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POLITICAL VACCINES – ARE THE MEDIA TO BLAME?

An examination of the United States news media coverage of the Measles,
Mumps and Rubella vaccine and the Human Papilloma virus vaccine

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Abstract

This study examines the news coverage in two different online media outlets, the *New York Times* and *Fox News*, in their reporting on two different vaccines, the Human Papillomavirus (HPV) and the measles, mumps and rubella vaccine (MMR). It uncovers media frames in the respective outlets in order to evaluate if political divides in attitudes towards the respective vaccines can be attributed to the media portrayals in these outlets. Using framing theory and qualitative content analysis to uncover media frames, it explores the circumstances in which a left-leaning contra a right-leaning audience is invited to understand the issue of HPV- and MMR vaccination. The study exposes the complexity of the vaccine debate in media discourse. Further, it demonstrates that media discourse is generally dependent on political actors instilling an issue with political meaning for it to be framed in terms of conflicting interests. Findings show that the media discourse on HPV vaccine is no longer politically charged or controversially framed. The framing of the MMR vaccine involves some partisan endorsements and it framed as an issue of competing values and interest. However, the framing is not deemed politically charged beyond the partisan endorsements in the debate on mandatory vaccination.

Key words: politicization of science, vaccines, vaccination, science communication, MMR, HPV, Fox News, The New York Times.

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1 Introduction

Science, in recent days, is becoming increasingly political (Suhay, 2017). In the contemporary United States, politics often times seem to dominate discussions regarding scientific issues and associated technologies (Suhay & Druckman, 2015). Examples of the politicization of science, whereby political interests shape the presentation of scientific facts, are abundant. Climate change is the paradigmatic case of this (Fowler & Gollust, 2015). Political interests also shape the discussion and perception of issues such as evolution, stem cell research, fracking and nuclear energy (Suhay & Druckman, 2015).

Various vaccines have also come to join this list of politically charged topics in public and media discourse. Other vaccines might risk joining the list, seeing as the discussion on a potential Covid-19-vaccine is already sparking concerns in public debate. In the US, it has been reported that people are already looking at the vaccine through the lens of the political situation. The mere connection of a potential vaccine to the Trump administration is raising concerns among some (The Daily Podcast, 2020).

The measles, mumps and rubella (MMR) vaccine was introduced to the public many decades ago. However, recently, attitudes towards the vaccine is demonstrating a divide along the lines of political affiliation (Baumgaertner et al., 2018; Rabinowitz et al., 2016; Hamilton, 2015; Gallup, 2020). The Human Papillomavirus vaccine (HPV) was introduced to the public more recently and was surrounded with notable political controversy (Colgrove, 2006). Conservative religious groups strongly opposed vaccination mandates arguing it would condone premarital sex and undermine parental rights (Gostin, 2011). Republican presidential candidate debates further vocalized concerns about the “dangerous drug” claiming “[t]here [was] no government purpose served for having little girls inoculated at the force and compulsion of the government” (Bachmann & Santorum in Gostin, 2011: 1699).

Scholars argue that the politicized and highly partisan legislative environment in which the vaccine was introduced predictably provoked identity-protective cognitions among citizens (Kahan, 2017). This “polluted science communication environment” (Kahan, 2017:7) created a political divide in public attitudes with liberal parents demonstrating a higher acceptability of the HPV vaccination than conservative parents (Constantine et al., 2007; Reiter et al., 2011).

The results of imbuing a scientific topic with political meaning is, of course, normatively problematic. In particular, because the viruses against which the vaccines are meant to protect do not discriminate in infecting citizens. The threat it imposed upon vaccination

attitudes is perhaps best summarized as follows “Immunization is a good medical idea. It works [...] Let's not replace it with a bad political idea” (Sager, in Freiden, 2015).

The process of politicization of issues through the news is not widely understood. This is vital to examine due to the public’s reliance on online and mass media for science-related issues (Scheufele, 2014). Some have argued that the media frames in the US largely focuses on supportive perspectives of science (Ho et al., 2011). Others claim the opposite. The media have been accused of reporting falsely balanced claims in the case of the discredited vaccine-autism link by giving weight to minority claims at odds with the prevailing scientific consensus (Clarke, 2006), exaggerating the scientific uncertainty of evidence underpinning climate change science (Boykoff & Boykoff, 2004), and consistently politicizing public health issues (Gollust & Fowler, 2015).

The present report turns to the news media coverage to investigate the current state of media discourse on the HPV vaccine and the MMR vaccine to investigate if the coverage might be creating or reinforcing political divides in the public perceptions of these vaccines.

2 Vaccines and the public discourse

This section first provides a brief background of the two vaccines and the diseases which they are meant to prevent. This is followed by a discussion regarding the extent to which the respective vaccines have or have not become imbued with political meaning in the public sphere. Finally, the discussion turns to the changing and politicized media system within which the vaccines are communicated to its public audiences.

2.1 The HPV vaccine

Human papillomavirus (HPV) is the name of a common group of viruses, some of which can lead to cancer later in life. HPV is the most common sexually transmitted infection in the United States. About 14 million Americans, including teens, become infected each year. HPV infections can cause cancers in both women and men. Cancer can take years, even decades, to develop after a person gets HPV (CDC, 2019b). There is currently no cure for HPV, only treatment for related health problems, although most related diseases can be prevented by vaccination. The vaccine, *Gardasil*, was licensed in 2006 by the FDA for girls and women age 9 through 26 (Institute of Medicine, 2012a). In 2009, Gardasil was also approved for use in males aged 9–26 years (IOM, 2012). It was later FDA-approved for eligible persons through 45 years of age (FDA, 2018). HPV vaccines are safe and effective in protecting against diseases, they have the potential to prevent more than 90 % of HPV-attributable cancers (CDC, 2020).

Despite this, HPV uptake is relatively low among US adolescents. The latest National Immunization Survey-Teen from 2017 estimates that only half of adolescents (49 %) have completed their HPV vaccinations, 53 % of adolescent girls and 44 % of adolescent boys (CDC, 2020). This is likely in part due to the exceptionally low rate of implementing state-level requirements for the HPV-vaccine, so-called vaccine mandates (Saulsberry et al., 2019). US vaccination policy has traditionally centered around school requirements, which have been effective tools in achieving high coverage rates and decreasing the incidence of vaccine-preventable diseases (Saulsberry et al., 2019). Currently, only three states, District of Columbia, Virginia, and Rhode Island require HPV-vaccination for school attendance (NSCL, 2018).

2.2 The MMR vaccine

Measles is a highly contagious disease, 90 % of non-immune persons who are exposed to the virus will develop the disease. Measles can cause fever and is commonly followed by a rash

that covers the whole body (CDC, 2019c). In rare cases, it can cause brain damage or death. Mumps is also caused by a virus and can cause fever, headache, muscle aches, and swollen and tender salivary glands under the ears. It can lead to deafness, swelling of the brain and/or spinal cord covering, and, very rarely death (CDC, 2019c). The Rubella-virus can cause fever, sore throat, rash, headache, and eye irritation. If a woman should get rubella while pregnant, she could have a miscarriage, or her baby could be born with serious birth defects.

These diseases can be prevented by the combination vaccine, abbreviated the MMR vaccine. The CDC recommends all children get two doses of MMR vaccine, one at the age of 12 through 15 months of age, and the second at 4 through 6 years of age. It is also recommended for young adults and adults who do not have presumptive evidence of immunity (CDC, 2019d). The vaccine has a long record of safety, and serious adverse reactions from MMR are rare (Kwong & Ambizas, 2019). Research also reports strong evidence favoring a rejection of a causal relationship between MMR-vaccine and autism (Institute of Medicine, 2012b).

Again, school vaccination laws have played a key role in the control of vaccine preventable diseases in the US, preventing the spread of disease through high vaccination coverage. All 50 states have legislation requiring the MMR-vaccine (NCSL, 2020). States laws also offer *exemptions* to school vaccination requirements based on medical, religious and philosophical grounds, which vary from state to state. As a consequence, the number and size of measles-vulnerable areas and significant measles outbreaks in the US are increasing, especially in metropolitan areas of states that permit philosophical exemptions (Olive, Hotez, Damania & Nolan, 2018).

2.3 The vaccines in the public sphere

The FDA approved the first HPV-vaccine in 2006, led to an upswing in media attention of issue and the subsequent politicization of the vaccine in the news media (Fowler & Gollust, 2015). The media picked up on the controversial potential of the debate. News stories often featured competing messages from liberal and conservative advocacy groups presenting their sides prescription and implications (Fowler et al., 2012). Opposition to vaccine mandates was justified with ideologically based arguments, including concerns about the sexually transmitted nature of the vaccine and general resistance to government intrusion on parental autonomy (Colgrove et al., 2010).

The MMR vaccine, on the other hand, was introduced in 1963 with comparatively little controversy until some 35 years later, in 1998, when the vaccine was hotly debated within the scientific community following an article in the medical journal the *Lancet* suggesting a

potential association between autism and the MMR-vaccine (Wakefield et al., 1998). The media have also been accused of keeping this particular controversy in the public spotlight and recent surveys suggest that this is still a concern for American citizens, as 46 percent of Americans report that they are still “unsure” if the MMR vaccine causes autism according to a recent Gallup survey (2020). This controversy has been the object of much research aiming to explain vaccine hesitancy, until recently when scholars examined political ideology as a predictor of vaccination attitudes (Hamilton, 2015; Rabinowitz et al., 2016; Baumgaertner et al., 2018).

In the case of the HPV vaccine, controversy over the product began before it was even licensed, as religious conservatives expressed concern that a vaccine against a sexually transmitted disease would undermine abstinence-based prevention messages (Colgrove, 2006). It is a mistake, however, to view HPV vaccine controversy solely, of primarily, as a conflict between science and religion. Rather, many scholars argue that the HPV vaccine has been subject to a strategic effort to portray the vaccine as controversial for political ends, by questioning the scientific evidence in support of the vaccine’s safety and efficacy, highlighting a lack of scientific consensus as well as attempting to feature the vaccine embedded within political discourse (Saulsberry et al., 2019; Fowler & Gollust, 2015; Gollust et al., 2010; Krakow & Rogers, 2016).

And as it turns out, studies find that liberal parents have a higher acceptability of the HPV vaccination than do conservative parents (Constantine et al., 2007; Reiter et al., 2011). Other studies confirm that conservative respondents are less likely to support HPV vaccine requirements than liberals (Saulsberry et al., 2019). A survey on school mandated HPV vaccination found significant differences in support by ideology, with a significantly higher proportion of liberals in favor compared to conservatives (Saulsberry et al., 2019). The differences were not as large in regard to political affiliation, however, Democrats expressed higher support than Republicans in all categories but those identifying as “not so strong Democrats/Republican.”

The particular controversy of MMR-vaccination and autism linkage kept generating public interest, political remarks and media attention in the US, long after the Wakefield-article was retracted. What kept this particular controversy in the public spotlight, according to some, has been the media discourse on a potential autism-vaccine link, at odds with the prevailing scientific consensus (Clarke, 2006). By covering both the perspective of supporters and opponents of such a link in the pursuit of balanced coverage, the media gave the impression that there was plausible doubt and uncertainty of evidence underpinning the rejection of a causal relationship between the vaccine and autism.

A number of politicians and other celebrities have weighed in on the issue of childhood vaccinations, both liberal and conservative, including then presidential candidate Donald

Trump. During a campaign debate he claimed that “just the other day, 2 years old, 2½ years old, a child, a beautiful child went to have the vaccine, and came back, and a week later got a tremendous fever, got very, very sick, now is autistic” (Trump, 2015 in Wolters & Steele, 2018). A liberal media profile, Robert F Kennedy Jr, also an outspoken MMR vaccine critic espousing the discredited vaccine to autism-link, was asked to join President-elect Trump to chair a vaccine safety and scientific integrity commission (Wadman, 2017).

It is hotly debated whether skepticism about the MMR vaccine is more prevalent on the political left or right. Commentators have depicted vaccine opposition as primarily a liberal attribute, comparable to the conservative rejection of climate science (Hamilton, 2015). Others argue that this alleged liberal bias against vaccination anecdotal and based on arguments such as celebrity statements.

Scholars have attended to the issue, finding no support for a liberal anti-science bias on vaccine, rather, the opposite is true: conservatives are more likely to reject science regarding vaccines (Hamilton, 2015). Subsequent studies have also shown a divide in which conservatives express less intent to vaccinate than liberals (Baumgaertner et al., 2018). Others showing that political ideology affects the degree to which participants endorse pro- versus anti-vaccination statements (Rabinowitz et al., 2016). Liberals expressed greater endorsement of pro-vaccination statements and greater disagreement with anti-vaccination statements than conservatives. Liberals were also more likely to state that pro-vaccination statements are facts rather than beliefs. This ideological gap in vaccination attitudes is reflected in a recent Gallup survey (2020) finding an overall decreasing support among conservatives and an increasing partisan gap regarding the importance of vaccinating their children, with Republican support down from 93 percent to 79 percent from 2001 to 2019, and Democrats down from 97 percent to 92 percent.

Taken as a whole, HPV-vaccine seems to be more explicitly imbued with in political meaning in public discourse than has the MMR-vaccine. However, recent outbreaks of measles have thrust the issue of childhood vaccines into the media spotlight again, generating opportunities for political actors and media logic to shape the tone of the public discourse. Leaving it up to the present report to examine the current state the media coverage regarding both the HPV vaccine and the MMR vaccine.

2.4 The changing media environment

Changing dynamics in the US media system has given media outlets reason to re-invent themselves. In recent years, the primary dimension on which media outlets try to differentiate themselves in the US is ideology, by offering opinionated and partisan content (Baum, 2011;

Hmielowski et al., 2014). Most notably, prominent cable channels have been shown to cover events in a way that is more supportive of liberal interests (e.g. MSNBC and CNN) respective conservative interests (e.g. Fox News) on issues like presidential candidates, the Iraq war and climate change (Feldman, 2012). A content analysis examining the tone of MSNBC and Fox News coverage of the 2008 presidential candidates respectively reveal an ideological divide between the two channels, with MSNBC's tone favoring the Democratic candidate and Fox News' favoring the Republican candidate (Feldman, 2012).

This trend has been referred to as the breakdown in information commons (Baum, 2011). And while some argue that opinionated news plays a vital role in a democracy, encouraging critical and engaged discourse, others claim the news media are exacerbating, if not all together creating, the cleavages between partisan groups in some cases (Baum, 2011). This niche media environment has scholars concerned that political beliefs will guide individuals in their choice of news outlets, commonly referred to as *selective exposure* (Stroud, 2011), leaving audiences of partisan media with a slanted perspective on news events, which may in turn, reinforce existing views (Stroud, 2017). However, in the case of science-related issues, it is not evident that science beliefs in themselves are the motivating factor for seeking exposure to a particular media outlet, rather, it seems people seek out news outlets for partisan reasons. In this sense, it differs from the notion of selective exposure which holds that attitudes motivate exposure on a certain topic. It follows, nonetheless, that the perspective of the media outlet affects people's beliefs on science-related issues, which is the opposite temporal order of selective exposure but an imperative theory for the present study (Suhay, 2017).

What is more, there seems to be considerable differences in how different political news outlets report on scientific issues in particular, which may in turn affect audience perceptions. Content analysis have shown that conservative media consistently claim a lack of scientific consensus regarding anthropogenic climate change compared to liberal media (Hmielowski et al., 2014). Experimental research has found relationships between exposure to partisan media (CNN, MSNBC and Fox News) and beliefs on global warming (Feldman et al., 2012). Findings showed that the more often people watched Fox News, the less accepting they were of global warming, conversely, the more frequent CNN and MSNBC viewing, the greater the acceptance of global warming (Feldman et al., 2012).

Given this background, the present report turns to examine of the content of left-leaning and right-leaning news coverage respectively, seeing as differential coverage has the potential to shape and polarize public views.

3 Communicating science in politicized environments

People increasingly face the necessity of integrating science information with their personal values, in order to make important life decisions, such as those about medical care. However, if the information appears to be in conflict with their economic interest, beliefs or values, there is no promise of a smooth integration of scientific recommendation. Scientific findings do not only influence personal considerations, but involve corporate policies, laws and regulations. The high stakes of those decisions attract multiple actors to get involved, pitting competing interests and political control of various players against one another (Lupia, 2013).

Currently, politics seems to dominate the discussion of many scientific issues in the US, including climate change, stem cell research as well as the use of various vaccines (Suhay & Druckman, 2015). Most citizens hear about scientific issues from various online and offline media, a trend that involves both promise and peril (Scheufele, 2014). An important function of news organizations is to pre-select relevant news for citizens to allow them to make informed personal and democratic decisions. On the other hand, there is a media preference to cover controversial science issues which are more likely to receive news attention as a consequence of politicians and other stakeholders getting involved. Consequently, the visibility of scientific issues in the media are often leveraged by actors with political interests that differ from those of the academic community. Finally, when scientific advances become politically contested, the media seems to contribute to issue polarization by their preference for dramatic coverage (Nisbet & Markowitz, 2014).

This is the dynamic to which this chapter is dedicated; how the audience's predispositions shape their views of science issues as well as how media logic and other organized political interests influence the process of communicating science.

3.1 Predispositions shape opinions on science

The discrepancy between scientific consensus and public views in general was long assumed to derive from a lack of accurate scientific knowledge among the public (Brossard & Lewenstein, 2010). This approach is known as the 'deficit model' (Brossard & Lewenstein, 2010). The 'deficit' in public science knowledge was assumed to undermine public support for science as an institution, promote opposition to scientific recommendations, and foster reservations

about scientific advances (Nisbet & Markowitz, 2016). Yet a growing body of research on the relationship of scientific knowledge and attitudes toward science have found that this is a much more complex relationship. Rather, a person's values, beliefs and cues from mass media determine how audiences shape their attitudes (The National Academies, 2017). Values can act as a filtering mechanism that explains why and how different audiences respond differently to scientific information (Scheufele, 2013).

In fact, scientific knowledge seems to have a polarizing effect on attitudes both in relation to ideology and religion (Nisbet & Markowitz, 2016). In climate change research, studies suggest that polarization occurs because individuals with higher levels of education and knowledge tend to be more attentive to politically or religiously congenial arguments, and attuned to what others think about the matter, more likely to react to these cues in ideologically consistent ways (Kahan et al., 2012).

Another study, looking beyond political partisanship turning to individuals' beliefs about science and society, found that such views had the strongest influence on support for stem cell research (Nisbet & Markowitz, 2014). Also, those with a lack of a clear mental model on how science might affect their lives and society, tended to rely on other heuristics such as partisanship and ideology to make judgments about unfamiliar scientific issues or technologies.

Research on public perceptions of vaccination attitudes also argue that identity affirmation, information sources and value-based narratives in public discourse matter when an individual's evaluate vaccine information (Song, 2014). In the case of MMR-vaccine, scholars expect that such tailored messages will be more successful in conveying vaccine-related information to diverse publics.

Experimental and survey studies have demonstrated that cultural worldview termed "cultural cognition" shapes individuals' perceptions of the benefits and risks associated with HPV vaccination (Kahan et al., 2010), and the willingness to vaccinate against the swine flu (Mesch & Schwirian, 2014). Findings from the first study showed that disagreement about the risks and benefits of the HPV vaccination are shaped by *cultural values*, which exerts their influence through (a) biased assimilation and (b) source credibility. Biased assimilation is a cognitive heuristic by which individuals' credit and dismiss information in a manner that confirms their prior beliefs. Information sources whom individuals identify as sharing their worldview are deemed more credible, e.g. partisan sources (Kahan et al., 2010; Druckman, Peterson & Slothuus, 2013).

Results showed that subjects with cultural predispositions associated with political and social conservatism perceived much higher risk from HPV vaccinations than subjects whose cultural cognitions aligned with liberal and progressive political and social values. The

explanation for this is that former is predisposed to reject the benefits of the vaccine because it condones sexual behaviors and defies traditional gender norms and intrudes on individual decision making. The latter is predisposed to see greater benefits due to the signaling of tolerance for behavior that denigrates traditional norms and embodies collective commitment to the public good. Polarization grew when arguments to which they were disposed to accept, were being made by policy advocates whose values they share.

The second study showed that Democrats were more willing to take the swine flu vaccine, than were individuals identifying with the Republican Party (Mesch & Schwirian, 2014). The results were considered a consequence of the fundamental tension between cultural values tied to vaccination, one between the individual's agency and the collective agency of the state and the public health authorities; as well as consistent with the reported trend of distrust in science among political conservatives (Gauchat, 2012); and a consequence of ideological media segmentation that has made willingness to vaccinate a contested political issue (Baum, 2011). (A point to which will be returned in the next section).

In short, individuals tend to evaluate issues in a way that reflects their membership in social groups such as political party or ideological group (Mesch & Schwirian, 2014). The studies also touched upon the role of the source credibility. Individuals tend to rely on the views of those seem to possess the similar cultural values to themselves, e.g. political representatives. The literature also indicates that value-based narratives portrayed in the media may have made certain considerations more salient than others.

The concept of *framing* science issues combines these mechanisms. It is suggested that science communicators should take ideological differences into account to reach better predictions in assessing public opinion and perception across issues (Nisbet & Markowitz, 2014; Song, 2014). The frames used to describe science information can serve as very powerful heuristics for audiences that are being faced with risk evaluation or regulatory policies regarding science-related issues (Scheufele, 2013). A well-framed science issue can provide the audiences with the tools for understanding the relevance of science to their everyday life and its societal benefit. On the flipside, framing science issues can be exploited for diverse political agendas that create or reinforce cultural divides. Political actors are aware of the persuasiveness of party identification and political ideology and have used it to leverage candidates or causes. Politicization of science is a consequence of this, that is, when political interests shape the presentation of scientific facts to fit a certain agenda (Bolsen, Druckman & Cook, 2014). This process is discussed in the following section.

3.2 Political involvement in framing science

Framing research offers a rich explanation for how various actors define science issues in politically strategic ways, how journalists selectively cover these issues and how diverse publics differently perceive, understand, and participate in these debates (Nisbet & Scheufele, 2009). This section discusses the involvement of political actors in framing science-related policy issues in public discourse to mobilize support for their position. This might be referred to as issue framing (Saulsberry et al., 2019).

The issue of climate change has historically been framed in ways that reinforce ideological divisions, by emphasizing uncertainty and appealing explicitly to conservative values, by use of frames such as *scientific uncertainty* and *unfair economic burden* to the US due to climate change in order to defeat the adoption of the Kyoto treaty and other major policy proposals that ran counter to Republican economic interests (Nisbet & Scheufele, 2009). Democrats countered by emphasizing the *public accountability* frame claiming that politics were put ahead of science in a number of issues, including climate change, which mobilized many ideologically like-minded Democrats (Nisbet & Scheufele, 2009).

This type of political interference in framing science to the public has been termed politicization of science. However, the conceptualizations vary. Some argue that “politicization occurs when an actor emphasizes the inherent uncertainty of science to cast doubt on the existence of scientific consensus” (Bolsen & Druckman, 2015: 746). This has mainly been used as a means to frame and politicize the issue of climate change.

Others have used the label when referring to American public’s perceptions of science which have become more politically charged the past four decades, with a significant decline in conservative confidence in the scientific community (Gauchat, 2012). Historical and cultural origins are used to explain this trend. Conservative distrust is assumed to stem from the notion that political interests have too great of an influence on the production of scientific knowledge. The notion was crystalized into a partisan rallying cry and frame by Democrats, claiming Republican’s were waging a ‘war on science’ (Nisbet & Scheufele, 2009). Scholars caution that claiming science as a liberal agenda might prompt conservatives to infer that science and scientists are in fact driven by a liberal agenda, and deem it as less trustworthy (Hardy et al., 2019).

Others define politicization as political debate and the presence of controversy. This final definition broadens the conceptualization of politicization of scientific issues to include the mechanisms of issue framing and the media’s preference for conflict framing. It claims that when two issue frames compete with each other in public debate and the media emphasizes the political controversy, it follows that the issue has been *politicized* (Fowler & Gollust, 2015). In this sense, politicization takes on a broader meaning than solely emphasizing the uncertainty of the scientific process.

As aforementioned, many scholars claim that issue framing reinforced conflict over the HPV vaccine and politicized the vaccine in this way (Fowler & Gollust, 2015; Colgrove, 2006; Gollust et al., 2010). This in turn, established a standard for news coverage and public discourse about the issue. Some argue that the diverging ideological views of the HPV vaccine was in part a consequence of differing messaging in liberal and conservative news outlets. Advocacy messaging appearing in liberal media outlets such as the *New York Times* and the opposition messaging in the *Wall Street Journal*.

Issue framing also applies to the stem cell debate. Scholars argue that two contending frames in the stem cell debate set the context for public judgments and opinions by selectively activating different cognitive schemas (Nisbet & Markowitz, 2014). Officials and interest groups conveyed specific frames of reference of why stem cell research mattered and what was at stake for society. Experimental testing showed that subjects opinions on the issue were in part a function of the selective frames and storylines found in news coverage. Republicans aligned with the cues of Republican leaders in opposition of expanding stem cell research and the narrative of moral travesty framing of destroying embryos, and Democrats responded to the Democratic advocacy cues from Democratic leaders and the narrative of moral duty to move forward with research that could benefit Americans.

This definition emphasizes how political logic and media logic combined can politicize issues, which is of relevance for the present report. It also connects to literature on partisan cues and source credibility as described earlier. Precise definitions vary but overlap in the assertion that some actors have imbued a scientific topic with political meaning and that this outcome is normatively problematic (Suhay, 2017). It might be better termed politicization of *public discourse* to include the role of competing political interests as well as the media as well. This dynamic is discussed in the following section.

3.3 The medias role in polarizing and politicizing public discourse

Scholars argue that media is likely to enhance polarization and politicization of science issues among Americans. Firstly, due to the practices, norms and standards that the media as an institution adhere to, such as the norm of balanced coverage, the framing cycle and the use of frames (Nisbet et al., 2003; Nisbet & Huge, 2006). Secondly, because niched media provides citizens with the opportunity to limit their information exposure to perspectives that reinforce, rather than challenge, their preexisting beliefs (Baum, 2011).

3.3.1 Science issues meet media logic

Research on the framing cycle of the stem cell debate demonstrates that it corresponds with the potential for dramatic framing in the cycle of policy development (Nisbet et al., 2003). The administrative policy arena tends to privilege expert voices of the scientific community. When an issue enters into the overtly political arenas, the scientific community holds less influence and the issue opens up for interest group involvement. Debates in the context of overtly political institutions receive considerably more media and public attention. The media attention is also linked to the media's framing and to the potential for dramatic coverage of the arenas. Meaning that when the debate was held in administrative contexts, media attention was low, and the most prominent frames were *scientific research* and *scientific background* with very few *strategy/conflict* or *ethics/morality* frames. When the debate entered the political arena, media attention spiked and the prominence of science frames decreased considerable, to be replaced by a dramatic emphasis on *strategy/conflict* and *ethics/morality* framing appearing in almost every article. This study confirms the journalistic need for a narrative structure, also in covering science-related issues (Nisbet et al., 2003).

This is concerning, as others have demonstrated that conflict framing and especially morality framing can lead to diverging perceptions of an issue. Conflict alone may not be sufficient for politicization, but as we have seen once political actors offer conflicting viewpoints on an issue, it is argued that politicization is unlikely to recede in public discourse (Fowler & Gollust, 2015). Once political policy solutions are part of an issue's framing, journalists seek out politicians on both sides of a debate. Thus, political perspectives intervene in media coverage.

What is more, the science frames in the stem cell debate: *new scientific research* and *scientific background*, were most likely to appear with the frame of *scientific uncertainty* (Nisbet et al., 2003). Because the media tends to favor sensationalism, efficiency and profitability, journalists might be pressured to emphasize incomplete information, controversies, and caveats by means of *uncertainty frames* (Rice & Gustafson, 2019). Journalistic reporting on science is allowed the discretion to pass along uncertainty claims presented by the scientists, however, studies have found that in the case of climate change, the media has more often than not overplayed the level of uncertainty regarding the matter (Corbett & Durfee, 2004; Boykoff & Boykoff, 2004). In the specific context of climate change, uncertainty framing has ideological tenets which has driven ideological polarization on the issue. It is not certain that this strategy will be apply to all science issues in the absence of ideological motives. Rather, scholars argue that this has contributed to a significant divergence of popular discourse from scientific discourse in general (Boykoff & Boykoff, 2004).

Other content analyses have examined the evolution of media coverage of the HPV vaccine (Gollust et al., 2012; Fowler & Gollust, 2015). Their findings correspond with the study on framing cycles, demonstrating that the media discussion did not start out as controversial, but as legislative discussion began, there was a large increase in controversial framing. The analysis of news media coverage indicated that news articles frequently described doctors, politicians, parents and interest groups as conflicted over mandatory HPV vaccination. More importantly, conflicts were depicted in the context of moral and political arguments both in opposition and in favor. Their persuasive impact was not tested but it cautioned that the way in which the issue emerged might limit the potential policy opinions down the road and that politicization of the vaccine might linger and set the tone for subsequent media coverage and public perceptions. The present study examines if this is still the case.

As aforementioned, most studies have examined the MMR vaccine in the context of the fraudulent claims of the vaccine leading to autism. Few media studies have approached the issue of vaccine skepticism from a political perspective, although there are indications of a political divide in attitudes toward childhood vaccines. The following media content studies might still give insights about how the media tend to report on the vaccine.

A content study on the autism-vaccine controversy, examined a sample of UK and US newspaper articles on the issue, and found that 58 % mentioned both supportive and rejecting claims of such a link (Clarke, 2006). It demonstrates the media preoccupation with a balanced reporting to a fault, namely, creating a false balance between a scientific perspective supported by an overwhelming amount of evidence alongside other perspectives with less or no support and context is excluded. A false balance that may give the erroneous impression of scientific uncertainty about the evidence of a scientific issue. Researchers argue that under such conditions the media can produce a discourse that differs from the prevailing scientific viewpoint, which in this case rejects a causal relationship between autism and the vaccine (IOM, 2012; Boykoff & Boykoff, 2004; Clarke, 2006). Scholars have noted that scientific consensus on an issue creates more, not less, avenues for the news media to cover perspectives that disagree with that consensus (Boykoff, 2007).

Another content analysis on the autism controversy operationalizes the concept of a media frame as a distinct *blame frame*, focusing on whom was attributed blame in each news article, which source to attribute responsibility to and what might be done about it (Fowler et al., 2012). This is not entirely different from the operationalization of frames used in the empirical analysis of the present study, as will be elaborated upon in the chapter on method. The findings showed that the author of the fraudulent study claiming an association between autism and the vaccine was most often blamed in the media. The authors cautioned that this type of

framing guides the public to consider one individual as the main source of blame for a problem that is much more complex systemic issue.

Another content analysis examines the media coverage of MMR vaccinations, while touching upon its moral and political dimensions (Capurro et al., 2018). It is argued that the media's persistent focus on 'anti-vaxxers' obscures the complex and varied political, economic and social causes for a decreasing rate of full immunization coverage. Instead, creating a construction of a health scare that borders on moral panic. Framing the issue as a moral issue can have a productive role for constituting a sense of moral righteousness on the part of pro-vaccine advocates, it is argued. Yet the tone of coverage risks cementing the views of parents who are strongly opposed to vaccination and drive them to seek identification elsewhere, in online forums for example. Although this does not directly relate to political divides in attitudes toward the vaccine, it demonstrates that the media tend to attribute blame specific groups and cast issues in the context of moral narratives, at the expense of providing a complex understanding of an issue.

In all, media coverage of science issues seems to create a disconnect between scientific realities and subjective perceptions of citizens. This tendency can be attributed to media practices more broadly. A shrinking number of science journalists are giving way to political journalists, general assignment reporters and opinion writers who do not regularly communicate about science (National Academies, 2017). Strategy and conflict frames are more likely to be political journalists and editorials than specialist journalists (in science and business beats) (Nisbet & Huges, 2006).

What is more, insights from previous literature informs us that conflict framing tends to involve partisan endorsements, value-based narratives and politically strategic issue framing. According to the definition of politicization defined as two competing issue frames, political cues and cultural symbols become integrated in the public presentation of an issue by means of conflict framing. As a result of these cues, whether it is particular partisan information cues or political conflict cues more generally, citizens are expected to interpret the issue heuristically through a political or ideological slant (Druckman, Peterson, and Slothuus, 2013).

3.3.2 Media effects of conflict framing

It seems science issues are not immune to the media preference for controversial framing. The question to which this section turns is what effect conflict framing of science issues has on the perceptions of individuals.

A study tested the effects of this the politicized media coverage of the HPV vaccine in an experimental setting (Gollust et al., 2010). Subjects were exposed either to a *controversy* frame, which presented medical and political conflict on proposed HPV vaccine legislation, or a *uniform support* frame that stated that politicians and medical experts were in support of the legislation. Results showed that those exposed to the conflict framing were less likely to support legislation. They did not distinguish between the effects of political and medical conflict, but a subsequent experimental study filled this gap in part.

This influential study examined the politicization of the HPV vaccine and mammography in news media coverage and then the effects of politicization of the media discourse on subjects (Fowler & Gollust, 2015). The authors suggest that *politicization* can be thought of as a distinct frame that journalists gravitate toward in covering a scientific issue, by providing political context to the issue as a way to highlight partisan conflict (Fowler & Gollust, 2015). Others have called this conflict or strategy framing (Semetko & Valkenburg, 2000). It is argued that when political cues and symbols become integrated into public presentation of health issues it will lead audiences to interpret them heuristically through a partisan perspective (Fowler & Gollust, 2015). Which can in turn increase or decrease policy support.

This was followed by an experiment that measured the public response to politicization of the HPV vaccine which showed that political conflict decreases support for HPV vaccine requirements and immunization programs. The effect did not hold in the robustness test, however. But both pre-exposure and experimental exposure to politicization decreased both trust in doctors and in government (Fowler & Gollust, 2015). The intention and results are somewhat mismatched, since the authors argue that partisan motivated reasoning to differences in support between partisans, but they do not test these predictors separately. It is argued instead that the (small) overall decrease in support might be a consequence of strategy and conflict frames which been found to evoke cynicism toward policy and government (Cappella & Jamieson, 1997).

Yet another experiment examined how the *specific* ideological component of the controversy surrounding the vaccine affected individuals' perceptions of legislation and immunization programs in relation to media exposure (Gollust et al., 2013). Findings showed that liberals were most sensitive to media exposure to the vaccine debates, and as exposure increased, liberals became more aware, whereas conservatives' awareness was constant and did not vary with increased news exposure. The explanation for this is that opposition to HPV vaccine mandates were justified with ideologically based arguments, including concerns about sexuality and the general resistance to governmental intrusion on parental autonomy (Gollust et al, 2013; Colgrove et al., 2010). In general, it prompts conservatives not to select such media. If

exposed, conservatives would resist the message that HPV vaccination mandates are necessitated by means of biased assimilation, by counterarguing the premise or selectively incorporating some aspects (the conservative line) and forgetting others (the liberal stance). These results are in line with research that shows how self-selecting media based on ideology leads to differences in vaccination behaviors regarding the swine flu vaccine (Baum, 2011). This will be discussed in the following section.

3.3.3 Partisan media polarizing science issues

It was once commonplace to believe that science information passed seamlessly from journal to reporter to the public (Fahy & Nisbet, 2011). Subsequent literature demonstrates that this relationship is much more complex while considering citizens predispositions, influence of political interests and general media praxis in reporting on science. But because individuals tend to turn to ideologically-consistent media, it is crucial to consider what type of news content these audiences are provided with. Especially since previous studies have demonstrated that, in some contexts, there are clear differences across news outlets (Feldman et al., 2012).

For example, media with a conservative audience was less likely to frame the issue in terms that promote engagement and more likely to frame in terms of conflict, compared to media with a liberal following. The authors concluded that such differences might exacerbate ideological polarization on climate change (Feldman et al., 2017). Effects studies have confirmed that greater use of conservative outlets was associated with lower levels of certainty that global warming is happening, while greater use of non-conservative news was associated with greater levels of certainty (Hmielowski et al., 2014). A longitudinal measure was included to strengthen the evidence of causal influence of media influence upon climate change beliefs, showing that frequent use of conservative media was negatively associated with certainty of global warming. This is to be a consequence of media outlets framing scientists and scientific issues in a way that makes certain values salient, for example, by amplifying climate skeptic claims. It has even been argued that a coordinated denial movement uses conservative media as a means for casting doubt on the science of climate change, especially among ideologically receptive audiences (Hmielowski et al., 2014).

The present study relies on research that examines climate change science as a consequence of the extensive research on this topic and the limited studies on vaccine science. Although there is one influential study that has examined partisan differences in attitudes about the swine flu and to what extent differences in ideological media consumption can account for the attitude differences (Baum, 2011).

Based on an examination of different survey data sets, findings showed correlations between Republicans relying on Fox News in particular for news about the swine flu and less concern about the flu, compared to their counterparts relying on traditional news sources, or Democrats regardless of news source. The author hypothesized that this would also affect immunization rates (Baum, 2011). The regression analysis indicated that states with more conservative newspapers had lower immunization rates, after accounting for alternative explanations. This evidence demonstrates that the tendency to self-selected media could have implications for public health attitudes.

The reasons for Republicans unwillingness to take the vaccine are fourfold. Conservatives tend to be more skeptical to government intervention; government intervention was suggested by a Democratic administration; the pro-vaccination message was backed by global institutions to which they tend to be skeptical; and finally, that they exposed themselves to media that gave them ideological cues on how to approach the question of vaccination. In this way, the study combines the insights from literature political values, partisan cueing, and selective exposure. This pattern, it was suggested, could have implications for public policy and public health, if it leads partisans to refrain from vaccinating.

3.4 Summary and discussion

As this background indicates the context of communicating about science is very complex. Many dimensions relating to traditional media practices, changing circumstances in the media environment, niche outlets and audience characteristics, and political forces, contribute to the politicized milieu of communicating about science. This in turn, makes it difficult to evaluate the studies separately – what one study may lack, another one examines. As with this much of this literature, the present study only a particular area of study: frames in news media coverage. But does so against the accumulated knowledge of this diverse research field. And because it uses an inductive approach to the empirical material, it rests heavily on insights from previous literature. This will explain the emphasis on accentuating findings from previous research, rather than dissecting the vast and dynamic processes.

A short summary of the background follows. Individuals engage in biased information processing when forming opinions (Scheufele, 2013). This mechanism makes individuals susceptible to narratives that resonate with their cultural world view. Political actors (e.g. political entrepreneurs, interest groups, politicians) can strategically frame issues around dimensions that feed on the biases of constituents, news producers and their respective audiences (Nisbet et al., 2003; Nisbet and Huye, 2006). News producers tend to further the interpretive narratives

of political actors, seek out conflicting views on issues and apply conflict framing to science topics. This in turn, is assumed to lead audiences to interpret them heuristically through a political or ideological perspective (Fowler & Gollust, 2015). Finally, partisan media can fuel polarization by emphasizing certain political perspectives (Feldman et al., 2012).

Finally, what binds these mechanisms together is the importance of framing. Framing is expected to provide individuals with the means for a better understanding of the relevance of science issues personally and in policy (Scheufele, 2014). Issue framing and value-based narrative has been used by various political actors aiming to mobilize support for their cause (Nisbet & Scheufele, 2009; Colgrove, 2006). Finally, the media tend to rely on these narrative and/or apply their own frames to issues. The analytical approach to the media discourse is framing theory, explicated in the following chapter.

4 Framing vaccines in the media

The analytical approach is guided by framing theory and complemented by insights from the field of science communication previously described. A discussion regarding the analytical approach—framing theory— follows in this chapter, including its limitations and potential in uncovering the frames that might shape the public’s discourse on vaccines.

4.1 Framing theory

The term framing dates back decades within the research fields of sociology and psychology and assumes that all human perception is dependent on frames of reference that can be established by presenting information in a particular way (Scheufele, 2013). Conceptually, frames are interpretive storylines that communicate what is at stake in societal debate and why it matters (Gamson & Modigliani, 1989). The main premise of framing theory is that because an issue can be viewed from a variety of perspectives, the particular presentation may have implications for individuals’ considerations (Chong & Druckman, 2007). Frames are typically used to cast information in a certain light and emphasize different aspects to influence what people think, believe or do (The National Academics, 2017).

Frames have been located within audience members (individual frames), news organizations, news sources, news texts and within the culture in which news is constructed (D’Angelo & Kuypers, 2010). In communications studies frames refer not only to media frames, but politicians’ frames, audience frames and frames of interest groups (Chong & Druckman, 2007). The present study is primarily concerned with examining the frames in the media, that is, the *content features* of news media coverage. While also acknowledging that frames are the outcomes of the power struggle over meaning between actors with different material and symbolic resources (Vliegenthart & van Zoonen, 2011). Framing theory provides the tools to explore what frames are featured in the news coverage and the means to discuss what implications it has for public discourse.

4.1.1 Defining frames

Communications scholar Robert Entman (1993: 52) puts forth *selection* and *salience* as guiding principles in the definition of framing which reads that “to frame is to select some aspects of a perceived reality and make them more salient in a communicating text, in such a way as to promote a particular problem definition, causal interpretation, moral evaluation, and/or

treatment recommendation for the item described.” The process of selection entails choosing to convey some aspects of reality while obscuring others, which might lead the audience to different and/or a delimited understanding of an issue. This part of the definition aligns with the idea expressed by sociologists of the 1970’s putting forth that news is *socially constructed*. In fact, insights from as early as the 1920s highlight that the media do not simply mirror reality but make their own selections, and that news in itself presents a window on the world and by consequence that its frame delineates the world (Lippman, [1922]1997; Goffman, 1974; Tuchman, 1978).

Many scholars argue that understanding the routines and values of news work will help explain how certain frames are selected over others (Reese, 2010). Factors such as time, space, money, and competence impact the way that news is selected and later processed (Tuchman, 1978). Newsworthiness is a type of selection criterion. News organizations must consider what the audience wants and what news is believed to interest the audience (Johansson, 2008). More importantly, organizations consider which news the audiences ought to take part of and what the audience ought *not* to acknowledge. Against this background, the media cannot be expected to function as transmitters of science issues that is ‘true to reality’ (Weingart, 1998).

Saliency refers to making a piece of information more noticeable, meaningful and memorable to the audiences (Entman, 1993). Saliency is not necessarily equated to frequency in a news text, although repetition is one way of making a piece of information more salient along with placement, or association to culturally familiar symbols.

So, *to* frame is to “select some aspects of a perceived reality and make them more salient in a communicating text” and frames then “define problems; diagnose causes; make moral judgements; and suggest remedies” (Entman, 1993: 53). The definition is used here as an organizing principle with its corresponding *frame elements*: problem definition, causal attribution, moral evaluation, and treatment recommendation. Based on subsequent commentaries of this original work (Van Gorp, 2010; Matthes & Kohring, 2008) a more comprehensive conceptualization of framing is needed in order to understand how this framing of an issue relates to the power struggle over meaning. This is the point to which the next section is dedicated.

4.1.2 A comprehensive understanding of framing

Frames do not have a single definition that is agreed upon and operationalized consistently by scholars (Scheufele, 2008; Lecheler & de Vreese 2019; Vliegthart & van Zoonen, 2011). Entman’s definition is an attempt at concentrating the accumulated knowledge of the field into an operational definition of framing and frames and the widely acknowledged definition has

since become a standard reference in much framing research. Still, review articles have found that these articles contain countless diverging operationalizations of the concept (Vliegenthart & Van Zoonen, 2011). Scholars have cautioned that the dispersion of framing studies may leave room for too great a deal of leeway in theorizing about the mechanisms and processes of news framing (D'Angelo & Kuypers, 2010). On the other hand, it may very well be the case that the field is still developing its "core knowledge," which would explain the many operationalizations of the concept (Entman, 1993: 51). It does not follow automatically that Entman's proposed definition is the most accurate, even though it is based on gathered insights from the field at that particular point in time.

Some have argued that there is not, nor should there be, a single paradigm of framing (D'Angelo, 2002). Rather, knowledge about framing has accumulated because researchers have sought to employ and refine many of the theories on the relationship between frames and framing effects. According to this perspective, theoretical diversity is encouraged as a means to gain a more comprehensive view of the framing process (D'Angelo, 2002). This study will therefore use Entman's definition as a means for uncovering frames while complementing it with valuable insights from subsequent framing studies of how frames end up in the news.

For example, Entman only briefly touches upon how the concept might be applied in a content analysis of news texts, which is the chosen method for this study, demonstrating the need for additional foundational blocks in the theoretical and methodological framework. Methodological considerations and operationalization of the definition will follow in the next chapter concerning method. It will become clear here and in the next chapter that Entman's definition functions as the organizing principle for uncovering the frames. The corresponding frame elements are means to systematically approach the data, while the elaboration of the theoretical understanding of framing which will follow, offers a broader base for discussing the role framing in defining societal issues.

4.1.3 Framing as a power struggle and a science communications necessity

In broadening the theoretical framework on framing, we must consider some valuable insights from frame building literature, framing cycles, value-based science communications efforts.

Frame building is concerned with how media frames are formed by taking into account the processes that influence the creation or change of a frame featured in news coverage (Scheufele, 1999). Processes that influence how a frame ends up in the news coverage include organizational and structural factors of the media system such as ideological leanings of the news organization, but also market constraints, differences in power of social and political

sources, or other national and international cultures and structures (Vliegenthart & van Zoonen, 2011). For example, due to organizational budget cuts science issues are increasingly being covered by political reporters that are more likely to frame scientific issues in a political manner (Nisbet & Fahy, 2015).

However, the focus on the agency of the journalist overshadows the fact that journalists tend to adopt the frames of their sources (Tuchman, 1978) especially with regard to unfamiliar and unexpected topics (Van Gorp, 2005). For example, political elites are commonly featured sources which tend to aim appeal to the partisan and ideological leanings of their constituents, providing frames which journalists can in turn rely on in their coverage. As a consequence, news organizations are believed to limit the range of information about a topic because journalists (as a result of the workings of the organization) judge that there are few credible sponsors (i.e. sources) about a topic (D'Angelo, 2002). This is not to say that journalists cannot neglect or negotiate the frames and reframe issues (de Vreese, 2010).

A variety of stakeholders compete for access to the news agenda and work hard to ensure that the issue is framed in the way they want (Nisbet & Huge, 2006). These entrepreneurs (e.g. interest groups, advocacy groups, activists) invest time and resources to create and redefine the issue at stake, by combining and applying ideas from other issue domains in order to make their message resonate with the values and beliefs of a target group (Fowler et al., 2012). Entrepreneurial action can propel frames into media coverage. Non-elite actors such as parental groups and religious groups have also influenced media coverage, despite their lack of material resources.

This is clearly demonstrated in studies of the media coverage of the HPV vaccine, which show that publicizing the political and moral views of the vaccine's opponents framed the vaccine debate in terms of sexual morality. The stem cell debate was also cast in terms of morality following the issue framing of religious groups gaining significant news coverage (Nisbet et al., 2002; Nisbet & Markowitz, 2014).

Scientists are also encouraged to frame science in ways that address an indented audiences' values, interests and worldviews (Nisbet, 2009). In the communication of science framing is considered to be "an unavoidable reality" (Nisbet & Scheufele, 2009: 1771), a necessity that stems from inherent differences in scientific discourse and public debate. Frames in science communication can bridge this gap and make information more accessible for non-expert publics in their decision-making processes (Scheufele, 2013). This raises normative questions about the role of the role of scientists in communicating science. In this context however, scientists are considered as non-political actors. Research puts forth scientists and science organizations as the potential source of counteracting politicization when it has occurred (Bolsen &

Druckman, 2015). Strategic framing efforts of scientists are understood as effective public engagement efforts that can circumvent polarization and unite various publics around common ground and must be tailored to fit the constraints of a diversity of media outlets (Nisbet, 2009). If so, science actors can establish themselves as one among a range of different perspectives that the media coverage can choose between, while leaving no promises of media attention.

Nonetheless, some research has shown that coverage of science has favored government, industry and scientists' interest or issue frames (Nisbet et al., 2003). When science-related issues are not in an overtly political stage (e.g. policy making), scientists are generally the recognized authorities on the causes, consequences and solutions pertaining to an issue (Nisbet & Huye, 2006). However, this pattern shifts in times of political contention as demonstrated in framing cycle research. The debate over stem cell research mobilized a wide range of religious pro-life interests which then rose to the top of the political and media agenda. In politically contested environments dramatic arguments based on ethics and social concern are often emphasized in media coverage.

Entrepreneurs (interest groups, advocacy groups, non-elite actors such as parental groups) invest time and resources to create and redefine the issue at stake, by combining and applying ideas from other issue domains in order to make their message resonate with the values and beliefs of a target group (Fowler et al., 2012). Entrepreneurial action can propel frames into media coverage.

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Vaccinations also include a range of values upon which various actors can rally, such as individual agency, government intrusion, parental liberties, private sector interests (Big Pharma), and doubts about western medicine (New Age beliefs) (Song, 2014; Hamilton, 2015). These interests may only apply to a minority of people, as did climate skepticism at first and concerns about teen sex regarding HPV vaccinations. But as research has demonstrated these interests can gain significant media coverage and shape the discussion on vaccinations. What is more, there is no evidence that HPV vaccines increase sexual activity among adolescents. It

seems as long as science seems to be at conflict with a groups values or economic interests there is potential for external stakeholders to get involved.

The present report cannot determine the origins of the frames in media coverage. Frame building or framing cycle studies are perhaps more fitting for such purposes, as they tend to look chronologically at the development and evolution of frames. The insights from these framing paradigms regarding organizational and structural pressures and framing contest are not lost on the present study, however. Examining the outcomes of such power struggles, i.e. the news frames, will at least give an indication of what interests are invested in shaping the debate. To understand the implications of media framing on public discourse, we must consider media framing as a product of these power struggles. Framing involves the interaction of media makers and their sources as well as other organized interests in the public arena – all drawing on social, cultural, ideological or political values in one way or another.

4.1.4 Overlaps in news framing and stakeholder framing

Evidently, there are alternative ways of defining issues within the social and political world. News framing implies that issues and events are presented to citizens as alternative characterizations of a course of action (de Vreese, 2010). For this reason, emphasis frames focus on qualitatively different yet potentially relevant considerations of an issue, by emphasizing different aspects (Chong & Druckman, 2007). For example, when thinking about vaccines, citizens could be presented with a range of perspectives including a cultural, moral, political, scientific, or economic perspective. Such frames are parts of political arguments, journalistic norms and public discourse, endogenous to the political and social world. Emphasis frames are thus more realistic and closer to the practice of news framing, frequently used by both political and media actors to present political reality (de Vreese, 2010).

News framing studies might also benefit from a general distinction with reference to the nature and content of a news frame, distinguishing between *issue specific* frames and *generic* frames. Issue specific frames pertain to specific issues or news events and generic frames are applicable to a range of different news topics (de Vreese, 2010). The frame “Clinton behavior scandal” (Shah, Watts, Domke, & Fan, 2002: xx) is clearly specific to the issue of the final stages of the Clinton presidency, while frames of *conflict*, *strategy*, *human interest*, *economic consequences*, *morality* and *responsibility* are applicable to different issues and events (Semetko & Valkenburg, 2000; Cappella & Jamieson, 1997).

Considering the inductive and exploratory approach of this study, one cannot assume beforehand what type of frames might be discovered in the empirical study. The methodological

approach in itself may, however, limit the study's ability of making claims about generic frames. Linking a frame explicitly to an issue and evaluation obviates the need to specify how general a frame must be in order to be classified as generic (Chong & Druckman, 2007). For example, the economic frame is considered a generic frame (Semetko & Valkenburg, 2000) but it also serves as a specific issue frame for welfare reform in other studies (Shen & Edwards, 2005). That said, claiming frames as issue-specific limits the opportunities for generalization and comparison (Vliegenthart & van Zoonen, 2011). It risks turning frames into content-analytical features in the detailed account of a single case.

There is perhaps a compromise position here that gives weight to the potential generalizability of issue-specific frames and testifies to the overlaps in news framing and other actors framing of science debates.

In the context of science policy debates, scholars have identified frames pertaining to economic investment, market benefits or risks, and local, national or global competitiveness as the 'economic frame' (Nisbet, 2010). This frame along with others such as *morality frames*, *scientific uncertainty* and *conflict frames* are defined by their latent interpretations of different types of framing devices such as catchphrases, metaphor and so on. But because these frames appear consistently in science policy debates, they are considered *generalizable* enough for a typology across science policy debates (Nisbet, 2009). In this way it gives weight to the idea that even though issues are may be studied in specific settings, they may still add to the cumulativeness of the field or across fields. They are also comparable to the generic news frames discussed above, involving conflict, economic consequences, morality etc., which have also been claimed to be applicable to many different issues (Semetko & Valkenburg, 2000). In this sense, it seems frames in science-related debates are not much different than news framing of other issues.

These arenas of framing overlap in their tendency for conflict and morality framing. As mentioned earlier, stakeholder's morality framing is likely to be woven into media discourse (Fowler & Gollust, 2015; Nisbet & Markowitz, 2014). And when science debates spark controversy the media is likely to cast the issue in terms of conflict. The media's preference for conflict framing has been widely documented. Simply altering media consumers to the fact that there are two sides to a debate and clarifying which political values and identities are associated with which side, tend to encourage motivated cognition in the public (Suhay, 2017; Fowler & Gollust, 2015). Others argue that while conflict and threat are basic criteria for newsworthiness, news selection is to some extent motivated by a balance of positive and negative news (Briggs & Hallin, 2016). A review of network coverage reveals that the most common storyline,

as the authors call it, was *real or potential health risk*, this is however closely followed by *triumph of medical science* and *heroism of patients* (Briggs & Hallin, 2016).

While these frames do not guide the analysis of the material, they provide some indication to what might be expected as a result of power struggles and general media praxis. It lies outside the scope of this study to determine how general the news frames in the empirical study may be. Just as it cannot with certainty determine if a frame is the result of organizational pressures or a by the journalist applied frame without interviewing them. Any reference to generic frames will be theoretical, yet valuable in a theoretical sense. Strictly methodologically speaking, the present study might reasonably aim to uncover issue-specific news media frames.

The overlaps in how science debates tend to be framed and how news media tend to frame issue testifies to the notion that all actors draw upon the same parameters for getting messages across to the public. However, frames in the news are the outcomes of how influential actors frame issues, how journalists and news organizations adapt and renegotiate the issue following the logic of the news genre (de Vreese, 2010).

4.2 Summary

Scholars caution that all-encompassing definitions of framing might stretch the concept in ways that risk weakening its potential analytical strength (Vliegenthart & van Zoonen, 2011). While others put forth that studies of frames would benefit from the knowledge of the foundational theories of early framing research emphasizing the structural and organizational factors of news work and power relations. The additional insights work to accentuate that news is socially constructed, resonating with Entman's understanding that some aspects of reality are selected and highlighted, and others omitted. It also enhances the understanding of the mechanisms affecting how these 'selections' are made by putting forth that frames are part of a "struggle for meaning between different actors that have unequal material and symbolic resources," and that frames are "the result of situated social and routinized processes" (Vliegenthart & van Zoonen, 2011: 105).

Pertaining to the particular case of science issues in the media, from science communications research offers a rich explanation of how various actors try to define science-related issues in strategic ways, political, moral or in terms of public engagement. These insights also highlight the media role in ultimately defining and shaping the discourse of science issues. Seeing as the news organizations have the discretion over what they select and how they define issues by making some considerations more salient, the next chapter turns to Entman's definition as the guiding principle for uncovering media frames.

5 Approaching media content

This section accounts for the bridge between framing theory and the way of operationalizing it by means of qualitative content analysis. Advantages and limitations of the chosen method are also discussed.

5.1 Qualitative content analysis

It has been argued that there perhaps two types of relevant framing studies, one that examines the development, prevalence or frequency of frames in real-world news coverage, and the other that examines the effect of frames on citizen attitudes, beliefs, or behaviors (Fowler et al., 2012). The present report joins the league of studies examining frames in news coverage and does so by means of content analysis. Content analyses lend themselves readily to researchers aiming to reveal and understand what type of media content is actually offered to media costumers. Typically, the field distinguishes between quantitative and qualitative content analyses. Quantitative content analysis is an approach to the analysis of texts that seeks to quantify content often in terms of predetermined categories, and in a systematic and replicable manner (Bryman, 2014). Qualitative content analysis does not aim to quantify but generally allows for categories or themes to emerge from the data, by a so-called inductive approach to the data. The latter will facilitate the analysis in the uncovering of frames in the news coverage.

Qualitative content analysis is one of numerous research methods used to analyze text data which is focused on the content or contextual meaning of the text (Hsieh & Shannon, 2005). It goes beyond merely counting words to examine and categorize communication into categories that represent similar meanings of either explicit (manifest) or inferred (latent) communication. These categories represent the frames in the coverage and the operationalization of uncovering a frame is discussed more in detail in the next section. Meanwhile, we must consider the different approaches to a text using qualitative content analysis which are the inductive and the deductive approaches. A deductive approach is typically applied in quantitative content analyses, which entails that the researcher formulates a hypothesis based on existing theory and tests this theory upon a data set (Bryman, 2005). The existing theory provides predictions about the variables of interest or the relationship between variables which helps determine a coding scheme that is applied in examination of the data (Hsieh & Shannon, 2005). An inductive approach works in the reverse way, that is, theory is the outcome of the observations (Bryman, 2014). And in the case of content analysis, this entails letting the frames flow from the data by

engaging with the texts. It should be noted that this can still be done in a systematic way (Hsieh & Shannon, 2005), a point that will be attended to in the section on operationalization.

In general, inductive approaches are appropriate when existing theory or research literature is limited (Van Gorp, 2010). This is arguably the case here considering the specific approach to the issue. For even though the news coverage of the HPV vaccine was examined to some extent in association with its FDA-approval in 2006, it has not been thoroughly examined since 2011 (Gollust et al., 2015). And to the best of the authors knowledge, no other study has explored the news coverage of the MMR vaccine against the background of the recent trend in politically associated lack of confidence in the vaccine. The approach to this issue might also be characterized as an *exploratory* approach, which has been argued to be the best way of exposing the spectrum of frames available for a topic of investigation using the inductive approach (Van Gorp, 2010).

An exploratory approach is typically difficult to conduct because it has few guidelines, steps are not well defined, and the direction of inquiry may change along the way (Neuman, 2014). However, this may be circumvented, at least to some extent, as the operationalization of frames will provide some guidelines for approaching the data. This is not expected to affect the flexible and investigative qualities of the exploratory approach that takes advantages of knowing that unexpected factors can have large implications. For example, an expectation might be that the immigration to a new nation would have a more negative impact on younger children than on older ones. Instead, the examination might show that children in the middle group, aged six to eleven, are the most vulnerable to the disruption of immigrating compared both to younger and older children (Neuman, 2014). This in turn, will help formulating and focusing questions for future research, by determining the feasibility of pursuing certain aspects of an issue and developing techniques for measuring and locating future data.

Notably, it does not employ the specific type of inductive theorizing that is termed grounded theory which involves formulating new theoretical idea from the ground up (Neuman, 2014). The report builds on established theories of framing science, framing theory and recent trends of politicization of science in order to develop these theoretical relationships. It is exploratory in the sense that it aims to explore if the frames in the real-world news coverage give indications that politicization of these vaccines is taking place in the news. It is inductive in the sense that it starts by observing the empirical world to reflect upon what is taking place (what frames are featured in the coverage) and then thinking about these phenomena in more abstract ways (if frames and political divides are related to each other in some way) (Neuman, 2014).

Finally, the main advantage of using inductive qualitative content analysis is gaining direct information about the world without imposing predefined categories upon the social

world. The value of conducting qualitative research lie in observing the social world as it is, with little prior contamination of the object of study (Bryman, 2014). The main disadvantage is that, despite this approach, the researcher fails to develop a complete understanding of the context. As a consequence, the results might not accurately represent the data. This is also difficult to detect, as replication of qualitative findings is hard to conduct since the interpretation will be profoundly influenced by the subjective leanings of the researcher. Despite these limitations, the present report values the flexibility of the approach by which unexpected and potentially substantial factors may be exposed. In sum, inductive approaches to detect news frames often produce rich knowledge, but are hard to replicate, which may in turn affect academic cumulativeness (Lecheler & de Vreese, 2019).

5.2 Operationalizing frames

As noted by several scholars, there is substantial conceptual confusion about the concepts adhering to the field of framing (Vliegenthart & van Zoonen, 2011; Scheufele, 1999). Although they may be theoretically intriguing, most frame definitions are vague and are difficult to translate into empirical indicators or an applicable operationalization of media frames (Matthes & Kohring, 2008). However, the definition as offered by Entman (1993), has been successfully operationalized for a quantitative content cluster analysis of frames and is thus deemed suitable for a qualitative frame analysis while also allowing a more in-depth consideration of latent meanings. It follows that the empirical approach to frame analysis is a systematic exploration of frames in news articles guided the notion that it is constituted both by manifest and latent meanings.

5.2.1 Manifest content

The idea of the following procedure is based on the understanding that a frame is composed of several elements, so-called frame elements (Matthes & Kohring, 2008). Frame elements are not words, but previously defined components or organizing devices of frames, that group together systematically to form a frame (Matthes & Kohring, 2008). It is deemed a suitable fit for a content analysis, both quantitative and qualitative, the major advantage of a qualitative approach being that also latent content can be taken into account. For this part of the method, the detailed and widely accepted definition offered by Entman (1993) is operationalized into coding categories of the organizing devices of a frame, i.e. frame elements. Following this definition, several frame elements constitute a frame: a problem definition, a causal interpretation, a moral

evaluation, and/or treatment recommendation. These might be understood as variables, both in a quantitative analysis as well as in a qualitative analysis, each of which can have several other categories, such as subthemes, types of actors, sources, contrasts, appeals (ethical, emotional and ethical) and more (Van Gorp, 2010). Metaphors, catchphrases, historical examples, depictions and visual images are five more such categories that have been conceptualized as manifest content by some (Van Gorp, 2010) and latent content by others (Nisbet, 2009; 2010; Nisbet & Scheufele, 2009). Not to confuse the manifest and the latent levels here more than necessary, the present study opts for the latter conceptualization. The organizing devices are set to correspond with the definition as provided by Entman (1993) and is complemented by consideration of latent meanings using the above listed functions, except for visual images.

Frame elements are discussed more in detail based on a previous study's (Matthes & Kohring, 2008) operationalization of Entman's (1993) definition. The problem definition includes the central issue under investigation and the most important actor. Both the central problem and actor mark the content of the debate in defining the central problem of the frame. Causal interpretation involves diagnosing the causes, attributing failure or success regarding a specific outcome. It indicates who is deemed responsible for the risks or benefits associated with the issue at hand, so while certain actors can be blamed for the risks, others can be attributed the possible benefits. A moral evaluation can be positive or negative and can refer to different objects. Finally, a treatment recommendation can include a call for or against action.

It should be noted that a frame in any particular text may not include all four functions (Entman, 1993). There must not be a consistent relationship between all frame elements in order to form a frame. In some instances, certain frame elements may be more effective depending on issue. Scholars take the example of disasters and scandals to demonstrate this difference (Scheufele & Scheufele, 2010). In the case of disasters, causal and responsibility considerations tend to dominate in public discourse and framing. While in the case of scandals, political standards and norms are violated and so value framing is likely to be more powerful than other types of framing. In other words, the level of controversy surrounding an issue will likely shape the discussion.

This study assumes, based on the formulation of the concept of frames as provided by Entman, that news items are generally structured in a way as to promote a single frame. It does not reject the notion that an article can contain multiple frames, and certainly not that audiences are "exposed to an even greater number of distinct frames across a series of articles" (Chong & Druckman, 2010: 253). However, if a frame is constituted by the aforementioned frame elements it is assumed that it does so in such a way as to "thoroughly pervade the text" and other frames that expert readers might pick up from careful analyses are "likely to possess such low

salience as to be of little practical use to most audience members” (Entman, 1991: 22). Furthermore, the idea that frames can be identified across several text (Matthes & Kohring, 2008) as demonstrated by previous studies labeling certain frames as reoccurring across science-related policy debates, for example (Nisbet, 2010).

As stated above, each frame element consists of several content analytical variables. This is referred to as the latent content, which give weight to the different elements. This is the notion is discussed further in the next section.

5.2.2 Latent content

As the purpose is to make use of the advantages of a qualitative approach, as opposed to a quantitative approach, we must consider the value of acknowledging latent meanings in the text. This is crucial considering that the theoretical perspective puts forth that framing can only be effective when connects to a latent structure of meaning to which the audience can relate (Van Gorp, 2010).

The main advantage of coding only manifest content, as is typically done in quantitative framing analysis, or more specifically cluster analyses, is consistency (Sheufole & Sheufole, 2010). Coding manifest frame elements is very reliable. However, the advantages of coding manifest content come with trade-offs in terms of validity. It has been argued that these clusters of frame elements are unlikely to adequately tap into the media frames it aims to uncover. The clusters may overlap with media frames to some extent, but it is unlikely that they will fully match them (Scheufele & Scheufele, 2010). Coding manifest content in framing analyses will give an estimate of what media frames may look like, but do not uncover a media frame in its “pure form” (Scheufele & Scheufele, 2010: 122). For example, while scientific progress (Nisbet & Scheufele, 2009) is likely a pure media frame in the context of biotechnology, “ethical aspects of scientific progress” is plausibly a cross between two pure media frames: scientific progress and ethics (Scheufele & Scheufele, 2010: 122). Identifying meaningful and theoretically valuable frames requires coding of latent content.

Latent coding looks for the underlying, implicit meaning of the content of a text (Neuman, 2014). For example, when reading a text and decide whether it contains erotic themes or a romantic mood. Latent content can be described as giving weight to different aspects of storytelling. One of the most important guidelines for the inductive approach is to not focus on what a text is about, but how the story is told (Van Gorp, 2010). Scholars argue that depending on the issue being covered, some frame elements are more effective than others (Scheufele, 2004). For example, in the case of disasters, causal inference and responsibility claims will

dominate. While in the case of scandals, when standards or social norms are violated, moral evaluation are likely to be emphasized (Scheufele, 2004).

Latent meanings are assumed to relate to the saliency aspect of the definition of frames, as it connects to “cultural symbols” (Entman, 1993). Latent meanings can give weight to certain considerations in the organizing structure of manifest content (problem definition, causation, evaluation, treatment). While also connecting the organizing structure to broader cultural understandings in public debate. Latent content refers to things like catchphrases, metaphors, allusions to history, culture, and/or literature that relate to cultural phenomena (Feree et al., 2002). News producers and audiences share a “cultural stock of frames” (van Gorp, 2007: 62) as “culture is the stock of commonly invoked frames” (Entman, 1993: 53). In turn, these latent aspects lay the basis for discussing how the frame relates to public discourse.

Latent meanings are of particular interest because cultural phenomena include norms and values (Van Gorp, 2007). So, in a sense, latent content links frames in media content to the audiences, because media workers apply and magnify certain considerations in presenting content to their audiences (Van Gorp, 2007). In the words of Entman, salience is determined in part by associating information to culturally familiar symbols (Entman, 1993). The salience of the information is in turn determined by the reader, or in this case, the researchers reading of the text.

Latent content comes with a trade-off in terms of reliability due to the subjective interpretations of the researcher, yet the validity of latent content can exceed the manifest coding because meaning is communicated in a range of implicit ways depending on context (Neuman, 2014). A combination of manifest and latent content is expected to strengthen the results. Manifest content relates to the way that the frame is organized while latent content relates to the broader social and cultural context.

5.3 Online news outlets

Two online newspapers, the New York Times and Fox News, were chosen for this particular study based on their ideological bias in online news reporting (AllSides, 2020) as well as their ideological make-up their audiences (Reuters, 2019). It should be noted that the online news content of the New York Times is deemed ‘left-leaning’ and the editorial/opinion section is considered to have more of a bias, termed ‘left’. Fox News online news content is deemed ‘right-leaning’ and the editorial/opinion section is termed as ‘right.’ The present report relies on the organization AllSides (2020) measures of media bias which holds there is no such thing as unbiased news, in the same way that scholars claim that there are no unframed messages

(Scheufele, 2014). Media bias like frames allows us to look at a news story or issue from different perspectives. Acknowledging bias is deemed a powerful tool in the sense that it helps those interested to better evaluate and understand the information that is provided to the consumers. Further information regarding the methodology can be found on their website (All-Sides, 2020). The left-right polarization audience mapping was conducted by the Reuters Institute (2019) which demonstrates the left-leaning audience of the New York Times and the right-leaning audience of Fox News.

5.3.1 Selections of articles

The rationale for the timeframe chosen for the HPV vaccine is that content analyses have mostly examined the period prior to its licensure by the FDA in 2006 until the end of the year in which the vaccine was recommended for boys as well as girls by the CDC, 1 January 2006 until the 31 of December 2011 (Fowler et al., 2015). Few major news events, comparable to a measles outbreak as in the case of the MMR vaccine, were identified beyond this particular date. Thus, in order to render some balance between the samples of articles covering the respective vaccines, the timeframe was set to 1 January 2012 to the 31 December 2019. The timeframe spanning from that of the latest content analysis regarding the HPV vaccine in an American context, up until the end of year 2019, the latest full year at the time of writing. Regarding the timeframe for the MMR vaccination, it was set to one full year, ranging from 1 January 2019 through 31 December 2019. The rationale for this being that the US suffered the largest measles outbreak since its elimination in 2000.

The collection of articles was made using the online search function of the respective news outlets website, nytimes.com and foxnews.com. The websites search engines differed both from each other and that of common databases for collection of online newspaper articles. Consequently, the search words for the respective websites also differ. This approach was nevertheless deemed the most comprehensive as commonly used databases (Factiva and ProQuest) for article collection rendered incomplete samples. Media type was set to “Articles” for both outlets and both vaccines, and the timeframe set as explained above. Search words for the HPV vaccine on the New York Times website included “HPV”, “HPV vaccine”, “Gardasil”, “Cervarix” and “Human papillomavirus.” The search words: “HPV”, “Gardasil”, “Cervarix” and “Papillomavirus” were used to search the Fox News website. The brand names for the licensed HPV vaccines in the US *Gardasil* and *Cervarix* were also included in the searches. Casting a wide net was assumed to minimize the loss of any relevant articles. The New York Times search for articles regarding the MMR vaccine render search words including “MMR” “Measles”,

“Mumps”, “Rubella”, “anti-vaccination” and “anti-vaxx.” While the Fox News article search included the search words: “MMR” “Mumps” “Measles” “Rubella”, “vaxx” and “anti-vaccination.” Fox News website did not allow for quotation mark searches, for example, a search for “Human papillomavirus” would include all articles on the website that included the first word “human”, which explains the odd search words.

At the first stage of selection, all ‘weekly quizzes’, letters to editors, ‘bits’, transcripts of video, and briefings were excluded. The second stage eliminated all articles not relating to the US context. The third stage eliminated all articles with a word count lower than 500 words. At the fourth selection stage removed articles that were not mainly about the vaccine or vaccinations. Indexed articles from other news sources as well as mixed-contribution articles qualified if they passed the threshold of selection criteria. All the professional editorials or columns were kept in the sample taking after previous studies (Quintero Johnson et al., 2011; Nisbet & Huge, 2006) as well as by the reasoning that the entire discourse is relevant to the study (Reese, 2010). Furthermore, articles meeting criteria were not discriminated based on section in the paper, such as ‘politics’, ‘women’s health’ or other.

The selection process, in the case of the HPV vaccine, rendered 51 articles in Fox News and 49 in the New York Times. Articles covering the MMR-vaccine counted 68 in Fox News and 75 in the New York Times. 15 articles were randomly selected from each of these four samples to render a total of 60 articles for the empirical analysis.

5.3.2 Coding of articles

All the articles for the analysis were then analyzed using the methodology described above. First, all articles were read multiple times in order to understand the article. After that, coding the manifest content relating to each of the defined frame elements: problem definition, actor, causal interpretation, moral evaluation, and/or treatment recommendation. Latent meanings were considered simultaneously as to give weight to the different frame elements, emphasizing for example moral evaluations in some cases and responsibility claims in others.

Further, latent meanings such as subthemes, types of actors, sources, contrasts, appeals (Van Gorp, 2010) invoked certain considerations such as a competing values, consequence or principle that established what were the stakes surrounding the issue (Chong & Druckman, 2010). Partisan cues were also considered. These features are discussed in particular in the analysis because they relate to the underlying cultural values of the vaccine debate.

Some articles were involved more straightforward categorizations based mainly on manifest content. For example, the moral obligation frame clearly connects to the organizing

principles. The problem definition being: unvaccinated children, responsible actor: parents, causal attribution: putting the infants of others at risk, and the proposed treatment for individual parents to vaccinate their children, rendered the frame: moral obligation (of individuals). Latent codes such as emotional appeals offered parents, gave weight to the frame element moral evaluation. Quotes like “we depend on the community to take care of each other. The babies have no options” (NYT, 02.05.2019) helped to categorize the article.

In other instances, the categorization was not as straightforward. In the political conflict frame, the articles had to be considered on an abstract level in which the problem definitions all involve competing interests in a political dimension, the main actor is one or more political actors in a broad sense (as actors of competing political interests), causal attributions were multidirectional, treatment solutions absent or aligning with one of the involved actors. Some of the articles lacked content in corresponding frame elements (such as treatment solution) but still overlap with clustering of the other frame elements. Other articles that correspond with the framing elements promoted perspectives that were so infrequent that it would not make sense to categorize these for the discussion to categorize these as separate frames. For example, two articles promoted what could be conceptualized as something along the lines of ‘border control versus public health’ frame but was considered a political conflict frame considering the clustering of frame elements. If one considered latent content only, other categorizations might make more sense, but one would perhaps need another definition of frames to uncover such frames. The latent content of these articles is still discussed, but under the overarching frame of political conflict.

This is just an example of which more will follow and that are discussed more in depth in a following chapter. First, a summarizing chapter on the aim and purpose of this study.

6 Purpose and aim

According to previous literature, Republicans express lower levels of intent to support the HPV-vaccine than their Democratic counterparts (Gans, 2014) and recent reports indicate that Republicans are less likely to say that it is important that parents vaccinate their children (Gallup, 2020). While there are certainly multiple explanations for these gaps, the present report argues that it warrants an exploration of news media coverage on these issues. This notion is based on previous studies demonstrating that value predispositions matter for how individuals form opinions relating to vaccination and other science-related issues (Kahan et al., 2010; Bruce & Lewenstein, 2005; Druckman & Bolsen, 2011) and that partisanship tends to guide citizens in their selection of news to favor like-minded media (Stroud, 2011) which in turn has been shown to have effects on audiences beliefs (Feldman et al. 2014; Hmielowski et al. 2014) as well as vaccination-related behavior (Baum, 2011).

Against this background, the present study aims to explore what type of coverage is provided to the New York Times' left-leaning audience and if it differs from the coverage provided Fox News' right-leaning audience. This could in turn, provide insight to why there might be a political divide in attitudes towards HPV vaccination and MMR vaccination. News coverage of the respective outlets is explored by means of framing theory and qualitative content analysis, as elaborated upon in the previous chapters. In short, the study's purpose is to investigate if the media are responsible for creating or reinforcing political polarization in vaccination attitudes.

In an inductively exploratory approach to the empirical material, the aim of the present study is to answer the following research questions:

(a) what frames are featured in news coverage on the MMR- and HPV vaccine in the selected media outlets respectively?

(b) how might the framing be understood against the background of an ideological divide in the support for two different vaccines?

7 Framing analysis

A short summary of the results and disposition is followed by an in-depth analysis on the frames.

7.1 Results

The content analysis of frames rendered the following frames: social progress, scientific uncertainty, political conflict, public accountability, professional integrity, moral obligation, and social disruption. These were determined by considering how the frame elements of manifest and latent content in the news items grouped together. The following analysis discusses the frames in reference to each vaccine and each outlet connecting it to the theoretical framework.

Contrary to the findings of previous studies, few of the frames found in the reporting on the HPV vaccine contained political elements. Instead, scientific perspectives dominated coverage on the HPV vaccine. More political elements were found in the reporting of the MMR vaccines. Standards of newsworthiness will likely explain this tendency (Briggs & Hallin, 2016). Events tied to the HPV vaccine were mostly new research findings, while the urgency of the measles outbreak and legislative debate dominated reporting on the MMR vaccination. As a continuation of this, the frames in coverage of the HPV vaccine were more focused on the vaccine per se, while the coverage of the MMR vaccine referred to vaccination as an activity, a course of action.

Moreover, some frames are perhaps best understood as more general tendencies of news media reporting, such as the political conflict framing, attributions of responsibility and morality framing (Semetko & Valkenburg, 2000). While others are specific to coverage of a specific vaccine, such as the *professional integrity* frame in reporting on the HPV vaccine and *social disruption* in the case of the MMR vaccine.

7.1.1 Disposition

The analysis is structured as follows: one vaccine is discussed at a time, starting with the HPV vaccine, followed by the MMR vaccine in a separate section. The frames featured in the coverage of a particular vaccine are discussed in relation to each outlet's specific use of the frames. Introduction of a new frame to the analysis is done by summary of its defining qualities at the benefit of the readers comprehension. Some repetition is unavoidable particularly in the section regarding the MMR vaccine as some frames, explained in the section for the HPV vaccine,

reoccur also in coverage of the MMR vaccine. Frames are indicated by italics in the flow of text.

Because the article is the basis of the frame, the analysis will discuss news items and their contents as examples of the types of frames uncovered. Quotes, context, sub actors, partisan cues, emotional appeals, keywords and so on are included in the following to facilitate the readers comprehension of how central ideas are connected to each other in the news items.

7.2 Analysis of frames

The HPV vaccine is discussed first with a summarizing discussion. Then the MMR vaccine with a summarizing discussion. Further comparisons are made in the next chapter.

7.2.1 Covering the HPV vaccine

The following analysis demonstrates that political elements were limited in both outlets framing of the issue. However, the use of political frames (political conflict and public accountability) between outlets differ and will be discussed here, but this is not considered to be defining of the media discourse regarding this vaccine. Rather, the scientific perspectives and sources dominate the reporting in both outlets.

7.2.1.1 Political conflict

The *political conflict frame* emphasizes conflict between individuals, groups, and/or institutions within a political dimension, predominantly featuring conflict over mandatory vaccination and religious, philosophical or medical exemptions to vaccination. The frame found here overlaps somewhat with other definitions of conflict framing as it is considered to be a central frame for reporting on a range of issues, namely, the journalist-driven interpretation (Semetko & Valkenburg, 2000). Most prevalent, not in reporting on the HPV vaccine, but the MMR vaccine. Its use in reporting on the HPV is discussed below but since its use is more defining of the mediated discourse regarding the MMR vaccine, it will be discussed more extensively in the assigned section.

Despite its minority then, one article was categorized as a political conflict frame in the coverage of the HPV vaccine. It covers the conflict between lawmakers and a parental group that opposes the legislative requirements of HPV vaccination in entering sixth grade, with religious and medical exemptions. The item features a Democratic source who refers to the CDC

recommendations of the vaccine's safety and effectiveness and "some Republican representatives [that] said they'll try to change the requirement legislatively next year" (Fox News, 18.08.2015). A Republican representative is featured conveying that philosophical exemptions ought to be adopted to allow parents to opt out if choosing to do so. Other Republicans are also being quoted saying "that the health department has gone too far" (Fox News, 18.08.2015).

The 'right to choose' rhetoric that the Republican actors seem to be supporting is characteristic of the pro-choice stance in the abortion debate, which is generally associated with liberals. Interestingly, in the context of vaccinations, it is instead conservatives who are applying this logic. Previous research shows that this "culturally constructed right to choose" has been used in vaccination discourse, parents taking on the role of the "informed healthcare consumer" (Kaufman, 2010: 23). Vaccine safety indeed exposes the problem of freedom, the capacity to determine the course of one's own and children's lives. If one is predisposed to believe that mandatory vaccination imposes on one's individual freedoms, this idea might be heightened by the references of public authorities 'going to far', a stance that is explicitly endorsed by Republican officials.

7.2.1.2 Public accountability

The difference between the *political conflict* frame and the *public accountability* frame is that the former features the political dimension of vaccination in terms of strategy and conflict, while the latter highlights the obligations and responsibilities that government officials have toward the citizens. According to the framing, public authority is understood as one entity to which claims can be made in the name of the public interest. In this sense, it must be considered a type of responsibility framing. Here, it was found in one news item in the sample, in the Times. It will also be discussed in the section on the MMR vaccine.

Here, the report rest on emotional appeal as it portrays the consequences of the HPV virus as a tragedy that government is not doing enough to counter. It is featured in an op-ed making claims toward politicians to include women's health issues on the Democratic presidential candidates' agenda, stating that "it's a tragedy that nearly a dozen women die a day of cervical cancer in the United States, many of them young women in the prime of life" (NYT, 28.04.2016). And that this is "utterly unnecessary" because the HPV vaccine prevents most cases of cervical cancer, yet few girls and boys get vaccinated (NYT, 28.04.2016). Democratic President Barack Obama is praised "for making HPV vaccinations and cervical cancer screenings typically free" but politicians are no longer considered to be "doing enough" to include

women's health issues in the political conversation (NYT, 28.04.2016). Mandated treatment is implied as the specific solution to the problem.

This frame will likely resonate with liberal audiences, and perhaps reinforce support for HPV vaccination, as liberal parents have been shown to express a higher support for HPV vaccination in general and HPV vaccine mandates in particular, than have conservative parents (Constantine et al., 2011; Saulsberry et al., 2019). Especially, since the Democratic President is used as a 'party cue' to endorse the idea that promoting HPV vaccination is a liberal agenda.

What is proposed here, the re-entrance of HPV vaccine discussion into the political arena, may be exactly what is needed where the goal is to increase national coverage. On the other hand, the re-emergence of the HPV vaccine in the political arena risks politicization along partisan lines. Still, it would also provide the potential of re-framing in a way that applies to a larger group of the population. The officially recommended target group of the vaccine has now expanded from teenaged females to include males, as well as older groups. In turn, the vaccine may come off as more of a wide-spread social problem than a separate women's health issue for example. This in turn, might affect how the vaccine is framed in future.

Notably, there are references to Democratic officials, which is perhaps a consequence of the left-leaning bias of the media outlet, that but the absence of tangible conflict in the news item rendered it a public accountability frame.

7.2.1.3 Moral obligation

Moral obligation framing conveys the moral responsibility of citizens to solve the societal problem of non-vaccination. It applies to individuals in capacity of being parents by highlighting their obligations toward their own children as well as their obligation toward other members of society, future generations even. The overall problem in reporting using this frame is unvaccinated children. There is clear causal attribution in the framing that holds parents responsible for not vaccinating their children and the consequences that this has for others. The treatment solution is that parents should vaccinate their children for the sake of the public good.

In previous research the morality frame is understood as an organizing device for arguments and interpretations that are valence neutral, meaning that it can take on different positions to an issue (pro, anti, neutral) although one position might be more common than other (Nisbet, 2009). Here, it is used solely for the pro-vaccination position by accentuating secular morality, that is, social prescriptions on how to act. Compare this to previous studies which show that sexual morality was a prominent argument *not* to get the HPV vaccine. Morality

frames in that context took on an anti-position to vaccination underscored by religious morality claims (Krakow & Rogers, 2016; Gollust et al., 2010).

One such frame was found in the Times reporting, none in Fox News reporting. The article attends to the parental misconceptions that are assumed to be causing low vaccinations rates. A physician source is used to convey the moral message, saying: “what ... parents don’t understand is that “we have a window of opportunity” to vaccinate children ... We can’t say we’ll let them decide later in life” (NYT, 03.03.2017). Going on to say that “[w]e parents have a responsibility” and that “[w]e have to ask ourselves why we’re putting future generations at risk unnecessarily. We have to change the conversation from having sex to saving lives.”

There is evidently a heavy emphasis on the moral duty of parents to vaccinate their children, for their children’s sake and generations to come. The audience is invited to think about the issue as an issue that requires individual action for the ends of collective benefit. The framing is assumed to resonate with individuals that support a communitarian society, in which the needs of the collective take precedence over those of the individuals (Kahan, 2010).

7.2.1.4 Reporting on scientific uncertainty

The science frames found in the empirical analysis were predominantly the *social progress* frame in addition to the *scientific uncertainty* frame. Most surprising perhaps is that only one news article in the whole sample (the MMR vaccine sample included) featured a *scientific uncertainty* frame. It is remarkable because the scientific process involves uncertainty in general, and highlighting scientific uncertainty has been used in pursuits of political agendas in particular. Additionally, the media has been accused of overplaying the level of uncertainty of science (Corbett & Durfee, 2004; Boykoff & Boykoff, 2004). This tendency refers mainly to the context of climate change reporting, but also to the context of the MMR-vaccine-autism coverage (Clarke, 2006). Clearly, it does not apply to the coverage of HPV vaccinations to any large extent. Only news item in the whole of the was categorized as *science uncertainty* framing found in Fox’s reporting on the HPV vaccine.

The problem definition is vaccine safety and the scientific community is the main actor and used as a source. There are subtle responsibility claims directed toward the science community for not being able to detect side effects earlier, but it is understood as an inherent feature of the process, as researchers have “continued to monitor the safety of the HPV vaccine” (Fox, 02.10.2012). The solution is continued research, sources conveying that “ongoing studies of HPV are still needed to examine the risk of side effects” and that “they noted that future studies

should attempt to rule out effects that could be caused by pre-existing conditions” (Fox, 02.10.2012).

In fact, it is an example of what might be reasonably expected of reporting on new scientific findings that has found mild side effects of the HPV vaccine. The framing might be resembled to a definition found in the previous literature in which uncertainty is communicated as “an inherent feature of the scientific process or that further research may uncover unknown errors in our current understandings” (Gustafson & Rice, 2018). This type of phrasing has been tested as in a study of the perceived acceptability of different causes of uncertainty about food safety and was deemed the most acceptable type of uncertainty by the respondents (Gustafson & Rice, 2019).

Against this background, and the fact that uncertainty frames were so very few, it seems unlikely that such a frame would prompt Fox readers to disregard the vaccine. While uncertainty claims were launched in the context of climate change to sow skepticism, it had clear ideological tenets. This frame does not mention the political sphere at all.

7.2.1.5 Social progresses of research

The conceptualization of the frame *social progress* overlaps with previous literature listing it in a generalizable typology of frames in science policy debates. It was conceptualized as a frame that defines the science-related issue as “improving quality of life, or solution to problems” and “accenting the benefits to society” (Nisbet & Scheufele, 2009: 1772-74). It has previously been used to highlight the promise of nanotechnology for future environmental and economic conditions (Nisbet & Scheufele, 2009).

Here, the frame underscores vaccines as the logical solution to current societal problems relating to the spread and consequences of disease and infection (this is, after all, the purpose of vaccines). The frame defines vaccination as way to improve the quality of individual and public health and is closely tied to reporting on the HPV vaccine.

The problem definitions are related to the HPV virus and the main actor is the scientific community which is attributed the benefits of scientific progress, and the public is portrayed as beneficiaries of the *social progress* that the vaccine brings about. In terms of frame sponsoring, it clearly originates from the scientific community as virtually all items cover to scientific findings and use representatives from the community as sources. It provides social prescriptions on how to act, it is implied or explicitly stated that targets groups should be vaccinated. In this sense, moral evaluation might be considered the weightiest frame element as it is implicitly

understood as promotional of the vaccine. The frame can therefore not be considered valence neutral, it is pro-vaccination.

In Fox News the social progress frame is used to highlight the successes of the vaccine in reducing infections and death rates caused by the HPV virus. Different types of cancers, which are undisputable threats to public and individual health in the minds of many, demonstrate the social problem to which the HPV vaccine can provide a solution.

Fox News reports on research findings that show that the HPV virus causes a “mysterious” cancer, but that vaccinations have been found to protect against this cancer, which “further highlight[s] the importance of vaccinating against HPV infection” (Fox, 19.01.2016). Words like mysterious alludes to scientists having solved a puzzle that in turn benefits society. Another news item reports on other research findings that highlight the successes of vaccination in reducing infections, underscoring “how well it [the vaccine] works now that it is in general use” (Fox, 20.06.2013). These quotes are to demonstrate the inherent promotional aspects of the frame.

Compared to other frames it does not connect to specific societal or political values, so it cannot be analyzed in reference to such elements. The frame alludes to the general objective of improving public health. What is more, the vaccine is often referred to as a cancer vaccine. This can be understood as progress in terms of abating the stigma surrounding the vaccine, seeing as previous research has expressed concerns that focusing on sexual morality, news articles might prime audiences to think about the vaccine from a rather limited viewpoint (Quintero Johnson et al., 2011).

Such wording may be especially important considering the right-leaning composition of the Fox News audience. That is, as previous research has highlighted that many of those who oppose HPV vaccination seem to believe that supporting HPV vaccination somehow translates to condoning of teen sex (Wolters & Steele, 2018). Again, opposition tends to come from people holding more traditional views regarding sex, e.g. more conservative (Reiter et al., 2011; Constantine and Jerman, 2007) and more religious individuals (Constantine & Jerman, 2007). News coverage that furthers the sexual morality argument might activate heuristics that suggest avoidance of an activity which appears as questionable in respect to sexual morality (Quintero Johnson et al., 2011). Focusing on the cancer prevention aspects of the vaccine rather than the sexual nature of the transmission of HPV might invoke other heuristics. It is, nevertheless, virtually impossible not to address the fact that HPV infections and related cancers are sexually transmitted, which might still activate associations to teen sex if one is predisposed to think about the vaccine in this way.

In the New York Times the frame is used to emphasize the progress and future benefits of the vaccine. The technical or descriptive aspect of the frame relative other frames is demonstrated by an emphasis on factors such as effectiveness of the vaccine. One news item reads that: “[t]he vaccines are so effective that when given to enough young girls, they also give partial protection to both unvaccinated girls and boys” (NYT, 27.06.2019) and report states that ”cases of HPV infection in teenage girls had decreased by almost two-thirds. And in women in their early 20s, who have lower vaccination rates and may already have been exposed to the virus before being vaccinated, the vaccine reduced cases of infection by more than a third” (NYT, 07.04.2017). This is characteristic of both the New York Times and Fox News reporting using the frame, using statistics to underscore the positive developments.

It seems the potential of this frame in influencing attitudes for the vaccine and abating stigma, regardless of ideology, depends on not so much on the frame as on *what* the benefits are and for *whom* they are beneficial. A major hurdle in communicating about this particular vaccine is the delay of HPV related diseases. Cancers can occur two decades after an individual has been infected with a cancerous strain of the virus (WHO, 2020). It is not certain that audiences would make the connection between the fact that the HPV vaccine has been found to prevent throat cancer, typically found among “heterosexual middle-aged men” and “the need to “vaccinate both boys and girls” (NYT, 18.07.2013). This is notion goes against the idea of framing, purposing that the ‘what’ of the story will matter for how it is received. Alternatively, that the ‘how’ (the storytelling) in form of a social progress frame might not be enough to abate stigma regarding sexual morality. This will be a dimension for a framing effects study to investigate.

7.2.1.6 Professional integrity – the responsibility of health care experts

The frame *professional integrity* might be conceptualized a responsibility frame. The frame presents the issue in such a way as to emphasize the responsibility of a specific actor: physicians in their relationship to patients (or rather parents of patients). It attributes the health care experts as an institution with responsibility for the cause and the solution to the overarching issue of hesitancy to vaccinate. The frame is used to convey the obligation of doctors in addressing parental misconceptions and actively promoting the vaccination in line with the scientifically based recommendations that guide their profession. By consequence, parents are pardoned for holding misconceptions that has created skepticism among toward the vaccine. It differs from the public accountability frame, which is directed toward governance.

The idea here seems to be that misconceptions and moral convictions are reasonable for non-experts, but that there is no room for moral convictions about teen sexuality in the capacity of being a physician. In this sense, it connects to the overarching idea that expert opinion should not be political or value-laden but guided by scientific in science. This specific frame is not featured in reporting on the MMR vaccine at all. Rather, it seems to be a response to the issue-specific public misconceptions the HPV vaccine.

Fox News use make use of federal official sources to convey that problem of nationally low vaccination rates can be attributed to doctors failing to inform and promote the HPV vaccine. Many of reasons that parents list for not pursuing HPV vaccinations can be related to failures of health care providers in informing parents, as they many are under the impression that the “vaccine was not needed” or because “no one recommended it to them” (Fox, 25.07.2013). ‘No one’ in this context refers to doctors. A federal source is quoted saying that “the data showed that if HPV vaccine were given every time a young person went to the doctor to get another vaccine, the completion of those series would be at 93 percent” (Fox, 25.07.2013). Meaning that physicians are failing at conveying the importance of the HPV vaccine relative to other vaccines. Against the background of discrediting the promiscuity myth, it is proposed that “doctors need to take on a more active role in discussing HPV and the vaccine with parents” since “[r]esearch consistently shows that a provider’s recommendation to vaccinate is the single most influential factor in determining whether a parent gets their kid vaccinated” (Fox, 25.07.2013). The emphasis on health provider responsibilities in the frame is in this way exonerating of parental responsibility, as they cannot be blamed for these institutional shortcomings.

This frame is also used in the op-eds of the Times. Commentators argue that “the uptake of the cancer-preventing vaccine is abysmal” for “one reason: Doctors don’t want to talk about sex” (NYT, 19.04.2014). In this example, physicians’ responsibilities are understood against a range of public misconceptions, including presumed promiscuity. Again, the public is not blamed for holding these beliefs, while doctors are obliged to correct them. A final quote sums up the stance, that should be understood against the background of the thousands of deaths that might follow if children are not vaccinated, reading that this would be “unconscionable ... [a]nd doctors will have only themselves to blame” if they do not attend to these parental concerns (NYT, 19.04.2014).

It might best be summarized as a counter-framing to the “pervasive belief that when parents, or even doctors, give the vaccine, they may be condoning sexual activity in young adolescents” (NYT, 09.11.2015). The frame is interesting for at least two reasons. First, it is a testament to the effects of framing an issue in a particular way. As we know, at the introduction

of the vaccine to public debate it was framed in terms of sexual morality, a concern raised mainly by a conservative religious interest group. Clearly, this framing has lingered and is affecting parents (and perhaps doctors) in their decisions to vaccinate or recommend vaccinations. Secondly, it implies that personal values and expert opinion should be kept separate. Many argue that it is problematic when personal values of experts influence the scientific process, especially when interpreting evidence for it violates scientific integrity (Suhay, 2017; Douglas, 2015). Medical care is expected to be based on scientific evidence and personal values are not considered appropriate evidence in this process (Suhay, 2017). Considering the tension between science and religion in the US (Gauchat, 2015), it might also be understood as an attempt to counter the influence of faith-based arguments against HPV vaccination. Needless to say, the framing does not rely on religious moral tenets in attributing responsibility to health care experts, but rather upon ethical obligations toward the patient and the scientific process itself.

There is not politicization going on in this frame, however, researchers have found that previous politicization of the vaccine seems to have spilled over to affect attitudes regarding doctors in this context (Fowler & Gollust, 2015). They found that prior (controversy in public debate) and current (experimental exposure to politicization) influenced trust in doctors and medical science more generally. Political conflict narratives undermine the overall public trust in experts, although it does not test the effect for conservatives or liberals separately. If trust in doctors is low, this type of framing that highlights doctors' shortcomings might further the idea that one cannot "trust that what doctors are doing is right" (Fowler & Gollust, 2015) and create cynicism toward medical experts. Which can in turn have health-related consequences such as doctor visit propensity.

7.2.1.7 Summary and discussion

Overall, the framing of the vaccine in both outlets is quite similar. The main difference is the political conflict frame and scientific uncertainty frame found in Fox's reporting and the political accountability frame and the moral obligation frame in the Times. The political conflict framing is interesting considering that it accentuates value of minimal government restrictions on individual behavior which is commonly associated with conservatives (Newman, 2010). Conversely, the Times framing that puts forth political action as a way to promote vaccinations in the public accountability frame. The framing in Fox News taken as a whole does not indicate that the vaccine is still politicized, not in media discourse at least. The same goes for the reporting in the Times. This reasoning is based on the fact that the framing includes minimal political elements (e.g. partisan cues, political conflict settings) and the fact that the social progress

frame dominated in both outlets. As mentioned, some researchers believe that framing science can provide a venue to improve the public's understanding of the importance of science issues. This might be understood as such an instance, seeing as the social progress frame has been proven to be the most effective frame for swing publics in conveying the importance of teaching evolution in schools (Nisbet, 2009).

What is perhaps more interesting is the absence of some previous types of framing. When the HPV vaccine emerged, journalists relied on a familiar expert source: conservatives, to provide the moral counter-argument to an emerging issue, namely the notion that the HPV vaccine could encourage young girls engage in riskier sexual behaviors (Fowler et al., 2012). Literature on the framing cycle of any emerging issue explains this initial framing, in which the 'emergence' and 'conflict over problem definition' phase of framing requires differing viewpoints. It is clear now that the resolution phase—in which one side comes to dominate and public policy followed—favored the moral argument, to which the media, the science community and health experts must now respond. Instead, the social progress frame dominates the coverage while voices of interest groups, such as religious advocacy groups for traditional family values, do not. This tendency, and the lack of political aspects in framing, can also be explained by the framing cycle. The dominance of this frame indicates that the vaccine debate has returned to a more technical or administrative state in the policy and public arena (Nisbet & Huye, 2006). During the examined time period the vaccine was not in an overtly political stage, few actual news events which might explain the lack of political aspects in framing. There were few actual news events during the examined decade in which such a frame would naturally form. In the absence of powerful leaders pushing a frame, journalists would have to construct such a frame, and 'crusading journalism' is both time consuming and something that the profession discourages (Lawrence, 2010).

In sum, there are no strong indications that either of outlets are providing a political context in which to understand the vaccine. Rather, it could be argued that there is generally a promotional stance toward the vaccine that highlights scientific findings of social benefit, as opposed to covering the previous narrative of sexual morality claims.

7.2.2 Reporting on MMR vaccinations

To reiterate, the overall reporting of the MMR vaccine centered on vaccinations rather than the vaccine in itself. Vaccination is cast in a political and partisan setting when relating to legislative debates. It is otherwise framed in terms of responsibility claims towards authorities and

moral obligations of individuals. Finally, the anti-vaccination movement is portrayed as a threat toward society.

7.2.2.1 Political conflict

The *political conflict* framing portrays the issue as a conflict between actors: individuals, groups, and/or institutions within a political dimension. Causal attributions assign blame to one or more of these political actors for creating the conflict. It is predominantly featured in reporting on the conflict over legislative mandates for vaccination and religious, philosophical or medical exemptions to vaccination law. Where treatment solutions are suggested they align with one of the conflicting positions, such as strengthening vaccination laws. In other instances, treatments are not suggested or implied and the question is left open. For example, one news item concludes by just referencing the conflicting positions reading that “supporters argue the new legislation would protect children ... and those in opposition say vaccines are not universally safe” (Fox, 14.09.2019).

A Fox News report on some states wanting to tighten vaccination laws for children by removing religious exemption reads: “while doctors and lawmakers argue that it would help stomp out the disease that was all but eliminated until this year, a group of Connecticut parents is up in arms about the idea” (Fox, 10.05.2019). Going on to portray the conflict as one between a ‘civic duty’ to vaccinate on the one hand and religious freedom, parental liberties, and the right to education on the other. A Republican legislator is quoted cautioning that removing religious exemptions would result in “deny[ing] children access to a public education” and that the issue becoming “overtly politicized” (Fox, 10.05.2019). Interestingly though, the report conveys both political parties as being split in their stance on the issue. From an audience perspective then, there are mixed partisan cues to be found as Democrats and Republicans endorse both sides of the conflict.

The report emphasizes arguments that, in public discourse at least, have been associated with liberal respective conservative reasoning for opposing mandatory vaccination. The conservative principles being parental liberties and religious freedom to which supporters of limited regulation might respond, while tapping into an (anecdotal) liberal distrust in ‘Big Pharma’: private pharmaceutical companies and the potentially corrupt relationship between government and such companies (Wolters & Steele, 2018). A Democratic legislator that is disappointed in his party is quoted saying that Democrats are “handmaidens to the pharmaceutical company whose only mission is to increase sales and profits” (Fox, 10.05.2019).

This is an example of when the issue is simply portrayed as one of conflicting positions without a clear treatment solution. In absence of consistent partisan cues, readers have to rely on the values that resonate most with their own values. There are few actual Republican ‘partisan cues’ throughout these reports.

In fact, the reporting in Fox most often focuses on the conflicting sides of Democratic lawmakers in favor of mandatory vaccination and the opposition of parental interest groups claiming that it violates their religious freedom, constitutional rights to due process, and that forcing vaccination would put their children at risk to harm (Fox, 15.04.2019). The parental group is quoted claiming that the mandatory vaccination orders “grossly understate the risk of harm to children, adults and the general public from the MMR vaccine, while at the same time overstating the benefits” (Fox, 14.05.2019). This is contrasted by claims from the federal public health agency CDC, asserting that the vaccine is effective and safe. Nonetheless, this type of framing risks following the reporting trend of “false balance reporting” in which a scientifically based perspective alongside is featured alongside other perspectives with less or no support (Clarke, 2006). It has been cautioned to give an erroneous impression of scientific certainty about the evidence of a scientific issue, creating a disconnect between scientific discourse and public discourse, but it does not address polarization between groups.

The reports in which political conflict framing was most heightened were expectedly the opinion pages. In Fox News, political conflict takes on a different form than conflict over legal mandates. Instead, vaccination is used as a lever in the call for stricter border control and security.

Fox op-eds use of the frame portrays a conflict between illegal immigrants entering the US and American citizens, which is sponsored by a conservative interest group, the *Independent Women’s Voice* (IWV), their self-expressed goal being “to share conservative, free market ideas and solutions with women and Independents” (IWV, 2020). It stresses the need for vaccination and emphasizes the threat that the spread of measles poses to US public health. A threat embodied explicitly by illegal immigrants entering the US with unclear vaccination statuses, deemed a “CDC public health loophole [that] should give us all serious pause” (Fox, 2019x). The idea is that those who enter the country illegally and unvaccinated threaten an already declining herd immunity among American citizens. In sum, claiming that “border security is a public health issue” (Fox, 2019x). This reasoning taps into a longstanding conflict between Democrats and Republicans regarding border security, heightened by the election of the current President Trump. In fact, op-ed article explicitly mentions the polarizing issue, reading that:

“We hear arguments that attempting to control the border and stop the chaos at the border is racist or xenophobic. The opposite is true. The fact is, allowing this to continue because Democrats remain obsessed with political vengeance against the president first harms those migrating. To not secure the border and manage immigration is the abandonment of people seeking a better life in this country (Fox, 06.06.2019).

The reasoning brings another, unexpected, dimension of political conflict to the issue of vaccination. A clear example of an interest group combining and applying ideas across issue domains to make the message resonate with the target group (Fowler et al., 2012). Still, the question here is, how the use of the frame in this way might influence readers attitudes toward the MMR vaccine. Is it possible that the suggested threat of unvaccinated illegal immigrants toward the already strained US public health situation of increasing unvaccinated Americans will have an impact of upon vaccination attitudes? The present study does not have the means to investigate this specific association, such examinations are most suitable for framing effects studies. It is possible that attitudes toward the issue of border control could spill over to affect attitudes toward vaccination, when the issue is presented in a dichotomous way. The value of protecting the public health of *American citizens* might resonate with the audience when it proposed to be threatened by illegal immigrants.

In the New York Times’ reporting, the frame is used to portray the conflict over vaccination laws among individuals and legislators, and between individuals and legislators, as it is “pitting neighbors against neighbors” and is “sometimes paralyzing statehouses” (NYT, 14.06.2019).

One report conveys that only a handful Republicans support the limitation of exemptions because they believe it infringes on individual liberties, and Democrats getting a lot of political pushback for wanting to eliminate exemptions. It also includes moral evaluations calling vaccination “the norm” (NYT, 14.06.2019). Quoting mostly Democratic sources, the report focuses on the Democratic support for eliminating exemptions calling it “a step forward” (NYT, 14.06.2019), the position underscored by reference to the disproportionate backlash from protesters against Democratic legislators. Historical references to the Holocaust in turn function to delegitimize the oppositional position, protesters having worn yellow stars and called the legislators “Nazis” (NYT, 14.06.2019). This group is claimed to be “small and impassioned ... drawing support from conservatives wary of what they see as government intrusion into personal life decisions” (NYT, 14.06.2019).

The report also alludes to the political positions crossing issue domains. It reads that a “bill was scuttled when Republicans in the State Senate walked out of the session and could not

be coaxed back until both the vaccine bill and a gun control bill were dropped” (NYT, 14.06.2019). Grouping together mandatory vaccination and opposition to gun control might lead the public to believe that both issues adhere to the conservative sphere, as the right to arms has manifested itself as a conservative issue in public discourse. Even more so when it is conveyed that the issues were equally deal-breaking for the Republicans in the state senate.

The Times also use the frame to emphasize the value of mandatory vaccination without referencing Democratic endorsement but implying it and referencing Republican opposition explicitly. Expanding exemptions to vaccination laws is referred to as “elevating fringe views” and eliminating exemptions is called “a public health success” (NYT, 06.03.2019). While also conveying that a Republican legislator’s reported spread of misinformation, him having claimed that “people weren’t dying of measles in America because of “antibiotics and that kind of stuff,” could have “a great deal of influence on public health when it has the force of law behind it” (NYT, 06.03.2019). The conflict was thus conveyed as one between Democrats implicitly in favor of mandatory vaccination as opposed to Republicans advancing fringe views and on top of this, spreading misinformation. Which in turn might signal to a liberal audience that mandatory vaccines are important and spread of misinformation belongs to the Republican realm.

This type of portrayal could in turn play into the for-science versus anti-science framing in public discourse, as mentioned earlier, the former having been attributed to Democrats and the latter to Republicans (Hardy et al., 2019). Researchers suggest that science is becoming an ‘identity marker’ for liberals, which might lead conservatives to infer that science is driven by a liberal ideological agenda and therefore deem it less credible (Hardy et al., 2019). Identity marker is another conceptualization of partisan cues which informs partisans what it means to be associated with a political party such as the Republicans or Democrats. Framing effects studies show that framing that rests on such cues has the potential to further politicize and polarize science and science-related issues (Hardy et al., 2019). Judging from these results, it seems this constructed idea may be stretching into the media discourse of the MMR vaccination as well.

7.2.2.2 Public accountability

To reiterate, *public accountability* framing focuses on the responsibility of public authorities to act in the interest of members of society. Here, it mainly applies to minors in the capacity of being citizens. There is clear causal attribution that emphasizes government shortcomings in realizing the claims of this specific group. The suggested treatment solution is legislation. In a sense, this framing is an expression of the normative role of the media: acting as an important

channel of communication between policymakers and the citizenry and in turn political institutions accountable for the realization of the public's political claims (Esser & Strömbäck, 2014). The frame was used both in the Times and in Fox News to promote MMR vaccination on behalf of minors.

In Fox News, the frame was featured in a report on teenagers being denied vaccinations by their parents, taking “matters into their own hands” by turning to social media platforms for advice on how to pursue vaccinations (Fox, 12.02.2019). The problem is that persons must be of 18 years of age to make decisions about having procedures or medical treatment. Parents are thus, as the first instance of authority and legal guardians of their children, being held responsible for denying children adequate medical treatment. Parents are portrayed as unjustified in their anti-vaccination views, quoting children claiming that their parents think “vaccines are some kind of government scheme” and having “[fallen] down the conspiracy theory rabbit hole” (Fox, 12.02.2019). The proposed solution being state intervention, as a second instance of authority as their parents have failed to meet this demand. The idea is that government has the responsibility to help these children. This, in form of legal measures that accept that minors possess the maturity to decide if they want a particular health care treatment. Interestingly, this reasoning is also based on a type of ‘right to choose’ argument that applies to minors as citizens with the right to choose to have vaccination, as opposed to the previously discussed argument of individuals having the right to *refrain* from taking them.

The framing is also used in a Fox op-ed, calling for a national vaccine initiative. It conveys that “vaccine programs are one of public health greatest accomplishments” but that it is a victim of its own success as “today’s parents may not understand how devastating these diseases can be and how serious a threat they pose” (Fox, 14.03.2019). Responsibility is attributed to the highest legislative instance of public authority to solve this problem, as Congress is urged “to provide sustained, predictable and increased funding for a strong public health system and a national vaccine initiative” (Fox, 14.03.2019). The treatment is not legislation but an extensive cultural understanding of community specific concerns and barriers to getting immunized. Emotional appeal is used to convey that parents need help to “protect themselves and their loved ones from dangerous, vaccine-preventable disease” (Fox, 14.03.2019).

A report in the Times also attends to this issue of mature minor legislation, where the idea of children having the right to choose to have vaccinations is explicitly referenced. It reads that: “[y]oung people are often more conscious about the misinformation on the internet and can in many cases disagree with parents who have bought into unfounded and dangerous anti-immunization diatribes and pseudoscience” and that [t]hese young people have a right to protect themselves” (NYT, 11.03.2019). It also taps into the idea that scientific recommendation should

guide policy, as opposed to pseudo-science guiding some parents. In the context of the climate change debate public accountability framing help to move the issue away from questions of uncertainty to focus on the responsibility of politicians to follow scientific recommendation (Nisbet & Scheufele, 2009; Nisbet & Mooney, 2007).

Both the Times and Fox News framing puts forth the idea that parental liberties have to give way to the rights of children, in capacity of being their own individuals. There is no signs of conflict in the framing, rather, government is understood as here as one entity toward which citizens can make claims. In fact, the issue is conveyed as a bipartisan issue, laws “ranging from liberal Oregon to conservative South Carolina” (NYT, 11.03.2019). In essence the framing is deemed a type of responsibility framing that points to structural obstacles in promoting vaccinations among citizens. This can be understood as a unifying frame, rather than polarizing, as it has been shown that framing issues in this way encourages people to see problems as a collective responsibility (Iyengar, 1991).

7.2.2.3 Moral obligation

Again, *moral obligation* framing conveys the moral responsibility of citizens to solve the societal problem of non-vaccination. It applies to individuals in capacity of being parents by highlighting their obligations toward their own children as well as their obligation toward other members of society. The overall problem in reporting using this frame in unvaccinated children. There is clear causal attribution in the framing that holds parents responsible for not vaccinating their children and the consequences that this has for others. The treatment solution is that parents vaccinate their children for the sake of the public good.

Fox News uses the frame both in reporting and op-eds. In a news item resting heavily on emotional appeal as a way to personalize the issue of unvaccinated children. A mother’s perspective is depicted as the measles outbreak hinders her and her son, sick in leukemia and thereby ineligible for the vaccine, from going anywhere. The mother is quoted saying “that she isn’t questioning parents on their love for their children but urges them to make educated vaccination decisions for the sake of her son and others like him” (Fox, 04.03.2019). It is common in morality framing that journalists have someone else raise the question of how to behave (Semetko & Valkenburg, 2000). The appeal to vaccinate is strengthened by a physician source calling the act of bringing unvaccinated children to a pediatric office “inappropriate” because patients with cancer and congenital heart disease could “potentially die if they contract one of these diseases” (Fox, 04.03.2019). It is implied that vaccination is a moral responsibility because it puts vulnerable persons at risk.

The Times report on a similar situation whereby parents of infants are depicted as being “trapped in a dangerous limbo” because they want to but cannot vaccinate their children because they are too young for the vaccine to be effective, making infants especially vulnerable to the measles outbreak (NYT, 02.05.2019). For parents of infants that have “grown acutely aware” of their particular vulnerability following the escalation of the outbreak has been “agonizing,” according to the article (NYT, 02.05.2019). A mother is quoted about parents who do not vaccinate their children saying “[i]t’s not a choice for me, because my baby cannot be vaccinated. The folks who are choosing not to vaccinate their children or be vaccinated themselves are putting my child in danger” (NYT, 02.05.2019). This is a way to convey that refusal to vaccinate is an *individual* choice. Another mother is quoted saying that she believes “people have gotten a little selfish ... We depend on the community to take care of each other. The babies have no options” (NYT, 02.05.2019). This is understood in reference to families that believe that vaccines cause more harm than good which further manifests the issue as a matter of individual responsibility.

This framing highlights the fundamental issue of the individual actor’s agency as opposed to the collective agency of public authorities to enforce social behavior, but it is set in the context of consequences of non-vaccination, which will likely have an impact upon how the framing comes across. A strongly held attribution among political conservatives is that individuals are responsible for their fate (Gollust, 2016). It follows that some might respond to the individual right or value of declining state sanctioned medical intervention. However, the question of ‘individual freedoms versus the public good’ is much more intricate than this. For example, individuals that are prone to resist government intervention in individual decision making are not only guided by this value, they are still concerned with the consequences of non-vaccination (Song, 2014). Non-vaccinated individuals force infectious disease upon others which would result in an expensive spill-over cost upon others that are not involved in that individual level decision-making. In other words, not wanting to impose infectious diseases on others lessens the moral threat of enforced vaccination as it helps prevent individuals from spreading disease (Song, 2014).

7.2.2.4 Social disruption – the anti-vaccination crusade

The frame *social disruption* is specific to coverage on MMR vaccination and features the anti-vaccination movement, local and global, and its spread of misinformation as the threat to moral order in the US. The main problem definitions in this frame relate to the agitation that the anti-vaccination movement is causing. In that sense, the framing is conflict-ridden, which also

characterizes the political conflict framing, but this framing is so focused on the anti-vaccination movement as the main actor causing this tumult, that it made more sense to categorize it separately. If anything is portrayed as a threat to the cultural authority of science in modern society it is the misinformation and propaganda spread mainly by the anti-vaccination movement. Moral evaluations are thus heavily emphasized. The anti-vaccination movement is portrayed as a threat to society in its attempts to infiltrate various spheres in which science used to or ought to hold ground.

Most such frames occurred in the Times reporting, calling anti-vaccine parents “outsiders” and “well-off bohemians ... who might send their children to Waldorf schools, where an anti-vaccination culture is baked in the warm ovens of so many sprouted-wheat snacks” and Orthodox Jewish parents “resisting incursions of modernity” (NYT, 12.04.2019). In one article, criticizing the possibility of exemptions to mandatory vaccines for school-children, parents who seek philosophical exemptions are portrayed with ridicule, arguing that “hippie misconceptions” (NYT, 12.04.2019) are not considered a valid reason for a parent to excuse a child from vaccination. The argument is strengthened by historical reference to the 1890’s resistance to smallpox vaccine establishing these views as backward and inconsistent with modern society.

True, refusal and resistance to vaccination is problematic, but such framing might only lead to amplifying the societal risk of the deviant and threatening group. It does little, beyond ridicule, to advance the public understanding of actual causes of vaccine hesitancy as it is a much more complex public health problem than is conveyed by such framing. Reasonably, the relative facelessness of the group makes it easier to subject it to caricature and ridicule.

Many outbreaks occurred in Orthodox Jewish communities which are, according to the logic of the framing, victims of the anti-vaccination movement crusade. The Times report of a group “whose members are mostly anonymous and are supported by national anti-vaccine organizations” targeting the “ultra-Orthodox Jews [...] in insular communities” by spreading propaganda through robocalls, handbooks and a “vaccine symposium” that in itself “illustrated how the anti-vaccination movement can exploit fear and anxiety within relatively insular communities, especially religious ones, to undercut scientifically sound warnings from health experts” (NYT, 14.05.2019).

Fox also report that handbooks filled with “misinformation and discredited science about why it says vaccines are unsafe” that are distributed in tight-knit communities that “are susceptible to misinformation” (Fox, 29.04.2019) and that “anti-vaxxers even make robocalls to homes and have given out a hotline number for people to join in live teleconferences where misinformation is spread, and vaccination facts are stymied” (Fox, 29.04.2019).

The framing also conveys the threat of the anti-vaccination movement toward the cultural authority of science. What was in the Times' news coverage termed as a "vaccine symposium" (NYT, 2019), in quotation marks no less, is a reference to the attempt of the movement to gain legitimacy by association to scientific discourse. It is noted that "many of the vaccine skeptics cloak their rhetoric with scientific language ... downplay[ing] the dangers of measles and question[ing] the efficacy of vaccines" (NYT, 09.04.2019).

Because the outbreaks were centered in Jewish communities, and fueled by *some* Jewish leaders in the communities, there is at least on one level a perceived conflict between religion and science. This dimension is interesting for two reasons. The first reason relates to the way that the framing is structured. The Jewish communities are depicted as victims of the anti-vaccination movements propaganda and Jewish leaders as frequently used as sources to suggest that they are attempting to "counter the crusade" (NYT, 09.04.2019). In this way, the framing has the potential to diffuse the notion of perceived conflict between science and religious principles that could otherwise form, by suggesting that vaccination is compatible with religious doctrine. Secondly, it might also be understood as an active attempt of the media outlet to diffuse such stereotypes, as the media have been accused of reinforcing harmful stereotypes in general (Nisbet, 2010).

The use of the frame in both outlets is plausibly explained by the absence of a tangible political conflict between conservatives and liberals in their approach to the anti-vaccination movement in particular, seeing as there are "anti-vaxxers" (members of this particular group) are found in both ends of the spectrum, albeit for politically different reasons (Wolters & Steele, 2018). It should be noted that it is more frequent in the Times, the frame was only found in one news item of Fox News coverage. What is more, the Times even make a point of the ideological distribution within the anti-vaccination movement, claiming that the "anti-vaccine movement is "thriving and growing pockets of vaccine opponents across the country that span ideological boundaries" (NYT, 09.04.2019).

The name of the frame is a reference to the type of framing that was used in a classical study on framing effects of the Ku Klux Klan (Nelson, Clawson & Oxley, 1997). The public order frame portrayed the Ku Klux Klan rally as a significant threat to public order and civic harmony, as a compelling reason for limiting the Klan's public appearances. Here, the social disruption frame is used in a similar way to portray the anti-vaccination movement and its agenda as a threat toward certainties of modern society: the legitimacy of scientific facts, as a reason to stop the movement's crusade. While there is strong emphasis on the problem definition, the involved actor, and moral evaluations, there is little emphasis on specific treatment

recommendations. Thus, it seems the main purpose is to convey a sense of societal threat and moral decay.

Following the reasoning of this classical study, this type of framing might be expected to lower the tolerance of anti-vaccination sentiment or the anti-vaccination movement, as it seems to be disrupting societal fundamentals upon which we rely to make sense of the world, namely, scientific authority and scientific facts. Seeing as this is an example of typical “us” and “them” framing, and both liberals and conservatives are identified as adhering both to the inside and outside group, it might transcend ideological divisions to join Americans in defending common values and self-interests (Nisbet, 2010).

7.2.2.5 Summary and discussion

Overall, there is a general emphasis on competing interests in the framing of both outlets. The frames connect to a range of political values, including limited regulation, freedom of religion, and distrust in big corporations. As well as more general values such as civic duties and moral obligations to protect others connecting to the overall value of public health. However, there is no consistency in framing the issue of MMR vaccination as to clarify which political values and identities are associated with which side, beyond the context of legislative debates, that is (Suhay, 2017).

Fox News conflict framing contains elements of raising minority voices of parental groups purporting that vaccines are harmful, and their benefits overstated. This perspective is contrasted with references to the scientifically-based recommendations of public health officials but could still have consequences for how audience perceive the issue of vaccination. The tendency may be a consequence of the media’s preoccupation of balanced reporting. However, when framing falls into such persistent patterns of journalist practice, it can serve to amplify asymmetrical power by providing coverage to a minority viewpoint (Boykoff, 2007). Keeping in mind that the ‘erosion of trust’ regarding climate change is in part a consequence of the vocal minority of climate sceptics (Oreskes & Conway, 2010).

In reference to sub actors and partisan cues, there are some, but they are few. For example, a Republican legislator is quoted echoing the concerns of parental groups claiming that mandatory vaccination would deny children the right to public education. The prominence of Democratic legislators as sources is likely a consequence of the fact that many of the bills that enforce mandatory vaccination and the elimination of exemptions are sponsored by Democrats.

Fox's opinion pages are still considered to shape the understanding and evaluation of issues and events but should be considered separately. They sponsor the framing of a particular interest group with a self-proclaimed conservative agenda to share free market ideas and solutions (IWV, 2020). It demonstrates few issues are immune to strategies of political strategy, and while it uses vaccinations as a lever to call for action to strengthen border control, it might also lever the value of vaccinations as a public health concern by consequence.

The Times political conflict framing also attends to the issue of parental group opposition to vaccination. So, the outlet might also be accused of raising minority voices to a fault. However, the articles include more partisan cues that inform the readers of the Democratic position on the particular issue of mandatory vaccination. The framing also includes a stronger emphasis on moral evaluations of the causal agents as well as the issue at hand. For example, by referencing vaccination as 'the norm' and a 'public health success.'

Following previous research's broad definition of politicization of the HPV vaccine in the news, it could be argued that the MMR vaccine is now suffering the same fate. The stories using political conflict framing describe a "political context within which the audience can interpret the issue", as well as "conflict or controversy specifically within a political dimension (such as over government action or partisan divides over an issue)" (Fowler & Gollust, 2015: 157). Yet this only applies to the context of legislation.

Other frames must also be taken into account to provide a complete picture of the way vaccine is are framed and to what extent it may or may not be politicized. Both Fox News and the Times feature the public accountability frame, which promotes legal action to realize the children's 'right to choose' vaccination. According to this framing, parental liberties must give way to the rights of children. What is more, the framing was found in a Fox op-ed that favors national government action to promote MMR-vaccinations nation-wide. This type of framing is expected to prompt considerations of unity rather than polarization. By contrast, morality framing attributes the causes of non-vaccination to individuals for the causes as well as the moral obligation to solve it. This type of framing was also found in both outlets and is expected to elicit consideration of a shared moral challenge.

Finally, the social disruption frame was found predominantly in the Times, and in one of the Fox News articles. It is closely connected to this faceless group of members which might oversimplify the issue of vaccine hesitancy, by blaming and shaming. The 'us and them' element of the framing will have both liberals and conservatives wanting to identify with the inside group. This frame is most interesting against the background of previous studies showing that interest groups can set the tone of the debate, as did the religious group in the case of the HPV vaccine. Here, in the case of the MMR vaccine, the anti-vaccination movements agenda is

thoroughly discredited in the social disruption frame. The threat of the anti-vaccination movement is clearly formulated, and their interests denounced in such a way that it would be unlikely that the audience would consider the anti-vaccination movements interests as a valid perspective on vaccinations.

Taken together, the framing of the vaccine is much more value-infused than the framing of the HPV vaccine, which is cast in more technical terms of scientific and social progress. While there are some indications that the legislative debates may provoke partisan motivated reasoning (alignment with the party position), the rest of the frames demonstrate a range of different perspectives on vaccination. Public accountability framing promoting the right to vaccination and the need for state action to fulfill these objectives, moral obligation framing promoting the collective benefits of vaccination, and social disruption framing denouncing anti-vaccination sentiment. In all, the vaccine is not considered to be politicized in media discourse beyond the legislative debate.

8 Discussion

The following chapter engages in a discussion of the results as well as a general discussion on the study's contributions, limitations and future directions.

8.1 Result discussion

In the case of HPV vaccine coverage, the study finds considerable overlap in the two outlets framing of the issue. The main difference being political conflict framing in Fox News and public accountability framing in the Times, highlighting separate perspectives on the issue of HPV vaccination. In addition to the moral obligation frame in the Times and the scientific uncertainty frame in Fox News. Social progress frame dominated the coverage in both outlets and is considered to be more descriptive in nature, which has been found to be a common tendency when the media cover science during periods when an issue is not subject of political contention (Nisbet et al., 2003). The professional integrity frame only relates to HPV vaccine coverage, but it appears in both outlets. It is interesting because it is understood as a response to the lingering notions of sexual morality framing. In all, it seems the framing of this vaccine in the media has changed. It does not involve politician endorsements and no interest groups influencing the tone of the media discourse in to any large extent. The predominance of frames that are assumed to derive from the scientific community, highlighting the benefits of the vaccine, characterized the media coverage as a whole.

The differences in the outlets framing on the MMR vaccine was demonstrated by looking closely at the latent aspects of their use of the political conflict frame. Fox News raised the issue of parental opposition to mandatory vaccination and contrasted it with federal official recommendations in favor of vaccinations. There was a lack of Republican partisan endorsements, and more Democratic officials in these items. In op-eds, the vaccine was cast in an unexpected setting of leveraging the issue of border control. The Times also attends to the issue of parental group opposition to vaccination while contrasting this position with partisan endorsements on the issue. Beyond the political conflict frame, both outlets featured claims toward public authorities and personalize the issue of vaccination in moral obligation framing. Finally, the social disruption frame was more frequent in the Times than in Fox News.

The differences in political conflict framing might provoke partisan motivated reasoning (alignment with the party's position) on the particular issue of mandatory vaccines, not including laws allowing minors to obtain vaccination on their own. In sum, neither the media

discourse on the HPV vaccine nor the MMR vaccine seems to be politically charged along partisan lines beyond the legislative debate regarding MMR vaccination legislation.

The differences in the framing of the HPV vaccine and the MMR vaccine can be summarized as follows. Overall, there is an emphasis on competing interests (e.g. minors, parental groups, politicians, interest groups) in the framing of the MMR vaccine. It touches on a range of values (e.g. government regulation, liberties, public education) that are considered to be at stake in different configurations. The framing of the HPV vaccine is generally structured around the technical aspects of the vaccine (e.g. importance of the vaccine, side effects of the vaccine) and efforts to promote the vaccine (e.g. the role of physicians).

These differences are probably explained by standards of newsworthiness as few events relating to the HPV vaccine lent themselves to being covered in terms controversy. News events relating to the HPV vaccine were mainly research developments and there were no major policy debates expect for some at the state level. It seems that media are at least somewhat dependent upon political actors (religious groups, parental groups, politicians) instilling an issue with political meaning, which might in turn be exacerbated by means of emphasizing conflict in media reports. This is no longer the case in the HPV vaccination media discourse.

Lawmaking on the other hand is inherently political as it is bound to involve conflict, debate and disagreement. This partly explains why media coverage of the HPV vaccine at its introduction to public and political debate were fraught with controversy portrayals: it involved a national policy debate (Colgrove, 2006). It will also, in part, explain the political dimensions in the framing the MMR vaccine, while also limiting the possibility to compare the framing of the vaccines to each other. The vaccines were during the examined time periods in different stages of the policy cycle. The HPV vaccine was in administrative state in the policy cycle, and the MMR vaccine was in a more overtly political stage in the policy cycle (Nisbet & Huye, 2006). The measles outbreak also created a more direct sense of threat which is a basic criterion for newsworthiness (Briggs & Hallin, 2016). The HPV virus does not impose such a direct threat to society.

8.2 General discussion

Media frames might help set the terms for how citizens understand issues, but they are not expected to exclusively determine public opinion (Nisbet & Scheufele, 2009). What is more, political ideology may be one determinant in forming opinions toward science and vaccination in particular, but it is certainly not the only one. While political ideology may constitute a type of social group, the group is in itself not homogenous. In science communication the power of

framing is assumed to lie in tailoring the message to a specific group (Scheufele, 2014). The respective audiences of the outlets constitute a way more heterogenous group than is needed for effectively influencing opinions according to this view. Even though news media makes science and science-related issues more accessible, it probably cannot substitute for direct approaches to vaccine promotion such as physician to patient discussion.

The frames were discussed in relation to the political or ideological values assumed to influence the attitudes of the outlets' respective audiences. In instances where this was not possible, other parameters had to be taken into account. This is a consequence of an exploratory study as the direction of inquiry may change along the way (Neuman, 2014). Here, the inquiry per se did not change, however, the discussion had to be broadened in order for there to be a fruitful discussion.

The central values and cultural understandings were in flux in the different logics of each frame. They gave weight to different considerations based on context. It is therefore impossible to speculate about how such general values would affect attitudes, seeing as they are context dependent. For example, the right to choose applied to parental rights to choose for their children in one instance, and minors' rights to choose for themselves in another. Parental rights were contrasted to government coercion in one instance and the rights of children in another. Individuals might be guided by the principle of limited regulation in one instance but support it in another context. It follows that these general principles are not likely to predict opposition or support of vaccinations wholesale.

The rigidity of the definition of media frames used in this report was fruitful in some instances, while it seemed to reduce the complexity of an article in other instances. Longer, more intricate articles seemed to involve multiple frames. Assuming that articles contained a single frame structured around the organizing principle, may have forced a format upon the articles that reduced its complexity. For example, determining the main actor was neither easy nor was it always fruitful. Sub-actors and their position within the frame were generally more interesting aspects.

It follows that many of the frames can be thought of a general tendencies of news production. This is the result of trying to categorize vastly different levels of framing, in terms of journalist interference for example. While some of the frames were conceptualized as general mechanisms of framing, each outlet's specific use of the frame may have highlight different considerations. The salient cues or arguments adhering to the outlet's use the frame were therefore discussed to give the discussion more substance. These particular aspects are assumed to be more interesting in terms of how they relate to public discourse and public opinion.

Moreover, there are both advantages and limitations in labeling the frame in the same as previous studies, especially when the applied method here is inductive. The rationale for labeling the social progress frame the same way is, of course, that the defining elements of the frame overlapped. The main advantage in using the same name then, is avoiding ‘reinventing the wheel’ as scholars have a tendency to do so in identifying frames that exist in any debate (Nisbet, 2010). While the main disadvantage is that it may affect the perception of validity of the inductive approach.

Clearly, many of the frames could have been conceptualized differently. For example, the political conflict framing includes a range of conflicts within a political dimension. However, some are so infrequent that it would not make sense to categorize it as separate frame or category. And some articles do not entirely match with the definition of frames used in the study. One such example is the op-eds in Fox News regarding border control and unvaccinated immigrants. This aspect could be conceptualized as the ‘border control vs public health’ frame or something along those lines. Still, the author argues that such arguments are still discussed adequately as an element of the more overarching frame of *political conflict*.

In all, the dynamics of media frames and their influence upon the public discourse of vaccines and vaccines attitudes is highly complex. The issue is perhaps not best approach guided by such loosely associated values to explain ideological differences in vaccine attitudes.

8.2.1 Contributions and future directions

The study provides a new perspective in studying the media frames in vaccine coverage. No other study, to the best of the authors knowledge, has approached the issue in this way. It indirectly confirms the framing cycle. When issues (MMR) are in an overtly political arena, framing tends to involve more political elements, such as the use of elite sources and a general focus on threat, conflict and competing interests. When an issue (HPV) is in a more technical stage of the policy development, framing relies on sources from the scientific community and highlights research developments. Further, it provides insight to the workings of the news production. In the absence of powerful political actors pushing a frame such as the sexual morality frame, the media will rely common ways of portraying an issue. For example, by individualizing an issue in terms of moral obligation more generally or demand responsibility from authorities.

The main benefit of using an exploratory approach is that it investigates the setting for approaching an issue in a particular way to formulate the focus of future research and determining the feasibility of conducting research in this way.

Future research will want to approach the ideological divide in attitudes toward the vaccines from another angle. Trust in medical actors or trust in government will likely affect the perceptions of vaccines (Hamilton, 2015). It might be fruitful to look at social media consumption, specifically Facebook groups that spread misinformation, or websites that provide misinformation. Previous studies have shown that social media propagate vaccine conspiracy theories and can exert a large effect on people's world views (Featherstone et al., 2019). Conservatives have been shown to be more likely to report consumption of social media to obtain information about vaccines (Featherstone et al., 2019).

Notably, there is recent evidence of a link between conservative news consumption and holding inaccurate beliefs about the MMR vaccine (Stecula et al., 2020). Future efforts will want to examine the content differences between these examined conservative news sources: Fox News, Rush Limbaugh, The Drudge Report, or The Mark Levin Show (Stecula et al., 2020).

Finally, future studies should examine how political predispositions and media exposure influence *actual* vaccine uptake. Given political differences in the uptake documented for the swine flu vaccine (Baum, 2011) more research is needed in other samples. The present report still assumes that controversial media messages about vaccines can play a role in parents' overall perception of a vaccine, which can in turn lead to declines in acceptance and uptake (Gollust et al., 2013). National uptake remains low in the case of the HPV vaccine, and high in the case of MMR-vaccinations. But this can come to change, plausibly due to the spread of misinformation in social media and on other websites.

8.2.2 Limitations

As with any academic study, this study has limitations which must not be left unacknowledged. The choice of the specific news media outlets for this study was based on two factors, previous studies and reports of the current state of the media landscape in the US. First, previous studies have established Fox News the primary research subject of conservative media, when approaching opinions and behaviors that seem to be linked to ideology (Baum, 2011, Feldman et al., 2012). Secondly, the audience make-up of each respective outlet provided a venue for discussing the frames in relation to the general values linked to liberal and conservative views on vaccination (Reuters, 2019).

However, it seems that Fox News Online does not reflect the same ideological content as Fox Cable Network coverage. It seems it does not have the same spending or general assigned effort. This assumption is based on the fact that many 'articles' were in fact television

transcripts of host cable shows, which was excluded from the census. More importantly for the results of the present study, the online news website indexed a significant number of articles from other large news organizations such as *Reuters* and *Associated Press*, along with science news from *Live Science*. These articles were included in the sample guided by the rationale that including these perspectives is conscious choice by the organization. Additionally, this is the actual content to which audience is exposed upon reading Fox News online.

It does not reflect framing by Fox journalists representing the organization. The fact that indexed articles account for most of outlets coverage of the HPV vaccine will affect the conclusions that can be drawn regarding the of these articles. The answer to why such content was indexed, and specifically regarding the HPV vaccine, is only for the author to speculate about. It is assumed, however, that the news events pertaining to the HPV vaccine were not deemed particularly newsworthy or ‘Fox-frame-worthy.’ That said, the indexing did render a lot of *social progress* frames which highlight the benefits of the vaccine which might have a positive effect on readers.

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