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Discursive Representations of Controversial Issues
in Medicine and Health

La rappresentazione discorsiva di questioni controverse
in ambito medico e sanitario

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Discourse Strategies of Fake News in the Anti-vax Campaign*

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ABSTRACT

Anti-vaccine controversial debates have been occurring for more than a century. As the debate has moved onto social media, the issue has further developed. For anti-vaccine campaigners the use of Twitter and Facebook means giving them voice and massively amplifying their message. Yet, precisely because social media advertisements and news works on the basis of an algorithm that brings people to see similar news to those they have read before, anti-vax supporters tend to read and to always believe in the same type of news, be it fake or real. In other words, anti-vax supporters cannot discern real and fake news, as they do not realize that scientific fake news is the result of a decontextualization of the medical sources. By drawing on CDA, corpus linguistics and socio-semiotic multimodality, this paper aims at analyzing fake news discursive dynamics and strategies related to the anti-vax campaign to unveil cognitive, social and institutional constructs of misinformation.

Keywords: anti-vaccine movement; autism; discourse strategies; fake news; medical discourse; multimodality; popularization; social media; sociosemiotic analysis; vaccine.

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1. INTRODUCTION

Vaccination was introduced in the medical community as early as the 19th century thanks to the work of Edward Jenner, the father of immunology. Information on vaccination immediately started to be disseminated in society, but with the introduction of the *Vaccination Act* (1849-1898) in the UK resistance to vaccination began, as the bill was regarded as a violation of civil liberty. The bill was therefore amended, “allowing parents who did not believe vaccination was efficacious or safe to obtain a certificate of exemption” and introducing the concept of the “conscientious objector” (Wolfe and Sharp 2002, 431). On a similar cline, in the 19th century, in the US, despite several and serious smallpox outbreaks, any attempts to enforce vaccination laws were vigorously opposed by anti-vaccination movements.

Anti-vaccination movements were revived in the 1990s, when *The Lancet* published a study carried out by Wakefield *et al.* (1998). The authors demonstrated a correlation between the measles, mumps and rubella vaccine (MMR) and autism. This study was, however, strongly biased and its findings were flawed, as was demonstrated by Taylor *et al.* (1999, 2029) and Miller *et al.* (1999, 950), showing that Wakefield *et al.* (1998, 637) selected the data they needed to suggest a vaccine-autism correlation, despite Wakefield’s (1999, 949) counterclaims rejecting other scholars’ accusations. Wakefield *et al.*’s (1998) study was not only demonstrated to be strongly distorted; a journalist’s report (by Brian Deer) also proved that the study was funded by litigants opposing vaccine manufacturers (Hussain *et al.* 2018). This made *The Lancet* (Editors 2010) retract the article by Wakefield *et al.* (1998) in 2010. Despite the fact that further and even more recent medical studies have confirmed the absence of any correlation between MMR and autism and, on the contrary, indicated that autism seems to have a genetic predisposition (cf., for instance, Garcia 2019), anti-vaccine movements have become stronger and stronger, to such an extent that there has been a worldwide drop in vaccination. Apparently, the laypeople’s support for Wakefield *et al.*’s (1998) study and the resistance to vaccination has to be looked for in the access to medical information granted by the Net, which has dramatically changed doctor-patient communication dynamics (Hussain *et al.* 2018). Indeed, while in the past the repository of medical information was in the hands of medical specialists only, the advent of information technology and the easy access to any type of medical information has seen “the establishment of shared decision-making between

patients and healthcare physicians” (Hussain *et al.* 2018, e2919). If sharing this responsibility may help patients to cope better with their health problems (Hunt and Koteko 2005, 446), in the case of vaccination, the process of medical popularization carried out by the anti-vaccine activists has facilitated the dissemination of disinformation.

Many studies have carried out analyses of the dissemination of knowledge (cf., for instance, Calsamiglia and Ferrero 2003; Calsamiglia and van Dijk 2004; Garzone 2006; Marko 2015, 2017; Marko and Wimmer 2018), health literacy and healthcare (as in Muñoz-Miquel 2012; Filippone *et al.* 2013; Briones 2015), also paying attention to the role digital media play in disseminating medical knowledge (Vicentini 2012; Grego and Vicentini 2015; Luzón 2015; Turnbull 2015a, 2015b; Amann and Rubinelli 2017; Pott and Semino 2017; Semino 2017). Furthermore, many scholars have analyzed the different aspects of popularization in the spread of medical knowledge (Bondi 2014; Garzone 2014; Gotti 2014; Maci 2014a, 2014b). An exploration of how people can use online channels and social media to communicate has recently been carried out by scholars who have developed Digital Discourse Studies (cf., for instance, Myers 2010; Thurlow and Mroczek 2011; Zappavigna 2012; Gee 2015; Herring and Androutsopoulos 2015), and Social Media Critical Discourse Studies (Khosravinik 2018). Myers (2015), in particular, focuses on the use of Twitter in medical communication to demonstrate how professionals construct their persona in a 140-character tweet combining a variety of modes (personal, professional or institutional) according to the interactants. However, to the best of our knowledge, no empirical research has been conducted on the use of Twitter as a channel of communication for spreading (mis)information about or against a specific medical topic – vaccination – by laypeople. Thus, this chapter will investigate how anti-vaccine activists use Twitter to spread fake news, in order to detect their ideological dynamics and discourse strategies in relation to the anti-vax campaign on Twitter with the intention of revealing cognitive, social and institutional constructs of misinformation. For this purpose, an investigation will be carried out on a small corpus of 16,768 tweets (75,960 running words) collected over ten days in October 2018, soon after the death of some children due to an upsurge of measles in New York City.

In order to carry out this investigation, the chapter will draw on a CDA analysis accompanied by a socio-semiotic reading of the collected tweets and develop this in the following sections. Section two will give the background and an overview of how misinformation is constructed

and spread on online platforms. Section three will offer a methodological approach, followed, in section four, by an analysis and interpretation of the data collected from Twitter. Section five will offer a conclusion. The results suggest that the #anti-vax discourse seems to be founded on moral and scientific grounds at cognitive, social and institutional levels, thus granting itself authority.

2. THE PRODUCTION OF MISINFORMATION AND THE DIFFUSION OF FAKE NEWS

2.1. *Specialized (mis)information*

Nowadays, the audience requires more and more specialized information from the media industry, to such an extent that the demand surpasses the offer given by the media (AGCOM 2018). For this reason, newspapers and magazines try to cope with the demand by publishing specialized information written by journalists who do not have the necessary specialized competences or specific training (*ibid.*, 21-22). For this reason, spreading false information is easy. Within this context, it is also easier to scatter misinformation, because there are not enough specialists who can argue against what is wrong (AGCOM 2018). This is particular problematic, as anti-vaxxers easily persuade the audience by instilling fear, using blame language and other rhetorical devices for their manipulative purposes.

2.2. *The dissemination of fake news on online platforms and the 'informed' citizen*

As said above, misinformation tends to spread where the information system fails, in particular where there is not enough specialized training for professionals, especially in online contexts where updates need to be done immediately – which compromises the adequateness of the required information. As a consequence, this causes a trust loss on the citizens' part towards the information system (AGCOM 2018, 75). When people lack information, they search for or accept information which is in line with their beliefs, defending them. What is more,

as claimed by AGCOM (2018, 76), people's tendency to distrust the information system leads them to oppose objective and proven facts supported by scientific and official sources and to support misconceptions. In this context, people turn to online platforms, particularly social media, which are considered the main and objective sources of news, and so misinformation seems to have found a new channel (Tandoc, Lim, and Ling 2017, 138). All this has contributed to creating the 'informed' citizen. Unfortunately, these platforms disseminate misinformation and fake news on polarizing topics, which become objects of viral propagation through social media (AGCOM 2019, 6). Not only is this fake news viral, it is also based on algorithms that bring people to similar news they have read before. This creates a vicious circle: anti-vax supporters tend to always read and believe the same type of (fake) news offered by such algorithms, which confirm (in a self-predicting way) what they believe in, and which renders them unable to discern real and fake news (Balmas 2014; Gili 2018). This leads to risky consequences, i.e. exposure to unchecked and unreliable information in ready-made narratives.

2.3. The production of misinformation

The distinctive elements characterizing misinformation include (a) the subjects who are involved in the creation, production and distribution of content; and (b) the content itself.

Misinformation that is 'distributed' online can be characterized by six main aspects (AGCOM 2018, 25-26):

- it is false, that is, the news item is *fake news*;
- it is 'contagious', that is, it transfers emotions among people to such an extent that their behaviour is conditioned;
- there is a fraudulent willingness or intention to create a fake news item;
- there is an ideological or political or economic motivation in its creation;
- it is disseminated very widely;
- it has a massive and informative impact on citizens with the purpose of moulding their behaviours.

In order to create a fake news item, a message is created after an analysis of the target audience and the topic which has to be transmitted through a certain channel. The content thus produced is then transmitted via an online channel (also exploiting crowdfunding to benefit from

it) through a series of algorithms and posting systems which make use of trolls, influencers and false social-media accounts (AGCOM 2018). Viral posts are based on fictitious accounts made to look like news reports (Tandoc, Lim, and Ling 2018), in an intentional way, but verifiably false, with the aim of misleading readers (Allcott and Gentzkow 2017, 213) for economic, psychological, political or ideological reasons (AGCOM 2018, 25), such as promoting and favouring some ideas/people and discrediting others. Only if the audience perceives the fake news as real does the latter acquire legitimacy: “It is when audiences mistake it as real news that fake news is able to play with journalism’s legitimacy” (Tandoc, Lim, and Ling 2017, 148).

3. THEORETICAL FRAMEWORK AND METHODOLOGICAL APPROACH

As explained in the introductory section above, the aim of this chapter is to describe how Twitter is used by anti-vaccine supporters to circulate fake news, to explain the discursive dynamics and strategies employed in Twitter with the purpose of revealing the cognitive, social and institutional constructs of misinformation. To carry out this analysis, the investigation will draw on a multidisciplinary approach based on a socio-semiotic (Kress and van Leeuwen 2006) approach accompanied with a corpus linguistics methodology and a CDA framework (van Leeuwen 2005, 11; Baker *et al.* 2008, 274), because both CDA and corpus linguistics in synergy and yet distinctively contribute to discourse analysis and help triangulation of findings by unearthing the implicit ideological nuances and intricacies of discourse production and comprehension (Fairclough 2006). In order to do so, this study will be *corpus-based* (Tognini-Bonelli 2001, 10 and 65-83; see also McEnery and Hardie 2012, 6) – our aim here is not to formulate a linguistic theory, but rather to identify the type of linguistic patterns or rhetorical strategies employed by the anti-vaccinists.

The analysis will be quantitative and qualitative and based on the visual and verbal elements of the tweets collected. The visual quantitative and qualitative analysis will be carried out with Atlas.TI 7.0 (<http://www.atlasti.com.de>), a data-analysis tool to conduct content analysis of images in a corpus. The images will be classified and coded according to the focus of representation and, as said above, analysed from a CDA perspective in a socio-semiotic approach (van Leeuwen 2008, 141; Kress 2010, 183).

The linguistic quantitative analysis will be carried out with WMatrix (Rayson 2003) to detect the main aspects related to socio-semiotic, lexico-pragmatic and semantic features, to which the CDA approach will be applied for a qualitative interpretation of the resulting data.

In order to carry out the linguistic analysis, all English tweets with the hashtags #provax, #provaxxer(s), #vaccine, #antivax, #novax, #antivaxxer(s) or #vaxxed were downloaded, regardless of the users' nationality, with Socialbearing.com [06/10/2018], a free Twitter analytics and search tool for tweets, timelines and twitter maps, in the time span from 18/10/2018 to 27/10/2018. The tools allowed a search by applying as a filter all English tweets and replies for 9 days working backwards and starting on October 27, 2018. Videos and links have not been taken into consideration, but pictures have. The tools also offer a sentiment analysis of all the collected tweets. The starting date was decided following some children's deaths due to a measles outbreak in NYC, as revealed in some articles found in the *Independent* (see, for instance, the article written by Kristin Hugo "Measles Outbreak in NYC: What You Need to Know about the Highly Contagious Disease", published on October 18, 2018) and in the *New York Times* (see the article by Alexandra S. Levine "NYC Today: Measles in Brooklyn", published on October 22, 2018). Overall, we collected a corpus of 16,782 tweets (75,960 running words) which contain 3,737 pictures. These data will be analysed in the next section: we will first analyse the visual data and then the verbal data. Then, an overall interpretation and discussion will follow.

4. DATA ANALYSIS

4.1. *Visual data*

As reported above, the downloaded tweets were accompanied by 3,737 pictures. The analysis of the visuals with Atlas.TI allowed the manual identification of a set of macro-categories in which the visuals can be grouped, that is, images that:

- a. proactively advise Twitter users about the necessity of getting informed about vaccination;
- b. aim to get an emotive response;

- c. focus on pharmaceutical economic profits in connection with vaccination;
- d. underline the negative side-effects of vaccination;
- e. contain (negative) statistical data related to vaccination;
- f. put a negative stress on the mandatory aspect of vaccination.

The distribution of these macro-categories can be observed in *Figure 1*.

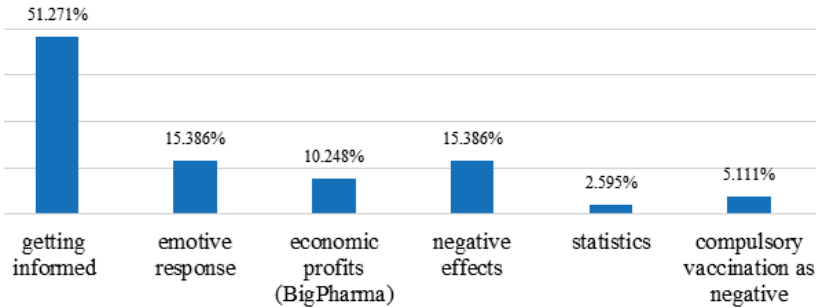


Figure 1. – Breakdown of visuals in the Twitter corpus.

As we can see from *Figure 1*, roughly 52 per cent of the pictures are centred around the necessity for Twitter anti-vaxxers to get informed about vaccination. About 15 per cent of the pictures tend to construct an emotive response. Similarly, about 15 per cent of the visuals are focused on the negative effects of vaccination, while only around 10 per cent of the images seem to stress the presence of the pharmaceutical industry's profits behind the vaccination process or reasons. And last, only 5 per cent of the visuals are linked to the negative implications of the mandatory effects of vaccination. Aspects related to statistical data linked to vaccination are extremely low and correspond to less than 3 per cent of all the images found in our corpus. Apparently, the categories can overlap, so that the 'getting informed' group can be characterized by some 'emotive response' traits, or the latter can contain some statistical data (as we can see, for instance, in *Figure 5*). However, for pragmatic reasons, they have been treated as mutually exclusive categories. The criterion by means of which one visual is categorized under one specific category rather than another is based on the type of keywords found in the visual headline.

The 'getting informed' category is based on the assumption that common people are not told the truth, that they are manipulated by the pharmaceutical industry for its own profits and, therefore, in order to

understand what the reality is, people should get informed (but we do not know by whom). An example is given in the visual reproduced¹ in *Figure 2*².



FACT

Each dose of polio vaccine contains significant amounts of complex animal proteins, blood and fatty and connective tissues - MEAT!

Question

Why are Big Pharma, Monsanto and the "Scientific Community" trying to inject our children with meat? Why are these vaccines being marketed as safe? Why won't the media report this?

TRUTH

Tired of the lies? The deception? The SPIN?

Visit www.meatspin.com to learn the truth "they" don't want you to know.

Figure 2. – ‘Getting informed’ category – the plot against the truth.

As can be seen, the enthymemic argumentation in the visual reproduced in *Figure 2* follows a simple path:

- a. (polio) vaccines contain complex animal proteins (as the meals reproduced in the small pictures);
- b. Big Pharma injects children with meat;
- c. vaccines are being marketed as safe.

¹ All the visuals are here reproduced following Twitter's Terms of Agreement at <https://developer.twitter.com/en/developer-terms/agreement>.

² The account of the Twitter user who posted this tweet has been removed because s/he violated Twitter Terms of Condition. The tweet is no longer available [31/07/2019].

In this reasoning, there are four inferences: (1) complex animal proteins are meat; (2) if vaccines contain proteins, and proteins are meat, then vaccines are injections with meat; (3) because of this, vaccines are unsafe (because meat can contain pathogenic elements); (4) this truth is hidden. For these reasons, people must get informed, and it is parents' responsibility to protect their children by avoiding their vaccination. The overall conclusion of this enthymemic argumentation is thus: "do not (let) vaccinate your children". In addition, the text contains a series of highly suggestive questions which, although unanswered, imply there is a hidden truth behind vaccination. Readers, are thus invited to 'discover the hidden truth by themselves': "Why are Big Pharma, Monsanto and the 'Scientific Community' trying to inject our children with meat? Why are these vaccines being marketed as safe? Why won't the media report this?". The hidden fact lies in the *marketed* reason of vaccination: children are vaccinated for marketing rather than for health reasons. This is the "truth" which, in a highly persuasive way, opens up the road to the second set of questions – the rhetorical ones: "Tired of the lies? The deception? The SPIN?". The implicit answer, is, of course, *yes*. Furthermore, the visual composition is twice tripartite: if we consider the visual only, with respect to the three horizontal pictures on top of the picture (the bacon, the sandwich and the steak); if we consider the text only, with respect to the vertical axis (which in turn is divided into three sections: "Fact"; "Question"; "Truth"). The use of colour may also be considered to have a symbolic meaning: the black background of the poster may be a representation of the action of concealing the truth about vaccination; the red colour of the headings, which attracts the readers' attention, may stand for 'blood' or 'bloody meat', and at the same time can also and alarmingly indicate the 'danger' vaccines can provoke; the writing in white, on the other hand, may uncover the concealed 'truth' about vaccination. These assumptions are not based on any scientific grounds, but seems to be taken as common-sense statements by the anti-vaxxers apparently revealing nothing but the truth.

Figure 3 is constructed in a similar way, and it overlaps with the 'emotive response' because of the presence of the child in tears.

In *Figure 3*, a list of all vaccinations is provided as an answer to the question at the top of the photo. The size and the colour of the headline make it easier to read the text: the question "how many *vaccines* will your child get?" may be simply answered by looking at the words having the same colour as the colour of the word "vaccine": "too many" and "81".



Talha Rama ⚡
@talharama87



"@Thedyer1971: How many vaccines will your child get ?
pic.twitter.com/ZZBDKVvKTO" @Nishtaknowledge

How many vaccines will your child get?

AT BIRTH
= HepB

ONE MONTH
= HepB

TWO MONTHS
= IPV
= DTaP - each shot has 3 vaccines
= Hib - each shot has 2 vaccines
= PCV - each shot has 8 vaccines

4 MONTHS
= IPV
= DTaP - each shot has 3 vaccines
= Hib - each shot has 2 vaccines
= PCV - each shot has 8 vaccines

6 MONTHS
= DTaP - each shot has 3 vaccines
= Flu
= HepB
= Hib - each shot has 2 vaccines
= PCV - each shot has 8 vaccines
= IPV

12 MONTHS
= HepA
= Hib - each shot has 2 vaccines
= PCV - each shot has 8 vaccines
= MMR - each shot has 3 vaccines
= Varicella

15 MONTHS
= DTaP - each shot has 3 vaccines

18 MONTHS
= Flu - annually throughout lifetime
= HepA

4-6 YEARS
= DTaP - each shot has 3 vaccines
= IPV
= MMR - each shot has 3 vaccines

11-12 YEARS
= MCV
= Tdap
= HPV - 3 doses

Too many.

Your child may receive up to **81** vaccines by six years of age.

Vaccination injects bacteria, viruses, genetic material and many other biological and toxic chemicals (mercury, aluminum, formaldehyde, acids) deep into the child's body, where they have access to internal organs (including the brain). The results are a host of illnesses that were rare or non-existent before mass vaccination. These conditions include, but are not limited to, the following:

Autism, juvenile diabetes, juvenile rheumatoid arthritis, reading problems, language difficulties, asthma, allergies, attention deficit disorder (ADD), ADHD, brain tumors, cancer, osteoarthritis, lupus erythematosus, celiac, abnormal behavior, deafness, hearing impairment, autoimmune disease, hyperactivity, death, inflammatory bowel disease, irritable bowel disease, juvenile arthritis, brain inflammation, infantile spasms, seizures, epilepsy, convulsions, increased intracranial pressure, demyelinating disease, SIDS (SIDS death), Apgar's syndrome, pervasive developmental disorder, vision problems, otitis media (ear infection), upper respiratory tract infection, vomiting, fever, loss of I.Q. points, gastroenteritis, rash, croup, hives, eczema, colitis, choking, holding breath, tremor, infectious mononucleosis, bronchitis, influenza, vomiting, conjunctivitis, facial swelling, unstable child, permanent brain damage, encephalopathy (brain inflammation), sepsis, arthritis (painful joints), nausea, headache, cardiac arrhythmias, typhoid (fevering), cranial nerve paralysis, anaphylaxis, Guillain-Barre syndrome, Kawasaki disease (inflammation of heart and blood vessels), skin diseases, skin rashes, kidney disorders (including kidney failure), shingles, tuberculosis, carpal tunnel syndrome, paralytic disease, aseptic meningitis, Hodgkin's disease and non-Hodgkin's lymphoma, alopecia, dermatitis, skin conditions.

Vaccines

DTaP/Tdap	Diphtheria, tetanus & pertussis
Flu	Influenza
Hepatitis A	Hepatitis A
Hepatitis B	Hepatitis B
Hib	Haemophilus influenzae type b
IPV	Inactivated poliovirus
MMCV	Meningococcal
MMR	Measles, mumps & rubella
PCV	Pneumococcal conjugate
RV	Rotavirus gastroenteritis
Varicella	Chickenpox

Make an informed choice.

Note: These numbers based on the 2009 CDC recommended schedule, see caveats as they do not include shots that are recommended for certain populations and that are optional (see the previous article in this series).
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TVA-12434

Figure 3. – ‘Getting informed’ category overlapping with the ‘emotive response’ and ‘negative effects’.

The term “informed” – which has the same colour of the previous terms – follows in the text, as part of “make an informed choice”: it is thus foregrounded by the colour. In addition, the poster can also be interpreted by looking at the way in which the poster is constructed, that is: the question; the answer in the middle (both with respect to the vertical and the horizontal axis); and the right-aligned direct appeal (a directive speech act with direct deictic) found at the bottom. If we look at these three foregrounded (due to their font size) verbal elements, we can notice a movement of the verbal element from above to below and from left to right (Kress and van Leeuwen 2006). According to Kress and van Leeuwen (*ibidem*), the composition plan of texts have a very

precise meaning so that what is positioned on the bottom of the page can be associated with the *real* world. In other words, this composition suggests that making “an informed choice” means being connected with reality. What is more, elements placed on the right (in this case, the picture of the child, which creates the appeal) acquire a *new* information value, while what is positioned on the left (in this case, the verbal element) has normally an *old* information value. Therefore, what is *already* known is that children have too many vaccines (and indeed they are all listed on the left); what is *new* is the child on the right. In particular, the new element is emphasized by the child’s gaze, which has an interpersonal function: by looking straight at the camera, the baby demands an involvement with the viewer (Kress and van Leeuwen 2006, 138). This has a strong appealing function. Furthermore, the sad look of the child, who seems to have reddened eyes, as if ill, may imply that vaccination makes children ill, which may also be a consequence of the fact that not only 81 vaccinations are too much, but also that their side effects are dangerous, as indicated in the text in the middle of the poster, where all the diseases allegedly caused by vaccinations are indicated. In the background, there can be seen some handwritten calculations, the result of which may iconically represent the what the text says: we should count the number of vaccinations (“ $2+2=4$ ”) rather than having the huge number of vaccinations children “receive by the age of six years of age”. The overall effect is emotively strong, underlining the necessity to be informed about the choice involved in vaccinating children – and yet, none of this information is supported by scientific data.

The visual in *Figure 4* seems to be more objective because no clear emotion is revealed: no picture is offered, just a text with a table; it is therefore rather informative. The tweet accompanying the visual, however, gives the angle from which the rest has to be read.

In *Figure 4*, a list of vaccinations children are obliged to be given is offered in a diachronic perspective, accompanied by the warning that “in 1986, Pharmaceutical manufacturers producing vaccines were freed from ALL liability resulting from vaccine injury or death by the Childhood Vaccine Injury Act”. In addition, the warning that the US gives more vaccines to children than any other country and the fact that side-effects are signalled as not being a coincidence are designated to lead the Twitter users to understand the reason why it is important to get informed. The diagrammatically organised table iconically represents the increase of vaccinations from 1962 to 2019 in three columns; at the bottom there is a scale that iconically represents the act of weighing up arguments pro and

contra vaccination, a symbol of balanced reasoning. So, we have a pictorial dimension in the visual. Yet, no scientific or legal evidence is provided: Twitter users do not have any comparison table with other countries, they do not know how many vaccines are compulsory abroad and what the chronological development has been. They do not know what the World Health Organization suggests worldwide and they do not even know whether there are differences across countries because of different environmental or other conditions. And yet, the ‘fact’ that the “US gives 2-3x more vaccines to children” and that “vaccines contain toxic chemicals that do NOT belong in our bodies” is expressed as an absolute truth.



Judea Johnson
@judeajohnson



#IfItWasTheSeventies:

- The rate of autism in the US would be 1/10,000
 - Vaccine manufacturers would be liable for their products
 - Kids would get <10 doses of vaccines
 - <15% of kids would have chronic illnesses #VaccineInjury
- #autism #InformedConsent #HearThisWell #SB276 #CAleg

2019 CHILDHOOD VACCINE SCHEDULE

1962

OPV
Smallpox
DTP
5 Doses

1983

DTP (2 months)
OPV (2 months)
DTP (4 months)
OPV (4 months)
DTP (6 months)
MMR (15 months)
DTP (18 months)
OPV (18 months)
DTP (4 years)
OPV (4 years)
Td (5 years)
24 Doses

2019

Influenza (pregnancy)	Hep B (6 months)	Influenza (18 months)	Influenza (10 years)
Tdap (pregnancy)	Rotavirus (6 months)	Hep A (18 months)	HPV (10 years)
Hep B (birth)	DTaP (6 months)	Influenza (30 months)	Influenza (11 years)
Hep B (2 months)	HIB (6 months)	Influenza (42 months)	HPV (11 years)
Rotavirus (2 months)	PCV (6 months)	DTaP (4 years)	Tdap (12 years)
DTaP (2 months)	IPV (6 months)	IPV (4 years)	Influenza (12 years)
HIB (2 months)	Influenza (6 months)	MMR (4 years)	Meningococcal (12 years)
PCV (2 months)	Influenza (7 months)	Varicella (4 years)	Influenza (13 years)
IPV (2 months)	HIB (12 months)	Influenza (5 years)	Influenza (14 years)
Rotavirus (4 months)	PCV (12 months)	Influenza (6 years)	Influenza (15 years)
DTaP (4 months)	MMR (12 months)	Influenza (7 years)	Influenza (16 years)
HIB (4 months)	Varicella (12 months)	Influenza (8 years)	Meningococcal (16 years)
PCV (4 months)	Hep A (12 months)	Influenza (9 years)	Influenza (17 years)
IPV (4 months)	DTaP (18 months)	HPV (9 years)	Influenza (18 years)

72 Doses

WHAT HAPPENED IN 1986?

- In 1986, Reagan passed a law that gave legal immunity to vaccine manufacturers.
- They could no longer be sued for injuries or death caused by their products. Safe vaccines wouldn't need such protection.
- Once that law passed, we suddenly 'needed' 48 additional doses of vaccines. (Do you remember any outbreaks in 1989?)
- Also, since that law was passed, U.S. Federal Government has paid out more than \$4 Billion in vaccine injury compensation, and that's only a fraction of actual injuries.
- The U.S. gives more vaccines than most developed countries, yet we have the sickest kids

GUESS WHAT?

The CDC has only ever tested MMR and Thimerosal for a link to autism. The remaining 15 vaccines and 37 common ingredients remain untested for links to autism.



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For more information and sources, please visit www.InformedChoiceUSA.org
THERE ARE RISKS | YOU HAVE CHOICES

Figure 4. – ‘Getting informed’ category – objectivity and ‘negative effects’.



Diane
@DianeTriple7



Every parent of a vaccine injured child was once "pro-vaccine."
[#educateB4Uvaccinate](#)

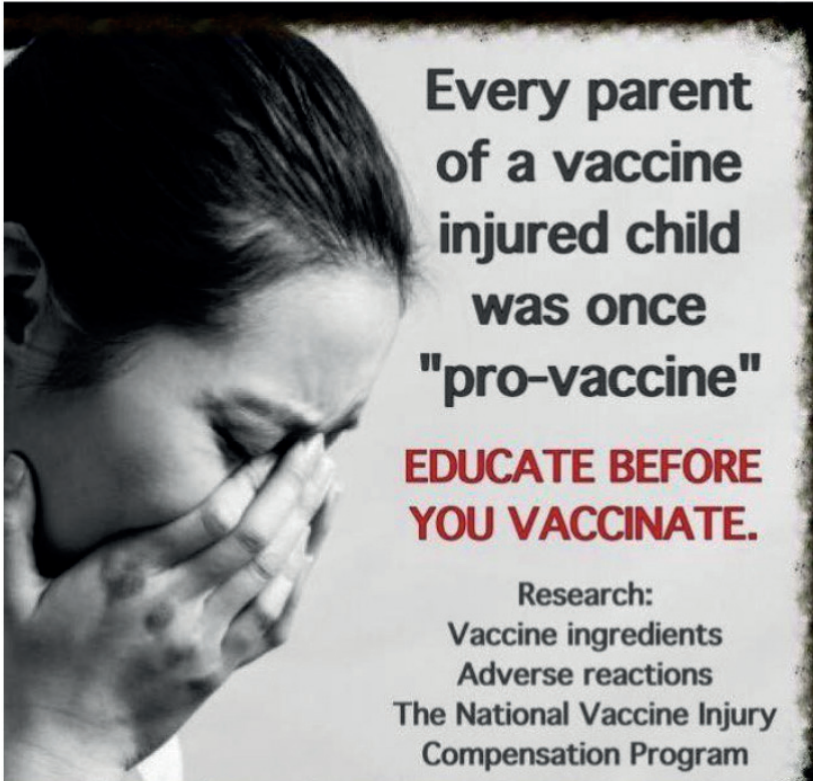


Figure 5. – ‘Getting informed’ category overlapping with ‘emotive response’.

Figure 5 offers an example of how the ‘getting informed’ category can overlap with ‘emotive response’:

The headline says: “Every parent of a vaccine injured child was once ‘pro-vaccine’. Educate before you vaccinate”, which is accompanied by an apparently crying woman. The whole picture implies that the woman is a

mother crying because the vaccine has had a negative (side) effect on her child. The woman is represented from the side. She is offered as a *model*, and, while becoming the object of our transitive observation (Kress and van Leeuwen 2006, 138), she is embedded into an actional narrative context: we, the viewers, are the voyeurs of her sad personal fate. Clearly, this is a visualization of what is explained in the headline, which gives the slant from which to read the image. Yet, we do not have any statistics about the numbers of both vaccine-injured children and non-vaccine-injured children; we also do not know whether all parents are actually “pro-vaccine” or not, but clearly the picture is emotionally effective.

When pictures are categorized under the ‘emotive response’ group, they tend to move Twitter users out of grief, as we can see in *Figure 6*.

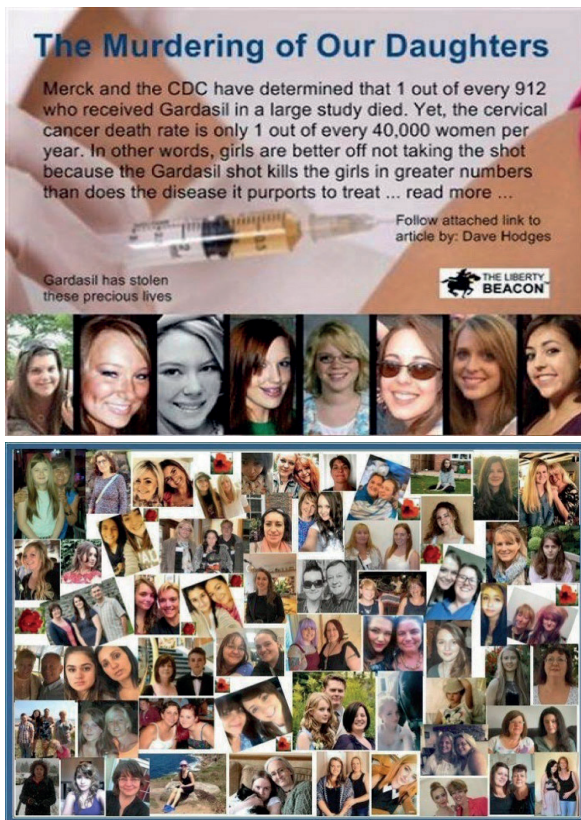


Figure 6. – ‘Emotive response’ category.

The emotion lies in the fact that more than 50 per cent of the picture is a composition with photos of all the girls who died because, according to the post, they had a vaccination, and so their deaths are defined as murder³. The link between cervical cancer vaccination and the deaths of these girls is not medically and statistically demonstrated in this tweet, despite the fact that it has recently been demonstrated that there has been an increase in deaths following a decrease in HPV vaccination (Dyer 2019). Yet, the warning here is not to vaccinate girls because the results are “the murdering of our girls”: by posting 67 close-up pictures of dead young women, all of them looking at the camera as if demanding involvement with the audience (van Leeuwen 2008, 139), the parents’ grief is greatly exploited by the anti-vaccine activists for their campaign. This is emphasised by the possessivation strategy (van Leeuwen 1996, 44) through the use of the possessive adjective ‘our’ in the post-modifying phrase “the murdering of our daughter”: the sentence simultaneously activates the social actors involved in the anti-vaccine group creating a ‘relationality’ process, a ‘belonging together’, “of the possessivated and possessing social actors” (van Leeuwen 1996, 56)

So far, we have seen that the presence of negative or side-effects is recorded as overlapping with other categories, as the ones listed in *Figure 3*, described in the box in *Figure 4*, emphasized in *Figure 5*, and depicted as the lethal consequence in *Figure 6*. In other cases, the presence of negative effects can be the only aspect depicted in the image. If so, the described effects are always devastating, as in *Figure 7*, where the use of aluminium is condemned because of its neurotoxic issues. It is true that aluminium is used (in small doses) in vaccines, but it generally boosts the immune response to the vaccine; furthermore, it has been confirmed that there is an absence of aluminium concentration in children’s blood (Karwowski *et al.* 2018). Nevertheless, the visual used in the post and reproduced in *Figure 7*, for instance, resorts to a supposed massive presence of aluminium: the considerations made of the weight of children and the amount of aluminium injected with vaccines, which, according to the anti-vaccine movement, seem disproportionate, are put forward in a sort of neutral language. The use of deontic *should* in *should not* and *should be the maximum* alerts people to the fact that, probably, these indications given “over a decade ago” have not been followed. Yet no scientific source of what is being said is mentioned,

³ The account of the Twitter user who posted this tweet has been removed because s/he violated Twitter Terms of Condition. The tweet is no longer available [31/07/2019].

and nothing is told about other scientific aspects such as the immune-response boosting effect that aluminium has. The linguistic interplay between the image and the text is emphasised by the use of different colours in the text: yellow is the colour conventionally used in signposts indicating the danger of radio-active hazard. Therefore it seems here to be used to warn people of the vaccination danger (“ALUMINUM IS USED IN VACCINES”, “we should not inject more than...”) and red, to highlight the alleged link between “hepatitis B vaccine” and “neuro-toxin”. We have therefore four possible ways of reading the visual: by reading the whole text, by following the yellow path (what we should not do, because “aluminium is used in vaccines”), by reading the white part (what the FDA decreed), or simply by connecting the red words (what vaccines really are).



Christ Consciousness

@TlohJ

**ALUMINUM
IS USED IN VACCINES**

OVER A DECADE AGO, THE FDA DECREED THAT
WE SHOULD **NOT** INJECT MORE THAN 5 MICROGRAMS OF
ALUMINUM PER KILOGRAM OF BODY WEIGHT PER DAY.
YET THE **HEPATITIS B VACCINE** HAS MORE THAN 250 MCG OF
ALUMINUM AND A NEWBORN BABY WEIGHS AT THE MOST
5 KILOS. 5x5 MEANS 25 MCG SHOULD BE THE MAXIMUM,
YET WE ARE INJECTING 250 MCG ON THE FIRST DAY
OF LIFE - A TOXIC DOSE OF KNOWN **NEURO-TOXIN**.

Natural News

(c) MARCHAGAINSTMONSANTO

Figure 7. – ‘Negative effects’ category.



Staying Healthy
@ICanStayHealthy



No American should be legally forced to play vaccine roulette with their child. Barbara Loe Fisher #CDCwhistleblower



Figure 8. – Negative considerations of vaccination as mandatory.

Negativity is also found in the mandatory aspect of vaccination, as can be seen in *Figure 8*.

Here, the obligation to vaccinate is seen as a violation of the freedom of choice: people are indeed “legally forced”, while they “should not” be. In addition, we have a conceptual metaphor, verbally realised as “vaccination is a roulette” and visually extended by the dice we can see in the background. Like gambling, with vaccination, people are gambling with their lives. Interestingly, the picture of the dice is on no. 6 – and you can roll a D6 die – to reproduce the fact that *you can roll a die*. The metaphor and the literal meanings create a pun: exactly as you can roll a dice, you can also roll a die gambling with your child’s life.

The category of ‘statistic data’ is used as an argument that shows the number of deaths or injuries caused by vaccination. Again, no source is

offered in the statistics. Nobody knows when the statistics were issued, when they were elaborated, with what data – in short, statistical data are distorted⁴ and no scientific consideration can be made, as can be seen in Figure 9⁵.

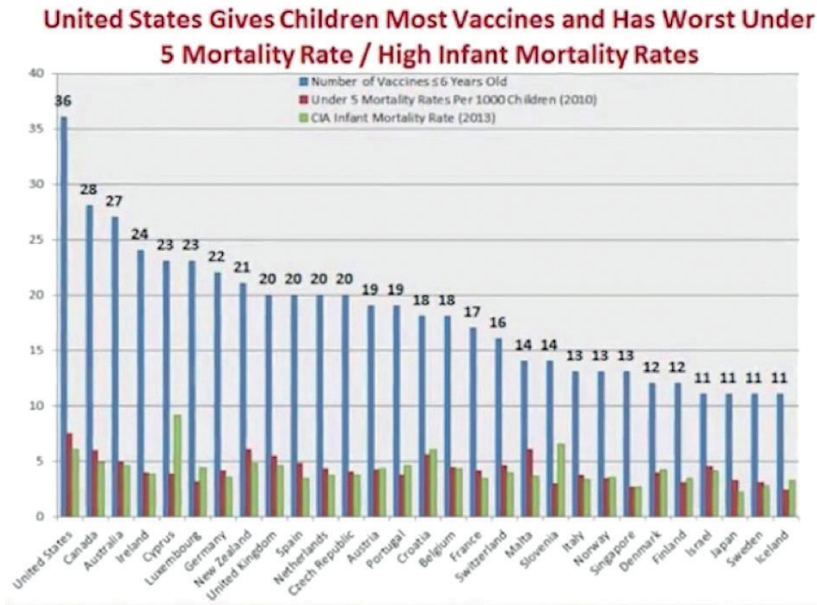


Figure 9. – ‘Statistical data’ category.

At last, some words should be said about the ideas anti-vaccine Twitter users have about the Big Pharma plot against the truth: from the collected tweets, it appears that they believe that one of the real reasons why nobody speaks about the dangers of vaccination is linked to the huge economic interests the pharmaceutical industry has in vaccination. Indeed, there is a part of the visuals that underlines the profits that Big Pharma managers make thanks to the selling of vaccines, as we can see in the report in Figure 10.

⁴ ‘Distortion’ is here to be intended in the statistical sense. Data are *distorted* and manipulated when they report information misleadingly so that incorrect results derive from it (Huff 1954, 101).

⁵ The account of the Twitter user who posted this tweet has been removed because s/he violated Twitter Terms of Condition. The tweet is no longer available [31/07/2019].



Vaccinelnjured
@Rectitude20



At **#Merck** you can more than double your salary in 2 years if the company successfully manipulates & conceals data, promotes false advertising, creates unsafe vaccines, & causes chronic disease. All the while you will remain free of **#vaccine** liabilities!
Way to go **#CDC #Gardasil**

2014



Kenneth C. Frazier, Merck
\$13.9 million
(\$53,350 per day)



2015



Kenneth C. Frazier
\$19.1 million
(\$52,328 per day)



Figure 10. – ‘Economic profits’ category.

Clearly, according to anti-vaccine supporters, scientific teams and medics are also included in this category as they too are seen to be involved in the plot and to have an interest in concealing the truth.

4.2. Linguistic data

The visuals described above are usually, but not necessarily, complemented by a short text like the ones generally found on Twitter. As said in the introductory section, the corpus collected in the verbal section comprises 16,768 tweets (75,960 running words). The sentiment analysis elaborated by *Socialbearing.com* reveals that over 45% of the tweets are neutral (in the sense that they are posts reporting academic scientific papers without any positive or negative consideration about vaccina-

tion *per se* but rather for the scientific research commented on the post itself) roughly 35% of the tweets convey negative feelings (bad and terrible), while just 20% convey positive ones. Although negative feelings exceed positive ones by 15%, almost half of the tweets are neutral. Nevertheless, while reading the whole corpus the impression one gets is that vaccination strongly relates to negative emotions. This is probably due to the fact that the linguistic data are accompanied by the pictures described above. The pie-chart in *Figure 11* summarizes the sentiment analysis.

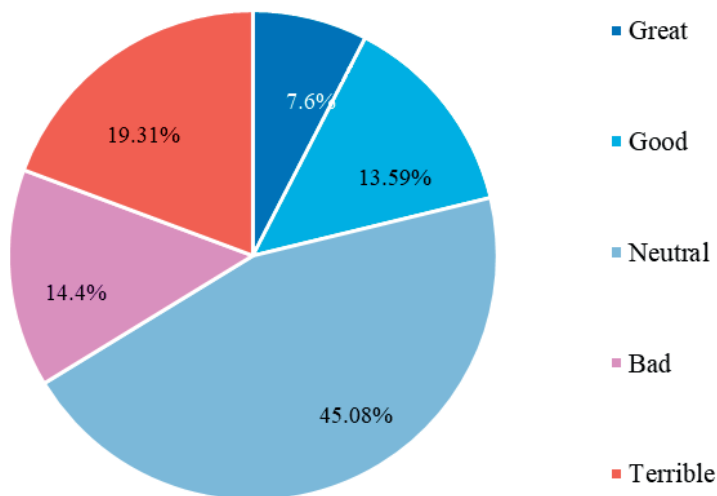


Figure 11. – Tweets sentiment analysis.

In order to understand whether the sentiment analysis has a correspondence in the linguistic data, we investigated the discourse in the tweets by using WMatrix, with the aim of detecting key parts of speech (POS) through the WMatrix's tagging system, a tool for identifying salient discourse linguistic POS items. Before using WMatrix, the corpus had to be manually reorganized: *Socialbearing.com* downloaded all types of tweets, including retweets and mentions; the former are not taken into consideration in our investigation, as retweets are duplicates of what has already been said, while mentions are, as they are replies to tweets starting with the name of the twitter user. This left us with 7,275 tweets (37,980 running words).

4.2.1. Key POS in the #anti-vax tweet campaign

POS are detected with the Constituent Likelihood Automatic Word-tagging System (CLAW)⁶ tagset (Piao *et al.* 2006). CLAW determines what the most frequent word classes are in the studied corpus relative to a reference corpus (which we did by comparing our corpus with the spoken BNC sampler set used by default in WMatrix) by using “a statistical Hidden Markov Model (HMM) technique (Jelinek 1990) and a rule-based component” (Rayson 2003, 63). CLAW achieves 97-98% accuracy for standard written texts (Rayson 2003).

The top key POS characterizing our corpus are items with hashtags and proper names, followed by function words, such as articles, prepositions etc. The others drop dramatically, with frequencies ranging from 10 to 30 occurrences. The findings checked for the purpose of this investigation are those which have a frequency ≥ 20 occurrences. The data are centred around four main categories: nouns, verbs, adjectives and numbers (written in italics in the following paragraphs); they, reveal a lot of expected results as they deploy recurring discursive patterns, as indicated below.

As to the nouns, there is constant exploitation of the imagery of *death* (40 hits), involving *children* (92 hits); a correlation with *autism* (51 hits) and other *risks* (23 hits) and with the claim that the *Government* (27 hits) is either paying for the damages of vaccination or is responsible for a *conspiracy* (9). *Social media* (17 hits) are the only place where *parents* (44 hits) can get true *information* (13 hits) and stop Big *Pharma* (12 hits) from *fraud* (20 hits) and cover-up.

There is an interesting result for the data related to the word ‘government’, which links to the idea of a conspiracy against the people, perpetrated by the government who is faced with a conflict of interests. This is reported in tweets characterized by a lack of emotions, as can be seen in *Table 1*. Verbs are normally those inviting people to *learn* (25 hits) and *read* (31 hits) about the risks related to vaccines if they *want* (21 hits) their children to be healthy, and to better *help* (5 hits) and *protect* (24 hits) them. There is frequent use of the verb *to need* (37 hits), either in combination with the noun *children*, to indicate that it is not necessary to inject them with lots of vaccine; or with Big *Pharma* to underline the deontic necessity to sue them for vaccinating children, because too many children *died* (13 hits) after vaccination.

⁶ See <http://ucrel.lancs.ac.uk/claws/> [24/03/2018].

The mostly used adjective is *dangerous* (20 hits), which is connected with the adjective *adverse* (31 hits), usually collocating with *reactions* (27 hits).

Table 1. – Representation of a government conspiracy.

-
- 1 Don't believe anything the *government*, scientific or political studies say.
 - 2 The problem here is the *#government* is forcing your arm (literally).
 - 3 Why is the compensation for *#Vaccine* dead given by the *Government* and not by *#BigPHARMa* vaccine manufacturers?
 - 4 Given that US *government* has paid out over \$3 billion for *#vaccine* injury who, in their right mind, wouldn't like to see safer vaccines?
 - 5 The *government* created lyme disease, read Lab 257, now THEY want to create a *#vaccine* to make a profit off the disease.
-

Basically, what the tweets report is that vaccination is dangerous, as it can cause adverse reactions and correlates with autism, if not death. So parents should protect their children by not allowing the government to have their children injected with unnecessary vaccinations, as the government is responsible for a conspiracy with Big Pharma. Therefore, all parents are invited to get informed before it is too late.

As to numbers found in tweets, they are associated with the negative consequences of vaccinations and apparently represent records of overestimated cases of:

- dangerous risks,
- adverse reactions, and
- costs;

as can be seen in the collocate lists in *Table 2*.

Table 2. – Numbers as negative or overestimated cases of negativity linked to vaccination.

-
- 1 For every 1 beneficial *#HPV* *#vaccine* they give out, there are at least 13 cases where it caused problems? *#wtf*. Scary that they have rushed out *#Gardasil* to *over 50 million* people already.
 - 2 In addition to *#vaccine* injuries and deaths, there are now two drowned humans, and 3 million dead honeybees connected to our *#CDC* and *#FDA*.
 - 3 *#VACCINE* *#INJURY* Compensation Program: \$3.7+ Billion Paid by Taxpayers NO LIABILITY [hrsa.gov/vaccinecompensation](https://www.hrsa.gov/vaccinecompensation) *#vaccines* *#LearnTheRisk* *#VaccineInjury*.
 - 4 *630 percent* more aerosolized flu virus particles emitted by people who received flu shots; & flu vaccines actually spread the flu bit.ly/2rSWJK1 *#flushot* *#antivax*.
 - 5 *97%* of people making regulatory decisions about vaccines either own stock in vax companies or are financially entangled bit.ly/2zcHnBY.
-

5. CONCLUSIONS

The analysis of the anti-vaccine activists corpus collected from Twitter has revealed that the anti-vax discourse, based on fake news, is apparently constructed on scientific grounds in an accessible language that is supported by vivid (and visual) metaphors. The images detected in the tweets forming our corpus follow some regular and recognizable patterns by means of which Twitter users are emotively moved and invited to get informed about:

- vaccination,
- its negative side-effects,
- its negative statistical data aspects,
- the alleged economic profits linked to vaccination (which is why the mandatory aspect of vaccination has to be abhorred).

The argumentation of the anti-vax discourse in Twitter can be summarized as follows: if parents want to protect their children, they must get informed, as the long-term effects of vaccination are unknown. New studies have revealed that vaccination is responsible for deaths or injuries, as the courts have established. And despite the fact that the media have dismissed this piece of news, these facts cannot be denied. Thus, people must get informed before getting vaccinated – indeed, false diseases can also be generated by the government so that vaccines are created in order to make a profit. There is, in sum, a conspiracy between the government and Big Pharma at the expense of the population.

Vaccination, therefore, is cognitively perceived as extremely dangerous because of its unknown effects. When its negative effects are emphasized, in particular when vaccination is seen as the main cause of injuries or deaths, or when the presumed correlation between autism and vaccination is put forward in tweets, vaccination is, socially, strongly condemned. At last, institutionally, vaccination is seen on the basis of conflicting and financial interests involving the authorities: it is here that the conspiracy plot is constructed. Since all this is elaborated on moral and pseudo-scientific tweets spread by the anti-vaccine activists, this discourse seems to ground on authorial news.

The misrepresentations to which the spread of such fake news can lead over Twitter are visible to such an extent that, nowadays, social media are removing social news sites from their platforms “on the grounds that they violate policies against misleading contents” (Alcott and Gentkow 2017, 233). This alone is not enough. There is a need for a new transdisciplinary literacy: a digital-health literacy on vaccination

that can help people, even vaccine supporters who may be confused by the debate arising in social media, to develop trust in health professionals (Hussain *et al.* 2018).

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