
The Doctor (2)	<input type="radio"/>						
The Anchor (3)	<input type="radio"/>						

Q9.5 What was the name of the Doctor?

- Dr Adam Barnes (1)
- Dr Nathaniel Boone (2)
- Dr Christopher Tucker (3)
- Mr William Adams (4)

Q9.6 What was the name of Jenny's child?

- Michael (1)
- Ethan (2)
- Alex (4)
- Chris (6)

Q9.7 How old is Jennys child?

- 6 years (1)
- 3 years (2)
- 12 years (3)
- 16years (4)

Q10.1 Please estimate the number of hours of television you watch each week. (Include any time you spend watching programs on sites like Hulu, but do NOT include movie sites such as Netflix or individual videos you watch on YouTube). Please use a whole number such as 1, 7, 14, etc.

Q10.2 What is your gender?

- Female (1)
- Male (4)

Q10.3 What is your marital status?

Q10.4 What is your age?

- 17 (1)
- 18 (2)
- 19 (3)
- 20 (4)
- 21 (5)
- 22 (6)
- 23 (7)
- 24 (8)
- 25 (9)
- Over 25, or "other" (10)

Q10.5 What is your ethnicity?

- White/Non-Hispanic (1)
- Hispanic/Latino (2)
- Black/African American (3)
- Native American/Native Alaskan (4)
- Native Hawaiian/Pacific Islander (5)
- Asian (6)
- Other (7) _____

Q10.6 Which of the following do you consider yourself?

- Domestic student (1)
- International student (2)

Q10.7 This is your last question! Estimate the average amount of time you spend viewing each of the following television program genres. Please skim over the categories first before responding. We know it can be difficult to do this. Just do your best!

	Hours (12)
Soap Operas (Days of our Lives, Young and the Restless, etc.) (1)	
News (local or national 6 pm or 10 pm programming) (8)	
Sports (stations like ESPN, or game coverage) (10)	
Comedies (Big Bang Theory, Two Broke Girls, Modern Family, etc.) (2)	
Dramas (Scandal, Revenge, etc) (9)	
News Shows (60 Minutes, 48 Hours, etc.) (7)	
Reality TV Shows (Real Housewives, Survivor, etc.) (5)	
Crime Shows (Law & Order, CSI, etc.) (6)	
Talk Shows (Day - Ellen, The View, Dr. Phil, etc) (13)	
Talk Shows (Night - Jimmy Fallon, Conan, Daily Show, etc) (14)	
Movies (11)	
Music (4)	
Game Shows (12)	