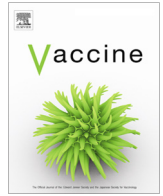




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When being positive might be negative: An analysis of Australian and New Zealand newspaper framing of vaccination post Australia's No Job No Pay legislation

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ABSTRACT

Vaccination rates are an ongoing global concern. Many developing and developed countries have rates of vaccination below rates required for herd immunity, for differing reasons. One way in which to communicate information about vaccination to the wider public is via the use of the news media. Communication agenda-setting and framing theory generally hold that the news media sets the issues of importance to society and also tells us how we should think about those issues. Emphasis framing theory however, would suggest that positively-framed statements in the media may actually be viewed as persuasive in a coercing way, leading to resistance to the messages. Further, this theory claims that negative news media is viewed as more credible and therefore, more easily accepted. We were interested to explore the framing of news reports about vaccination and the potential effects this framing may have had on the wider public over the years 2016–2017 in both Australia and New Zealand (when changes in vaccination policy and publicity respectively were on the agenda). We undertook a content analysis of 197 articles and emphasis frame, type of message, and other variables recorded. In both Australia and New Zealand, the news media messages were predominately positively framed and yet the vaccination rates of New Zealand particularly (where no policy changes mandating vaccination took place) have been decreasing. We suggest the media emphasis on positive vaccination reporting may be having the opposite effect of engendering resistance to vaccination within those who are vaccine-hesitant.

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1. Introduction

Vaccination is a contentious issue worldwide (see [2] for a review). The World Health Organisation (WHO) sets immunisation rates of at least 90% vaccination coverage by 2020 [43] to enhance herd immunity and protect populations from potentially serious diseases. However, rates of immunisation for different antigens vary significantly. Global coverage rates in 2018 ranged from approximately 35% for rotaviruses, 47% for pneumococcal diseases, 84% for Hepatitis B, 86% for measles (first dose) 69% for measles (second dose), and 90% for diphtheria-tetanus-pertussis [44].

More people now question the necessity of vaccinations in a largely disease-free first-world population [6,14], and with recent developments in terms of Covid-19 it would be reasonable to assume that this questioning would be minimised. Unfortunately, however, recent research has modelled that in fact the opposite might occur with anti-vaccination views being held by the

majority in ten years' time if interventions are not put in place [19]. Concerns exist in many countries about falling vaccination rates. For example, the WHO has expressed concerns about the rise of the anti-vaccination movement in Italy, with the incoming government during their electoral campaign "promising to oppose the pre-existing law that made vaccinations mandatory" [13]. In both Australia and New Zealand controversy emerged around the screening of the anti-vaccination film 'Vaxxed'. The film attempts to link the Measles, Mumps, and Rubella (MMR) vaccine to autism and is directed by "discredited gastroenterologist Andrew Wakefield" [39]. At the time of writing this article a billboard produced by the New Zealand anti-vaccination group Warnings About Vaccination Expectations (WAVES) was placed on Auckland's southern motorway posing the question "If you knew the ingredients in a vaccine would you RISK it?" The billboard was removed the day it was erected after 140 complaints were received by the Advertising Standards Authority [40]. These examples illustrate how prevalent and current the issue of vaccination is in many countries.

The news media play a vital role in communicating vaccination messages to the public [27,23]. While increasing numbers of

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individuals find their news through social media, over 75% of stories they are exposed to come from news websites [32]. Therefore, information supplied by the media about vaccines can influence the public's attitudes and beliefs towards them (see [8,20,33]). Although the news media can promote pro-vaccination messages, they have also been held responsible for exacerbating the efforts of anti-vaccination groups because of an "inadequate scientific knowledge base within the media, and an irresponsible tendency towards the emotional" [7]. Speir [38] goes further arguing the media are tempted to turn single, alleged incidents of adverse vaccine effects into "major disasters" whereas "by contrast the successful prevention of diseases in terms of millions of individuals is virtually ignored" (p. S83).

Given the influence of the media on public attitudes and behaviours toward vaccination, it is important to understand how the media frame vaccination and how these frames impact the wider public. A small number of studies have examined the news media's reporting of vaccination in New Zealand and Australia separately. In a study of 208 newspaper articles occurring between 1993 and 1998, Leask and Chapman [24] found the Australian newsprint media reported vaccination with an emphasis frame on vaccine-preventable diseases and the issue of low immunisation rates. The coverage also emphasised that the responsibility for vaccination resides with the individual. The threat of vaccine-preventable diseases was conveyed in a number of ways including personification, panic language, stories of personal tragedy, and tales from the pre-vaccination past. These messages were often delivered by representatives of professional medical bodies [24]. Using a larger sample of stories (2440) Leask and Chapman [23] found 4.7% of the stories had anti-vaccination statements. These statements contained one or more of the following subtexts:

- (1) Cover-up – arguments that the real facts about the safety of vaccines was being suppressed.
- (2) Excavation of the 'facts' – real 'truth' seekers had to find the true facts of vaccination.
- (3) Unholy alliance for profit – Accusations of collusion between government and big pharmaceutical companies, so the latter could increase profits.
- (4) Towards totalitarianism – Vaccination was 'forced' on the community by the government.
- (5) Us and them – those opposed to vaccination were portrayed as caring parents against the impersonal medical profession.
- (6) Vaccines as poisonous chemical cocktails – argues vaccines contain dangerous chemicals.
- (7) Vaccines as cause of idiopathic ills – vaccination blamed for a range of conditions including autism.
- (8) Back to nature – the body was perfect and able to defend itself without the need to turn to antibiotics and vaccines.

A number of stories also portrayed the vaccine debate as a religious crusade between those for and opposed to vaccines [23].

A more recent study examined the reporting of the HPV vaccine by the Australian press finding a number of themes including these: Australian pride in vaccine development; details and progress of the National Vaccination Program; vaccine safety; HPV vaccination's future; whether or not males could and/or should get the vaccine; issues related to sexual activity and the vaccine; and issues about decision-making for acceptance of the HPV vaccine [11].

A study of New Zealand print media between 2001 and 2003 found the coverage was predominantly neutral towards vaccination (51%) with 33% of stories framed as positive for vaccination and 17% opposed [17]. Another study examining headlines used in New Zealand newspaper stories reporting the meningococcal B

immunisation campaign found that 51% of the headlines were scientifically inaccurate and another 12% were misleading [41].

Since the previous Australian and New Zealand studies cited, a number of events have exacerbated the vaccine debate, including the 2010 Lancet retraction of the now infamous Wakefield study linking the MMR vaccine to autism and the Vaxxed film mentioned prior. More importantly for this study is the introduction by Australia of the No Jab – No Pay law in January 2016, a policy not adopted by New Zealand. The law meant parents who had children under the age of 20 who were fully immunised or under a government recognised catch-up scheme could receive "the Child Care Benefit, the Child Care Rebate and the Family Tax Benefit Part A end-of-year supplement" [3]. Families who did not vaccinate their children would lose the equivalent of \$28.00 per fortnight, \$784 per annum, in family tax credits. Parents could no longer use conscientious objection or objections on non-medical grounds as reasons to be exempted from losing their tax credits. Some states in Australia go further with unvaccinated children not being allowed to enrol in pre-schools or childcare centres unless they are vaccinated or have a medical exemption to vaccination.

Given these more recent events and the policy difference between the two countries regarding vaccination the current study compares newspapers from both countries (a first cross-cultural comparison) to understand any differences in how the reporting is framed, who are the main news sources, the arguments both for and against vaccination that are contained in the stories, and how those who are unwilling to vaccinate their children are labelled. We specifically focus in on emphasis framing theory in making sense of our results. Emphasis framing theory argues that when stories or statements are framed in a negative way, they are deemed more credible to readers [21]. Further, positive frames of stories or statements are viewed by readers in a negative light also as attempting to persuade them in some way; for example, advertisements that positively review a product are rightly viewed as attempting to persuade people to purchase that product. These understandings will, it is hoped, lead to implications for the media on best practice reporting of vaccination information.

2. Method

Four Australian and four New Zealand newspapers were selected for the study. Newspapers were chosen to replicate previous studies and also for ease of access to archives in contrast to broadcast news.

According to Roy Morgan [37,36] over 3 million New Zealanders and 5.8 million Australians read print newspapers in 2019. Most of New Zealand's relatively small population (approximately 5 million), is served by four large metropolitan dailies; two in the North Island, the *Dominion Post* and the *New Zealand Herald*, and two in the South Island, *The Press* and the *Otago Daily Times*. There is no national daily newspaper as New Zealand's unique and rugged geography has historically hindered the development of one or two national daily newspapers. In contrast Australia has two national dailies with *The Australian*, chosen for this sample, having the largest circulation. In order to have an equal number of newspapers from both countries a further three, large, well established metropolitan dailies, two from New South Wales, the *Daily Telegraph* and *Sydney Morning Herald* and one from Victoria, the *The Age* were selected on advice from an Australian colleague (see Table 1).

Limiting the sample to these four Australian newspapers did mean newspapers from Queensland, Western Australia, South Australia, and Tasmania were not included. However, newspapers in these states have smaller circulations in comparison to the newspapers chosen. All items, including opinion pieces and Letters to

Table 1
Australian and New Zealand newspaper readership (2019).

Newspaper	Readership (2019)
The Australian	295,000
Sydney Morning Herald	372,000
Daily telegraph	544,000
The Age	394,000
New Zealand Herald	782,000
Dominion Post	297,000
The Press	227,000
Otago Daily Times	138,000

the Editor (LTEs) relating to vaccination or immunisation, were considered for inclusion for the period 1/1/2016 through 31/8/2017. Items were found via a search on the Australian/New Zealand Reference Centre database via Ebsco Host using the following key words: Vaccine, vaccinate, vaccination, immunise, and immunization. The first date coincided with the introduction of Australia’s No Jab-No Pay law and the cut-off date was decided to be the end of the month in which the study commenced. Sourcing articles from the database meant the researchers did not have access to the original newspaper articles and therefore accurate measurements of column inches could not be conducted. In addition, database stories did not always contain photographs and so these were unable to be examined as part of the analysis. A total of 226 articles were found and all were carefully read to ascertain what type of article they were. For example, columns and opinion pieces were identified as different to news articles as the author’s name and occupation were often quoted at the beginning of an article and there were often no sources quoted. For example, a story entitled “Attacks on science a call to arms for academics” by the New Zealand Herald [16] began with “Dr Jarrod Gilbert is a sociologist at the University of Canterbury...” illustrating it was an opinion piece rather than a news story. Likewise, LTEs were also easily identified as they were short, contained within a group of likeminded items, and the authors were identified by name and the town they came from. Once all the items were read, 29 were discarded as they were not about vaccination. For example, one dealt with immunity in terms of legal prosecution. The remaining 197 articles were subjected to a content analysis coding for the following:

- Newspaper
- Type of article
- Sources used
- Emphasis of the frame of the story e.g., Anti (negative) or pro (positive) towards vaccination
- Labels to describe people unwilling to vaccinate and those who do vaccinate
- Emotive or loaded terms appearing
- Type of anti-vaccination argument

Leask and Chapman’s [23] subtexts were used to identify the anti-vaccination arguments included in articles. We used emphasis framing to determine if the argument of the media story was largely positive in nature (pro-vaccination) or negative in nature (anti-vaccination). A sample of 10% of the coding of one Australian and one New Zealand newspaper was subjected to a test of inter-coder reliability. Agreement was 100% on framing of the article, 100% on the type of article, 90% on number of sources seen, and 76% on the type of sources. Although we found some discrepancies in the type of sources seen, these were minor e.g., a school official versus a state education spokesperson or a medical professional versus a health spokesperson.

3. Findings

From the 1/1/2016 through 31/8/2017 the selected newspapers published 197 stories concerning vaccination. A slightly higher number of stories appeared in New Zealand newspapers (101 versus 96 in the Australian newspapers).

The majority of the stories were news stories 91% (179), 5% were opinion pieces, and the remaining 4% were letters to the editor.

The number of sources appearing in all the stories were 406. These included:

- Medical sources - GPs, nurses, and representatives from government health bodies
- Politicians - Australian Prime Minister, and MPs from both Government and Opposition parties in both countries,
- Education officials – School principals, School Board members
- University researchers
- Parents of children affected by vaccine preventable diseases
- Anti vax spokespeople

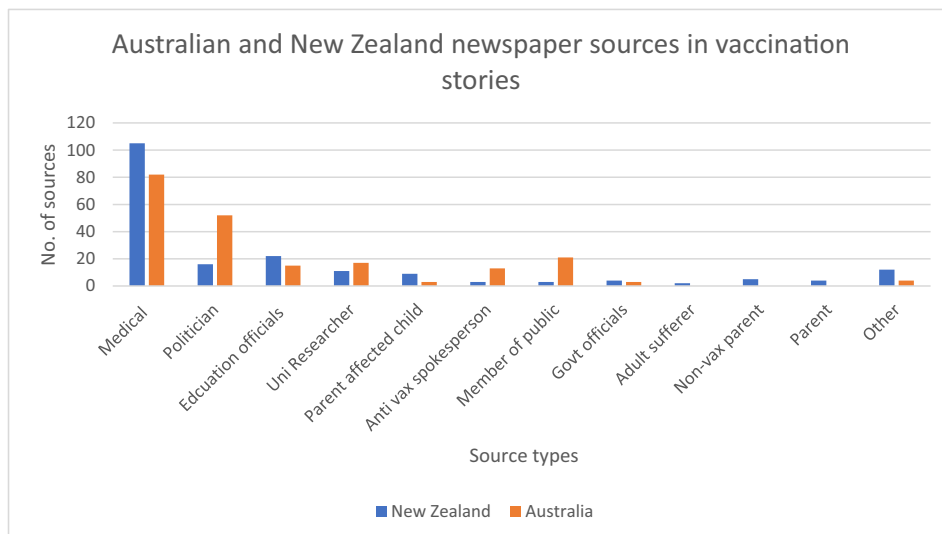


Fig. 1. Australian and New Zealand source use in vaccination stories 1/1/2016 – 31/8/2017.

Members of the public – authors of LTEs with no other affiliation listed
 Government officials – officials from government departments other than health bodies
 Adult sufferer – adults who are suffering from vaccine preventable diseases
 Non-vax parent – Parents who do not vaccinate their children
 Parent – Sources identified as simply parents and the vaccination status of their children is unknown
 Other – Sources who were not LTE authors and whose affiliation could not be ascertained

Fig. 1 shows the differences between sources in the Australian and New Zealand stories. More medical or health sources were used in the New Zealand stories (105 vs. 82) whereas more political sources appeared in Australian newspapers (52 vs. 16). In all the stories only 16 anti-vaccination activists or spokespersons were used as sources.

Overall, 28 stories of the entire sample were found to contain a ‘negative’ emphasis using some of the anti-vaccination arguments identified by Leask and Chapman [23]. The most common of these was ‘vaccination causes idiopathic ills’ appearing 19 times in the 28 stories. The next largest argument mentioned was ‘towards totalitarianism’ appearing 11 times in the 28 stories. ‘Unholy alliance’ appeared four times, ‘cover-up’ three, ‘poisons’ two, and ‘back to nature’ and ‘us and them’ once each. ‘Excavation of facts’ did not appear at all. In a number of instances these arguments were not raised by anti-vaccination campaigners, instead those in favour of vaccination raised them to refute these arguments.

Table 2
Pro-vaccination arguments found in New Zealand and Australian newspaper articles.

Pro vaccination arguments ^a	New Zealand newspapers	Australian newspapers
Vaccines prevent disease	56%	38%
Vaccines protect against disease	14%	5%
Vaccines protect community/society	0%	23%
Vaccines save lives	1%	6%
Vaccines safe	2%	1%
Vaccines scientifically proven	0%	2%
Safety through herd immunity	6%	9%
Vaccines a public health good	0%	2%
Vaccines control outbreaks	1%	1%

^a Examples of pro-vaccination arguments were not found in every article and some articles contained more than one pro-vaccination argument. Thus, these figures state the percentage of incidence of the argument over the entire sample for each country.

Table 3
Emotive terms used in New Zealand and Australian newspaper articles.

Emotive terms ^a	New Zealand newspapers	Australian newspapers
Outbreak	42%	19%
Anti-vaxx	12%	17%
Epidemic	15%	5%
Vaccine preventable diseases	4%	16%
Highly contagious	10%	6%
Deadly infections	2%	8%
Risk to own and others’ children	5%	8%

^a Examples of emotive terms were not found in every article and some articles contained more than one emotive term. Thus, these figures state the percentage of incidence of emotive terms over the entire sample for each country.

In addition to analysing the stories for anti-vaccination arguments, the research also identified stories with a positive emphasis, and noted the types of pro-vaccination arguments. These types of arguments appeared in 146 of the 197 stories with 19 stories containing more than one pro-vaccination argument. Table 2 illustrates these arguments and their distribution between the Australian and New Zealand newspapers.

As shown in Table 2, the Australian newspapers appeared to talk of vaccination more in terms of protecting the community or society than New Zealand newspapers which strongly argued that vaccines prevented and protected against disease.

Another aspect of the stories analysed was the type of emotive terms used by the newspapers analysed. These are shown in Table 3.

The New Zealand newspapers were more likely to describe increased cases of particular diseases as ‘outbreaks’ or ‘epidemics’ unlike their Australian counterparts. Australian newspapers were more likely to speak about ‘vaccine-preventable diseases’ and also refer to ‘deadly diseases’. Twelve stories contained more than one emotive term. Both Australian and New Zealand newspapers were inclined to suggest those opposed to vaccinations were putting their own and other children at risk.

The final analysis examined the labels used to describe those persons opposed to vaccination and those persons who supported vaccination. These terms are listed below:

4. Terms used for persons opposed to or sceptical of vaccination

Conspiracy theorists	Vaccine sceptics	Anti-vaxx brigade
Scaremongers	Crazy	Selfish
Bad parents	Irresponsible	Nonsense
Muesli crew	Village idiots	Mad not to immunise
Anecdota	Insidious propaganda	Ridiculous practices
Unproven nostrums	Extreme views	
Anti-vaxx movement	Anti-vaxx schools	

Two or three terms were used to describe persons who were pro-vaccination. Doctors were “pushing vaccines” and one was called a “pharma whore”. Finally, vaccines were labelled “a victim of their own success”.

5. Discussion

In cross-country comparisons, Australia and New Zealand do not differ largely from each other in the number of stories published in the 1/1/2016 through 31/8/2017 period. Differences were found in the sources most prevalent in vaccination stories between the two countries. The medical/health profession dominated New Zealand stories, but political sources dominated the Australian media, largely due, it is suggested, to the January 2016 arrival of the No Jab – No Pay campaign, making vaccinations mandatory for families that receive certain government benefits. Given the change in the political environment surrounding vaccination in Australia, it may be that medical arguments for vaccination become of less import to readers than the potential financial impacts of non-vaccination choices. Rates of explicit opting-out of the vaccination schedule for children (known as vaccine-refusal or conscientious objection) are often reported as quite low (1.3%) in Australia [5], ranging from 3.5% to 5.3% in New Zealand [29]. Considering that a vaccine refuser’s medical concerns regarding vaccination may not be superseded by financial concerns, this suggests that the change in the Australian political

landscape may have instead impacted on the decisions of those who are vaccine-hesitant (or face other barriers to vaccination such as costs and transport [12] or antipathy [23], but do not identify as against vaccination.

5.1. Emphasis framing of vaccination media stories

Emphasis framing theory has been applied in several situations, including psychology, political communication, and public opinion [31], and the implications are vast for a number of fields including health. Koch and Peter [21] posit that people learn socially to expect credible news from traditional mass news media and to expect this news media to be negative; therefore, the association between negative news media and credibility is built. When news media messages are positive, the credibility relationship is weakened. As positive news media messages about vaccination could also be viewed as advertising, a sense of coercion results from positively framed messages, suggesting that readers may find them less credible in terms of factual information. It could be that readers do not wish to see persuasive information (perceived as akin to advertising) in a perceived ‘factual’ or ‘neutral/balanced’ space, particularly with contentious topics such as vaccination. Wallack and Dorfman [42] note that the traditional view of mass media with regard to public health is to view it as an “educational strategy primarily to provide individuals with more information to make better health choices” (p. 296, italics in original). This view of the media with regard to vaccination positions the media as a ‘teacher’ or ‘authority’ on the topic, which may in turn lead to resistance to the message particularly when a reader’s own or known other’s experiences of vaccination differ [18]. Happer and Philo [18] also argue that journalism is not only about balanced reporting but also sensationalising topics to sell papers claiming that “news reporting is increasingly shaped by this construction of polarisation and conflict. . .” (p. 329). This polarisation in reporting on climate change in Happer and Philo’s [18] study led to opposing opinions to those emphasised in the media.

When looking at sources in the news stories, Happer and Philo [18] also found that although readers/viewers trusted the scientist or expert on their topic of climate change, they did not trust the science itself. Public trust in politician statements about climate change was also very low. This led Happer and Philo [18] to conclude that “[i]n spite of general sympathy towards the issue and a recognition of its importance, the overall picture of current audience reception was therefore one of confusion, cynicism and distrust about public communications.” (p. 330). Further, even when met with compelling evidence about climate change, the majority of participants who emphasised its importance and changed their attitude toward it, did not show any behavioural changes six months on [18].

This framing effect has implications for vaccination messages in the media. Indeed, studies have found a link between negative information about vaccines in news reports and negative messages about vaccination spreading via social media [26], and negative HPV vaccine news reports and subsequent low vaccination rates [33]. In a systematic review, Catalan-Matamoros and Penafiel-Saiz [9], noted that of the 12 studies from a variety of countries, 83% (n = 10) were framed around negative information about vaccines. Only two studies showed positive framing and messaging about vaccines in news articles [9].

These findings illustrate the difficulty faced by those trying to communicate to vaccine-hesitant parents. As shown above, negative information is linked to negative messages being spread in social media and lowered vaccination rates. Whilst positive information can be seen as a form of persuasion and advertising and thus can cause those who read such information to distrust or resist the messages.

In the current study we found that the majority of stories in New Zealand and Australian media were presented in a positive frame. If the framing effect implied above is correct, positive framing would suggest that readers are less likely to view these messages as credible and view the stories as an attempt to persuade them. When people consciously feel an attempt at persuasion, they tend to resist those messages (known as reactance) [30,21,22], and react negatively to its points (reactance lowers the perceived truth of a message) [22,28,35]. Therefore, news media that provide a positive frame on vaccination as an activity that people should undertake, may actually be contributing to reactance in the form of lower vaccination uptake and/or lower belief in the efficacy/need for vaccines. As our study showed, emotively loaded terms and pejorative labels were used in the popular media to argue against anti-vaccination. Use of these terms could cause readers to react negatively to the pro-vaccination message. As found by Comrie et al., [12], immunisation decision-makers reported being disconcerted by vaccination promotional material that denigrated non-vaccinators. In particular, the NZ slogan ‘Be Wise, Immunise’ was touted as suggesting that anyone who did not vaccinate was stupid, which led to defensiveness and reactance.

Indeed, in New Zealand since December 2015, immunisation coverage rates have been decreasing [1]. This is due to a variety of factors (see [1], but the possibility exists that media portrayal of vaccination may be contributing to this decline. It must be noted here however, that vaccine hesitancy and/or uptake is a complex decision-making area, and we do not wish to imply that news articles alone are responsible for declining vaccination rates. Social media and how these sites influence vaccination attitudes and actions or inactions is another space of study which needs further research. Indeed, it would be useful to determine the relationships (if any) between social media messages and traditional print/online messages, and how those messages are portrayed and taken up by readers/viewers in similar or different ways.

Decades of framing theory research suggest that the traditional media such as newspapers influence people’s views on topics (although it was/is often thought that the framing implies the view e.g., a positive frame should imply a positive view). In this sense however, the positive framing in the media does not appear to be having a positive effect. As a comparison, Australian vaccination rates are increasing (for one- and five-year olds since 2009) [4] and the majority of the Australian stories were also found to be positively framed. However, the political environment of Australia is different from that of New Zealand, where vaccinations are mandatory to receive specific financial benefits. This would suggest that any media effect is perhaps moderated by the impact of pressing financial concerns for persons receiving such benefits.

The emphasis framing interpretation does seem to be a conundrum given that negative reports about vaccination, particularly if viewed as more credible, may have similar negative flow-on effects on vaccination uptake and belief in efficacy or the need for vaccines. The answer may lie in the presentation of neutral, balanced information only in media reports with the goal of informing the general news media public. However, this is easier said than done. Balancing positive and negative vaccination information is a contentious field with scientific studies supporting vaccination often ‘balanced’ in media stories at the same level of credibility as vaccine deniers whom are without a basis in scientific studies. Balance as defined by end-users in a previous study [12], noted that caregivers making decisions about vaccination for pre-school children wanted clear factual information only, e.g., the number of deaths attributed to the vaccine versus the number of deaths attributed to the disease, and then be left to make their own decisions. This information also needed to come from a credible source. Sources that are obviously positive towards vaccination (e.g., government health departments) could be viewed as attempting to persuade,

so where this information is to come from and who is to deliver it is a question. Comrie et al. [12] found end-users were particularly convinced by health information from health professionals they trusted. Trusting relationships between health professionals and vaccination decision-makers are key but must be combined with the presentation of factual information and perhaps the viewing of that information as neutral and factual, rather than positive/persuading or negatively framed.

If information presented in a negative frame leads to perceived heightened credibility and trustworthiness of the source and the message, the implication is that information could be presented in terms of general negative 'worst case scenario's' or the use of 'negative' pictures of children inflicted with the disease. Critics of this approach note that picturing the diseases themselves can be perceived as 'fearmongering' by the public and even by health professionals [12,34]. Therefore, use of such pictures could be viewed as 'persuasive' but in a negative light, which may have the same negative affect on behaviour as positively framed persuasion. Comrie and colleagues [12] also found that immunisation decision-makers in general welcomed the pictures of diseases (partial pictures rather than whole child pictures though) as 'factual' information so they could make an informed choice about vaccination. Subtleties in presenting such information should be explored in future research.

5.2. Types of vaccination arguments

It is interesting to note that some of the negatively framed statements made in media stories were attributed to vaccination supporters who raised these statements only to refute them. Therefore, these negative frames were present in a positively-emphasised article. Future research would benefit from focusing on the impact of negatively-framed or positively-framed statements in the context of opposite-emphasised media stories.

Overall, 14.2% of the stories in the entire sample contained a 'negative' emphasis, whereas Leask and Chapman [23] found in their sample of 2440 articles in Australia that only 4.7% contained a negative emphasis of some type. A partial possibility for this difference could be that a New Zealand sample was included in the current study, where a focus seemed to be more on medical information presented (regarding the vaccines), in contrast with the Australian media's focus more on political information and community/social benefits. The type of information reported in forms of medical vs political (and individual vs. social), could mean that more negative emphases on vaccination could be found in articles with a more individualistic medical focus. Anti-vaccination arguments are often made in terms of the impact on the individual [23]. This argument also suggests future research to investigate the impact of individualistic vs. community-focused communications on subsequent intention to vaccinate.

Interestingly, the type of anti-vaccination arguments found by Leask and Chapman [23], were found also in the current study (bar one), albeit at differing frequencies. The findings suggest that the same types of anti-vaccination messages are continuing to be revisited over time, further suggesting that communications in the media and elsewhere have had little effect on addressing concerns behind these messages in the last two decades.

Leask and Chapman [23] note that the majority of their articles showed a positive or promotional message regarding vaccination, which was also replicated in this study. Indeed, this study adds nine types of pro-vaccination messages as developed from the content analysis to Leask and Chapman's [23] eight types of anti-vaccination messages. These types of anti- and pro-vaccination messages provide a framework from which to determine changes or continual patterns in communications over time.

In terms of patterns of types of anti-vaccination messages, the top two arguments mentioned in our data were 'vaccination causes idiopathic illness' and 'towards totalitarianism'. Leask and Chapman's [23] top two anti-vaccination messages were 'excavation of the facts' (which did not appear in our sample at all) and 'us and them' (which appeared only once). It may be that although similar anti-vaccination arguments occur over time, the prevalence of these arguments is changing. Further, using the new nine types of pro-vaccination messages, as noted above, we can see distinct types of arguments being used in Australia and New Zealand, who have different political approaches to vaccination. The one similarity is the 'vaccines prevent disease' message which topped both countries' pro-vaccination arguments, but from there, the countries diverge with New Zealand focused on 'vaccines protect against disease' and Australia focused on 'vaccines protect community/society'. This again could be due to the different individualistic vs. community ideologies of the two nations proposed by this study with regard to vaccination. Leask has extended this work in 2012, identifying five parental vaccination group types including the 'unquestioning acceptors', the 'cautious acceptors', the 'hesitant', the 'late or selective vaccinator', and the 'refuser' [25]. These authors found that different communication strategies were needed in health professional and parent interactions for each of these groups to advocate for quality decisions on vaccination. Therefore, it is not only the content of the anti-vaccination argument that must be addressed, but such content must be approached in line with the communication strategies of the parents.

5.3. Limitations

This study is a content analysis of articles from two countries. The focus of analysis is on the media reports, and links to wider society's views and actions are suggested. However, this study did not investigate the direct and/or indirect links between media consumption and vaccine uptake and/or views. Therefore, this link is an assumption of the research, which may or may not be accurate. Some information does suggest that a link exists between media reports on vaccination and subsequent uptake rates or adverse vaccine event reporting (for example, see [10] and [15]).

6. Conclusion

Although the majority of news media articles studied were positively framed, suggesting that vaccination is portrayed in the media as a useful health activity to engage in, the subsequent expected influence on positive uptake of vaccination and views towards vaccination were not evidenced in wider society. Many factors impact a caregiver's vaccination decision, only one of which is the influence of the media. However, it is also possible that the positive emphasis of media stories has an unexpected reverse effect when looked at via emphasis framing theory and its view that negative media stories are viewed as credible, while positive news media stories on topics such as vaccination may lead to unwanted feelings of coercion and therefore reactance/resistance. Further research is needed to confirm the relationship indicated by these findings. Journalists and media commentators must reflect on the impact of their positioning of health articles. Neutral, factual reporting to help construct an informed public is needed, rather than positively or negatively slanted articles.

CRedit authorship contribution statement

Douglas Ashwell: Conceptualization, Methodology, Investigation, Writing - original draft, Writing - review & editing.

Niki Murray: Conceptualization, Investigation, Writing - original draft, Validation, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.vaccine.2020.06.070>.

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