Article title

Journalists and Science 2: diversity in the media coverage of the 2009 pandemic flu vaccine's safety in France

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Abstract

The theoretical debate about the role played by the media in controversies over science and technology has mostly died out since the beginning of the 2000s. The emergence of a *neo-institutionalist* sociology of journalism and the application of Bourdieu's field theory to this subject provide sociologists of science with new tools to make sense of journalists' work in controversies. This paper draws on this literature to shed light the media coverage of the controversy over the safety of the 2009 pandemic flu vaccine. Using semi-structured interviews with journalists who covered this issue for the French agenda-setting news-media and content analysis of the coverage proposed by a sample of these media, it analyses the diversity in the media coverage of this issue. I show that journalists presented a variety of conceptions of their role during this crisis. This was reflected in significant variations in how the issue was covered in the French news media. These variations are linked to journalists' professional trajectories, their media's position in the market and the overall evolution of the field of health journalism. These results contrast with the traditional account of why vaccine criticism emerges in the news that presents journalists on the whole as being favourable towards the "antivaccine movement" and as interested in fostering controversies on vaccination.

Résumé

Le débat théorique portant sur le rôle des médias dans les controverses sur les sciences et techniques s'est éteint depuis le début des années 2000. L'émergence d'une sociologie *néo-institutionnaliste* du journalisme et l'application de la théorie des champs de Pierre Bourdieu à ce sujet propose aujourd'hui

de nouveaux outils aux sociologues des sciences pour comprendre le travail des journalistes dans les controverses. Cet article se fonde sur cette littérature pour éclairer la couverture médiatique de la controverse sur la sécurité du vaccin contre la grippe pandémique de 2009. A partir d'entretiens semi-directifs et d'une analyse de la couverture médiatique de ce sujet par un échantillon de médias, il analyse la diversité de la couverture médiatique de ce sujet. Il montre que les journalistes présentaient des conceptions différentes de leur rôle dans cette période de pandémie. Ces variations se sont reflétées dans la couverture du sujet de la sécurité des vaccins. Elles se rapportent à la trajectoire professionnelle de ces journalistes, au positionnement de leur média d'appartenance sur le marché et à l'évolution générale du champ du journalisme de santé. Ces résultats contrastent avec la présentation traditionnelles des journalistes comme prompts à alimenter des controverses sur les vaccins et favorables au « mouvement antivaccin ».

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1. Introduction

What role do journalists play in controversies over science and technology?

This question was at the core of a heated debate at the turn of the 1990s among social scientists working on science and technology. To summarize the debate crudely, it opposed two factions. On the one hand, researchers interested in the « Public Understanding of Science » insisted that there were crucial differences between the professional ethos of journalists and scientists (« two cultures », see (Wahlberg et Sjöberg, 2000). For them, these differences account for the presence in the media of discourses and actors that deviate from what they present as scientific consensus. Journalists' definition of objectivity as balance leads them to see scientific controversies where there aren't any and give the same exposure to actors with unequal scientific legitimacy (Anderson, 2002 ; Conrad, 1999 ; Dunwoody, 1999 ; Friedman, Dunwoody et Rogers, 1999 ; May, 2005 ; Nelkin, 1987 ; Rowan, 1999 ; Seale, 2003 ; Stocking, 1999 ; Weigold, 2001). Because of this and their simplistic definition of « facts », journalists tune out the fundamental uncertainties at the core of scientific knowledge and overlook actors who present a more nuanced position (Conrad, 1999 ; Williams, Kitzinger et Henderson, 2003). With their sensationalist approach to science, they tend to overestimate risks (Kolb et Burkhardt, 2007). They also lack the time and training to properly understand the subjects they cover which leads them to believe false claims (Conrad, 1999 ; Einsiedel, 1992 ; Nelkin, 1987 ; Stocking, 1999 ; Weigold, 2001) and fall prey to basic cognitive biases (Stocking et Gross, 1992)¹.

On the other hand, researchers closer to social-constructionist and political sociology's approaches did not see the journalists as particularly heterodox-friendly. They also adhered to this « two cultures » hypothesis. But for them, this has the opposite effect of setting aside real uncertainties and controversies². Journalists do not give voice to dissenting views on most issues. They tend to favour an image of science as permanent progress and to brush aside the uncertainties and risks at the core of socio-technical controversies (Fahnestock, 1986 ; Nelkin, 1987 ; Singer et Edreny, 1993). More often than not, they explicitly disqualify heterodox actors rather than help them (Mooney, 2005 ; Zehr, 2000). They rely too heavily on top scientific journals, official experts, the government and the industry (Nelkin 1987; Einsiedel 1992; Conrad 1999; Weigold 2001; Nisbet, Brossard, et Kroepsch 2003) which makes them particularly vulnerable to manipulation by dominant actors (Berkowitz, 1992 ; Ericson, Baranek et Chan, 1989 ; Hansen, 1994). Journalists are therefore actually biased in favour of dominant science rather than heterodox views (Conrad, 1999 ; Dunwoody, 1999 ; Waddell et al., 2005 ; Williams, Kitzinger et Henderson, 2003).

This theoretical debate about whether, how and how much journalists act as facilitators of public controversies on science and technology was vibrant during the 1990s but has died out since.

¹ Studies of health in the news suffer particularly from these limitations (Briggs et Hallin, 2016).

² Sometimes by the same authors, see for instance Dorothy Nelkin's subtle work (1987).

This is partly due to theoretical limits inherent to the « two cultures » approach. Because it homogenises both scientists and journalists, it does not provide the theoretical tools to make sense of 1) the differences in coverages of a same topic from one media to the other; and 2) the diversity in overall media coverages from one topic to the other³.

Recent advances in the sociology of journalism shed new light on this issue. The emergence of a *neo-institutionalist* sociology of journalism and the application of Bourdieu's field theory to this subject provide sociologists of science with new tools to make sense of journalists' work in controversies over science and technology. This strand of research can help shed light on the diversity of media coverages of a same issue. But it also helps understand the variety of coverages from one subject to the other and therefore why some controversies, actors or arguments never make it into the news (i.e. journalists' gatekeeping practices).

The purpose of this paper is to shed light on journalists' role in controversies over science and technology by drawing on these recent works and through the case study of vaccination in France⁴. More specifically, I focus on the media coverage of the controversy over the safety of the 2009 pandemic flu vaccine. I aim to show how *neo-institutionalist* sociology and field theory in particular can help make sense of the variety in media coverages of this issue. It follows a previous paper dedicated to the boundary-making work performed by journalists during this period (Ward, 2019). My argument is based on two types of data: semi-structured interviews with journalists who covered this issue for the French agenda-setting news-media and the coverage proposed by a sample of these media. This work being part of a wider project on this controversy, I also draw heavily on other data pertaining to the actors who criticized this vaccine (Ward, 2016).

I start with a theoretical section reconstructing the mechanism explaining this diversity in journalistic practices as it is presented in *neo-institutionalist* and bourdieusian sociology of journalism (section 2). I will focus especially on field theory, not only because it constitutes a reference in debates surrounding *neo-institutionalist* sociology of journalism, but more importantly because it has already been applied to French health journalists in the past, making the present case study possible. I then present the context of the 2009 pandemic flu vaccination campaign in France and my data (3). In the rest of the paper (4), I show that there were significant differences in how journalists defined their role during a pandemic crisis (4.1) and how this translates in variations in media coverage of the subject of vaccine safety (4.2). But in exposing these results, I will also show the limits of these variations: all media covered the issue of vaccine safety and all followed a similar timeline.

2. Neoinstitutionalist perspectives on journalism

³ Of course, STS researchers have produced more subtle analysis of the role of the media in a variety of controversies. However, this has not led to the formation of a theoretical framework applicable beyond each case study.

⁴ The study of media coverages of vaccination has produced an ideal-typical example of the “two cultures” approach in the work of Christopher E. Clarke (Clarke, 2008, 2010).

Neo-institutionalist and bourdieusian sociology of journalism

Sociology of journalism and the media flourished in the English-speaking world in the decades following the Second World War. One of the main and consistent results emerging from this strand of research was that treatment of the news was very homogeneous across the media, especially in the USA (Michael Ryfe, 2006). The reason lied in the similarities in organisational structures across the industry and in the emergence of institutions working to build and unify the profession. This homogeneity could be seen in the common adherence to two norms and their centrality in the work of practically all journalists : the definition of objectivity as a balancing of contradicting points of view (hereafter called « objectivity as polyphony ») and the need to avoid being overtaken by competition (hereafter called « the competition norm ») (Kaplan, 2002). So when concerns about the « public understanding of science » gained traction in the English-speaking academic world at the turn of the 1990s, researchers turned to these early works to make sense of the gap that some perceived between scientific knowledge and its depiction in the news.

But, unbeknownst to most of its participants, this debate occurred around the moment when sociology of journalism was undergoing significant transformations. In the English-speaking world⁵, an increasing number of scholars came to take a renewed interest in this homogeneization theory and to challenge it (Michael Ryfe, 2006). This strand of ongoing research studies journalists' work at the intersection of dynamics of professionalization, transformations of the economic environment and transformations of the political field. This new line of research underlines the variety of constraints that affect each journalist's work: professional socialisation, pressure to find their public and access to information and sources (Esser et Strömbäck, 2014 ; Hamilton, 2004 ; Siméant, 1992 ; Sparrow, 2006). Each of these constraints bears differently on each journalist producing a variety of styles of journalism (Benson, 2013 ; Chalaby, 1996 ; Marchetti, 2010 ; Pickard, 2014 ; Weaver et Wilhoit, 1996).

Neo-institutionalists have drawn upon different intellectual traditions to make sense of this variety of norms and of their evolution. But Bourdieu's field theory has been the most influential and discussed one of them (Benson et Neveu, 2005)⁶. It constitutes the most comprehensive attempt yet at explaining variety and similarity in journalistic practices and also has the advantage for my particular case study of having already been directly applied to health journalism in France (Marchetti, 2010).

Bourdieu's field theory was designed as a tool to understand the institutionalisation of any type of social domain, such as professions, in a way that doesn't overlook tensions and conflicts

⁵ Especially in the United States of America.

⁶ Some authors working with field theory reject the *neo-institutionalist* label, arguing that institutionalisation is only one of the variables included in Bourdieu's model (see for instance the introduction of Benson et Neveu 2005). I follow here Ryfe and others' use of the term (2006). They argue that *neo-institutionalism* does not necessary imply a sole focus on the institutionalisation of a profession and that this aspect should be studied in relation to other social processes, which is precisely what field theory allows.

(Bourdieu, 1984). The autonomisation of a domain of activity (*a field*) means that a set of actors gain increasing control over a number of resources and over the rules and norms that determine access to these resources. A set of resources, actors and rules that are specific to this domain of activity therefore become increasingly the point of reference and the purpose of the actors who are engaged in said activity. These autonomous domains are called “fields”. All actors in each field do share some features, and not the least their will to “make it” in the same field. But competition for the symbolic and economic resources of the field creates inescapable tensions. For each actor, differences in amounts of the social capital specific to this field determine access to these resources. But this hierarchy, what counts as capital and to what extent, depends largely on who has the means to impose their own vision and therefore who holds the positions of power and prestige within the field. So the way competition is played out is necessarily an object of contention, since the various types of actors engaged in the field will fight to impose the vision of what the job should be which corresponds to their own trajectory and practice. While dominant actors within the field have the means to maintain a hierarchical order that favours them, transformations outside of the field can disrupt this order by allowing dominated actors to access new resources. This framework helps account for both the variety and the similarities in journalistic practices, but also for their permanence or change over time (Benson et Neveu, 2005 ; Marchetti, 2010). This is precisely what Marchetti’s has shown for health journalism in France.

Bourdieu’s field theory and the field of French health journalism

Through his study of the “contaminated blood scandal” which made the news at the very end of the 1980s and early 1990s, Dominique Marchetti set out to explain the transformations in health journalism in France since the end of the 1950s. He shows that this particular event marks the transition in health journalists’ professional norms towards a more critical form of journalism traditionally associated with political journalism. He proposes the following narrative.

Between the 1950s and the 1970s, health reporting was practically inexistent in the mainstream news media. Only the highbrow daily newspaper *Le Monde* had a health rubric. The type of journalism they practised relied heavily on dominant actors of the academic field and public health officials. It was focused on *vulgarisation* and promotion of scientific progress. Journalists didn’t see themselves as watchdogs to the powerful, even though this was already becoming the norm in other rubrics. Journalists were very dependent on their mainstream sources while at the same time very independent from market pressures. The rubric was not prestigious and they weren’t expected to make the front page. As a consequence, what we see as traditional norms of journalism did not apply to this field.

From the second half of the 1970s till the end of the 1980s most agenda-setting news-media created rubrics and positions to cover health. This is due to the intensification of the competition on the media market with the appearance of new daily newspapers aimed at the working classes. This

prompted news enterprises to seek more variety in their offer to their readership. But this did not immediately produce a transformation of the type of reporting expected of these newcomers. Consensual views from academics and public health authorities remained the reference in this field in constitution and “sensational” and “political” pieces were frowned upon and very rare.

The real change in journalistic style came at the very end of the 1980s and in the first half of the 1990s. This was a period of transition from one model of health journalism to the other. This transitional nature can be seen in the tensions that arose within the profession regarding the definition of what “good” health journalism is. These tensions were made particularly manifest during the coverage of what will later be called “the contaminated blood scandal”. It appeared that in the middle of the 1980s several thousands of persons were infected with HIV and hepatitis C through blood transfusions. Public health authorities were accused of being aware of the risk but overlooking it. Marchetti shows that transformations inside and outside of the field had to happen for this scandal to emerge. The AIDS epidemic significantly reshaped the field of health by bringing new actors into play (such as patient groups), dividing the scientific community and bringing to the forefront moral-political frames. This was combined with a further increase at the end of the 1980s of the competition on the media market with the arrival of new television channels and print newspapers. Newcomers, who battled to reach the working class audience, hired a new generation of journalists trained in political reporting and put more pressure on their journalists in a variety of rubrics to create the news cycle. In their health rubrics, they hired doctors not only to perform “service” journalism, but also to adopt a critical stance on these issues. They were the first to apply the basic norms of political journalism to health issues and to promote a *critical expert* ethos in health journalism. These new media were the ones who seized the issue of these contaminations to denounce public authorities and who gave a voice to patients and other actors and organisations considered as marginal until then. In opposition to them, journalists already in the field, working for media who targeted a more educated public, denounced this framing as “muckracking” and irresponsible. However the “scandal” made the news and they were compelled to cover the story.

According to Marchetti, a shift in the whole field occurred during this period. All health journalists became compelled to adopt more political frames and to look for scoops and critical pieces, even if they pinched their noses when they did. The increase in market competition constituted an essential factor in the generalisation of these professional norms. These changes were brought about by successful newcomers on the media market who targeted a working class public and the new generation of journalists whom they hired. This tale is therefore both one of homogenization, but also one of the constant coexistence of differing styles, homogenization being never fully complete.

I will now mobilise this framework to make sense of the media coverage of the safety of the 2009 pandemic flu vaccine. On the face of it, the emergence of such criticism in the mainstream media corroborates the hypothesis that the professional norms followed by journalists put them at odds with

scientific consensus (Clarke, 2008, 2010). As we will now see, this account overlooks significant discrepancies in journalists' attitudes towards vaccine critics.

3. Context and Methods

Context

In the past ten years, vaccination has become a subject of increasing concern for public health authorities. After two decades without vaccines hitting the news, a first vaccine scare appeared at the end of the 1990s when concerns were raised over a link between hepatitis B vaccination and Multiple Sclerosis. But by 2004 this issue had ceased to make the news. The real turning point was the failure of the 2009 pandemic flu vaccination campaign.

In April 2009, the circulation of a H1N1 strain of the flu elicited great concern in most high-income countries which had been preparing for a flu pandemic for years. This was especially the case in France where the government set up a special task force between the May 1st 2009 and January 21st 2010. By the end of June 2009, it was decided that a large-scale vaccination campaign would take place in autumn to vaccinate 70% of the population. This campaign was to go down in history as a complete fiasco with only 8% of the population getting vaccinated. The main subjects of contention were the reality of the threat posed by this virus, the cost of the campaign, alleged conflicts of interest among the experts counselling the Minister for health, and the safety of the vaccine.

Criticism of the safety of the vaccine is the most significant when it comes to the relationship between journalists and « scientists » or « experts ». This debate was special in that 1) only one of the main critics had a position in the academic world, 2) most prominent critics of the campaign explicitly rejected this line of argument, and 3) while there was some adaptation of the authorities' discourse following the emergence of the previous lines of critique, it was not the case for the issue of safety. There was no back and forth between critics and public health officials and experts (immunologists, infectiologists, etc.) on this subject. The latter were adamant that it was not an issue. They mainly explained how the process of production, certification and pharmaco-surveillance of vaccines made them reliable. They also publicly denounced the influence of « the antivaccine movement » and its conspiracy theories, irrationality and anti-science attitude. Criticism of this vaccine's safety was therefore the most heterodox form of criticism produced during this period. I focus on this aspect of the controversy because it exacerbated the issues of professional credibility discussed in the previous section, making them appear in a clearer light. I have presented elsewhere the most prominent critics of this vaccine and their arguments (Ward, 2016). Their main causes for concern regarding this vaccine were: 1) the vaccine was produced too quickly, 2) it contained adjuvants which made it more likely to produce side-effects and 3) the flu being benign, these elements make the vaccine more dangerous than useful.

Methods

This paper draws on two types of data: media contents published during the period spanning from April 27th, 2009 to February 1st, 2010, and interviews conducted with journalists who covered the topic.

Analysis of the media coverage consisted mainly in the systematic analysis of all contents pertaining even marginally to the safety of the pandemic vaccine published in 20 French news media:

Le Monde, Le Figaro, Libération, La Croix, Le Parisien/Aujourd'hui en France , L'Express , Le Point , Marianne , Valeurs Actuelles , L'Humanité , France Soir , Le Nouvel Observateur , Le Journal Du Dimanche , Le Canard Enchaîné, Rue 89 , Arrêts sur Images , Médiapart , Slate , TF1's daily news at 1pm and 8pm

A coding scheme was devised to determine, for each print article or television piece, the degree of legitimacy attributed to dominant health sources (public health officials, recognized experts, etc.) and to heterodox sources (marginalized scientists, activists, nonprofits, patient groups, etc.) (see Annex for details). A specific focus was given to whether the journalist explicitly endorsed the discourse of their source and whether he, she or they were careful to balance them with opposing points of view. Following Marchetti, I aimed to include in this selection a variety of positioning on the media market and media known to have a strong influence on the news agenda. For the print, TV and radio media, each media's position on the market could be assessed by referring to other sociologists' work, by identifying the moment of their arrival on the market and their target audience (data provided yearly by the Service d'Information du Gouvernement). The year 2009 was a particular moment for the media industry in France. At the time, the print media were still in the process of developing their internet presence and produced little content exclusively for their websites. *Pure-players* had started appearing, but most of the early comers had disappeared while the ones who would end up becoming major players were not set up yet or were just starting. The sample includes several of these new *pure players* but it must be said that they were still at their inception. Another caveat in this selection is the overrepresentation of print media, compared to radios and TV. There are two reasons for that. One is that analysing audio and video data is extremely time consuming compared to written text. The second is that in 2009 in France, radio and TV news reached large audiences but were marginal when it came to setting the news agenda (Maigret, 2015). The sample contains the two daily news bulletins from TF1, which are the only TV or radio news shows to have a significant bearing on the news agenda⁷.

The second set of data consists of 32 semi-structured interviews conducted between October 2012 and February 2014 with journalists who produced these pieces (15 working in a daily newspaper, 11 in a weekly newspaper, 2 in an internet pure player, 3 for a television news bulletins and one in a

⁷ Most media were accessed through two databases: Europresse (print) and Inathèque (audio and video, provides a detailed description of the contents which allows keywords searches). For France soir, Le nouvel Observateur and Le Canard Enchaîné, it was necessary to consult physical archives. Data was lacking for the months of December 2009 and January 2010 for *France Soir*.

news agency). Interviews focused on how they came to see the issue of vaccine safety as newsworthy with an emphasis on the chronology of the period. My aim was to make them explain their conception of what good health journalism was. Interviews ended with a set of questions aimed at understanding the professional trajectory of the interviewee including their position within the news organisation and how long they had been covering health (education, positions occupied, parents' profession and level of education).

4. Results

The issue of the safety of the pandemic flu vaccine was not as contentious for the health journalism profession of 2009 as was contaminated blood at the turn of the 1990s. All media covered the subject and gave voice to the critics of the vaccine's safety, at least marginally. This corroborates Marchetti's hypothesis of a process of "normalisation" of health news. However, clear differences remained in how these journalists conceived of their work and it transpired in their coverage of this issue. I will now present the different conceptions of good health journalism that emerged in my interviews with a sample of journalists and then link these differences to the variations I could observe in their media's overall coverage of the safety of this vaccine.

4.1 Three journalistic profiles: the *critical expert*, the *vulgariser* and *routine journalism*

The 2009 flu pandemic happened nearly 20 years after the first articles on contaminated blood were published and 15 years after the end of that scandal's news cycle. Nevertheless, the two conceptions of health journalism described by Marchetti still transpired in my interviewees' discourse. In 2009, *vulgarisation* journalism and *critical expert* journalism were still the two main alternatives. But a significant portion of my sample combined aspects of both in their production whose main characteristic was its diversity (*routine* journalism). These differing conceptions of good journalism appear particularly clearly when my interviewees talked about what makes a good subject, the importance of specialisation to produce good health journalism and journalists' responsibility towards public health.

Critical experts

A first subgroup of my sample is constituted of journalists who present a *critical expert* ethos. These journalists insisted on the importance of disrupting the dominant discourse. They were the ones who mentioned journalists' democratic role as a counterpower either directly or indirectly through their pet peeves:

Journalist n°17 (female, newswire): "For us, our role is transparency. We're not there to help the campaign! That's not what we're there for."

349 *Journalist n°4 (female, weekly newspaper):* “I really like to work on the pharmaceutical
350 industry and all its little secrets.

351 *Interviewer:* What do you like about it ?

352 *Journalist n°4:* It’s the discrepancy with the official discourse. Typically: « your health
353 matters to us, we work for you, etc. We do a lot of research and invest a lot ». And then:
354 « actually, we’re there to make some dough and give money to our shareholders». That’s
355 why it’s really interesting to decipher the official message in the light of all these ties
356 between all these people.”

357 The theme of conflicts of interests was often raised by these journalists as a typical example of a good
358 topic to report on. These were the journalists who were the first to speak of the alleged ties with
359 pharmaceutical companies of the Minister for Health’s special advisor on the pandemic flu. They were
360 also the ones who put it into the news cycle where it was then commented by all media. More broadly,
361 they favoured subjects and framings that highlighted the political or social implications of medicine
362 and health. For instance, many of them told me that they tended to favour stories that broach the
363 subjects of what they called “public health” and “health policy”. Some also raised the issues of
364 unequal access to health and health service reforms (two topics that were at the top of the health news
365 agenda the previous year).

366 These journalists’ preference for more political subjects was also facilitated by a certain
367 degree of division of labour within larger newsrooms, where there is often a doctor or a journalist
368 devoted to vulgarisation on staff. They also linked it with their media’s position within the market. For
369 instance, journalist n°23 (male, daily newspaper), who is the only one to cover health in her media,
370 explained to us:

371 “I have to make choices because I am alone here. Points that are very precise, very
372 medical, are rather left to specialised newspapers. For very advanced articles on medicine,
373 there are specialised publications for that.”

374 Their preference also has to do with the capacity to understand enough of the technical aspects to
375 explain them without making mistakes, as several interviewees explained to me.

376 *Journalist n°13 (male, daily newspaper):* “OK, I’m going to set things straight. I am
377 going to be very prudent on these subjects. Hmmm... firstly, me, I am a journalist. I am
378 not a doctor. I don’t have a fine and deep understanding of complex questions linked to
379 vaccination, to the effects and advantages of vaccines. I am very careful. Hmmm... I am
380 conscious of my limits and of what I can say about that.”

381 As Marchetti has showed, putting a variety of facts in political and social narratives or frames is part
382 of standard training in French journalism schools, while advanced immunology is not. Unless
383 instructed otherwise, as was the case before the 1980s, newcomers to health journalism can turn to
384 them in order to write their stories. This was particularly well explained by Journalist n°5 (female,

pure player) who had covered health for only a year at the moment of the pandemic and was in a media that favoured critical stances:

“Well I felt a bit helpless so I used other intellectual tools than medical ones. Tools that came more from Sciences Po. For instance, what I was thinking while reading the articles just now is that that I was very happy to have done the article on the doctors who didn’t get vaccinated. It’s typically the type of reflex that you can have... asking: “ sure, but do you apply to yourself what you prescribe to others?” I thought it was very telling. So when I realised that doctors didn’t get vaccinated, it explained a lot. “OK, so it IS a super exaggeration!”.”

It also reflects the fact that most health journalism positions are part of “society” rubrics (“société”) or similar which means that “social” framings, defined broadly, are actively encouraged by their editors. They are part of their day-to-day discussions with their colleagues and during their daily editorial meeting.

Another important feature of these journalists’ discourse was that they brushed aside their responsibility towards the vaccination campaign:

Journalist n°14 (female, TV news): “It’s a question of balancing risks and benefits. You have to argue about the benefit, and about the risk. (...). So for your decision to be informed, you need good information about both branches. If information is biased on either side, your decision is biased. So your freedom as an individual is altered. It’s a question of individual freedom. Because if we are in a dictatorship, they can just do as in 1984 and take everyone and say: “come on! form a line and let’s vaccinate. It’s good for you and for your health”. If we are in a democracy, then you have to give the information and say “voilà”. But on the condition that the information is good and not biased. Not biased by hidden economic interests.”

They emphasized “informed consent” and their public’s ability to make rational decisions for themselves. A “balanced” coverage is seen by them as enabling just that. They trust the reader’s ability to understand complex information and to handle uncertainty. Several of them denounced the proximity that can exist between some journalists and their sources. Journalist n°14 (female, TV news) uses this argument to justify her legitimacy in covering health-related issues even though her speciality is in “environmental news”:

“You need distance to have objectivity! (...) You don’t need to be a member of the health rubric to deal with these subjects. It’s even better not to be because otherwise you are too close. (...) In sport news for instance, you will never have a reporter who reveals a scandal. It’s always reporters from general information. Same in all domains. You mustn’t be too close in a domain because you are always in contact with actors in health for instance, so it’s more difficult to have perspective.”

This reasoning is even institutionalized in another newsroom. Journalists change rubrics every five years or so in order to prevent specialization and foster a “multi-factor” approach.

More generally, “critical” health journalists shared some crucial characteristics with regards to where they stood in the field. They were mostly hired by media who tend to target the working classes more or who are relatively late-comers on the media market. Most were senior journalists (around 50 years old and more) who had already been covering health for more than 10 years and who had a position in the newsroom that allowed them to make time for investigative journalism. A minority had only recently come to health journalism, but were in media or rubrics who encouraged this critical stance (“Environment” rubrics for instance, see next section for examples of critical media).

Vulgarisers

A group of about a third of my sample opposed this first vision of journalism when it came to this pandemic. This group was mainly constituted of doctors who became journalists towards the end of their medical training. But it also contains journalists who were not doctors and went through the traditional route of a journalism school. Most of the members of this group also occupied rather senior positions in the newsroom and had been covering health for more than five years at the time of the pandemic. They tended to be hired by media with a large health rubric (more than 2 journalists covering health). They were mostly hired by daily news media who, for the most part, were early arrivers on the health journalism market and who targeted a more high-brow audience.

When it came to evoking subjects of interest, these journalists stood out from the rest of our sample by their focus on the complexity of the subject they covered. For instance, they insisted in their pieces and during interviews on the technical difficulties of the production of vaccines within this limited time-frame. For these journalists, health and medicine are interesting as such and not because of their social and political implications. For instance, during our interview one journalist was very vehement in her statement that “politics” should be “separated from public health”, that they are “two different things” and that “these things about lobbies, (she was) not interested in that” (Journalist n°29, female, daily newspaper). One piece illustrates particularly well these journalists’ approach to the pandemic: *Le Monde*’s “100 questions on the A flu”. This extraordinarily long piece (more than 6 pages) with its focus on uncertainties and on explaining the science behind every aspect of this vaccination campaign was at the crossroads between service journalism and traditional scientific journalism centred on “vulgarisation”.

Unsurprisingly, these interviewees insisted on the need for a “scientific” or “medical” training to cover these issues. One journalist, who was also editor in chief of the rubric, even told me that one of her crucial issues during that period was to “defend the scientific character of (her) newsroom”. This “scientific culture” was presented as a safeguard against the excesses induced by the pressure of “the news cycle”:

Journalist n°30 (male, TV news): “The problem is that a lot of journalists don’t have any scientific culture so they answer like a herd. And they choose their side. Me, I didn’t choose a side.”

More generally, all of them criticized at some point during our interview the « sensationalist » tendencies of contemporary health news:

Journalist n°15 (male, TV news): “The media went overboard because you have to comment on each other’s stuff, not leave out something in the news, especially when you have to fill [name of the media the journalist worked for]. So these things become totally irrational. And unfortunately, newsrooms, and not only [name of the media the journalist worked for] go towards the sensational and permanent anguish.”

Several of them even went so far as criticizing the tendency of French media to seek scandals and focus on “politicking” while the media in other countries were “more respectful” of scientific knowledge.

Another interesting feature of these interviewees’ discourse was how much they insisted on their responsibility towards the vaccination campaign and vaccination rates in general. They felt that they were an important actor of public health and the fact that the issue of vaccine safety became part of the news and had to be covered made them uneasy. This was expressed very simply by journalist n°29 (female, daily newspaper) and journalist n°21 (male, weekly newspaper):

“Vaccine safety, I would’ve preferred not to speak about that ! (...) Vaccination rates are already so low!”

“We have to be responsible and not feed the polemic (...) We didn’t know whether it was going to be a pandemic or not... So, in doubt, we didn’t want to harm vaccination (...) Fear is the key to non-observance. They aren’t going to get vaccinated and that’s very important for herd immunity...”

This feeling of being part of a collective enterprise with public health authorities was made particularly clear in the disappointment and resentment that journalist n°15 (female, TV news) felt towards the distance that was put between her and public health officials:

“Where I disagreed with them, and on this point I really resent them, is that I cannot believe retrospectively that they didn’t quickly understand it wasn’t going to be the major pandemic we all feared. But I think everyone went overboard.(...)”

Interviewer: Why do you resent them?

Journalist n°15: They should have let us know that it wasn’t that catastrophic, at least to me, to us specialists...”

It is important to note that even though these journalists made it clear that they did not see the issue of vaccine safety as having any scientific ground, they still felt compelled to cover it. While they

presented a significantly different discourse than that of the other journalists in our sample on that issue and on the pandemic flu in general, professional norms and organizational constraints led them to somewhat follow the competition. This is best exemplified in journalist n°15's (female, TV news) explanation of why she covered at the end of November the lawsuit for "poisoning" filed against the minister for health. She started by lamenting on the tendency of French people to always think that the government is hiding something from them and then denounced the "antivaccine movement" which she thought was on the rise. Trying to bring her back to the particular case of this lawsuit, I asked the following question:

Interviewer: So when it is on the AFP's wire...

Journalist n°15: Well you cannot not follow up on that...

Interviewer: why not?

Journalist n°15: Because we are a news enterprise!

Interviewer: But among all possible stories...

Journalist n°15: No, not among all possible stories! This is news! It's news at that time! It's something that is of interest to everyone, this flu. This vaccination campaign... you cannot overlook this lawsuit of 9 people against the Minister. It's not trivial a lawsuit against a Minister. There aren't that many around: (...) Maybe when you can take a step back from the newscycle and be like: let's analyse the newscycle, then maybe. But we are in daily news, we have editions to fill up. If it's in the news, it's normal that we cover it. But then, there's covering and covering. We could have just published a newsbrief, lots of people did. It didn't merit more. It's already annoying to have to talk about it. OK, it just deserved a newsbrief. But you cannot overlook an info like that. And those who did full stories on that kind of stuff, that's up to them."

This journalist denied any scientific legitimacy to the actors who filed this lawsuit. But the fact that it was on the wire, that this event had some crucial eye-catching properties and that she was under pressure to produce a strong coverage of the issue compelled her to talk about it.

These differences in what they considered to be "interesting" or credible did not lead journalists to completely forgo the idea of "making the news", but they looked for it in different, more orthodox places. For instance, one journalist who was also a doctor, talked at length about his attempt to secure a long interview with a world-renowned medical expert in order to « get the information earlier and therefore publish it earlier » (Journalist n°26, male, daily newspaper). Journalists from this group obtained and published long interviews with prominent public health officials across the world, interviews that were then commented in other news media.

Routine journalists

The rest of our sample didn't present an alternative to these opposing visions, but seemed to be stuck between them. Most of them said they were more attracted by social frames and public health

issues and underlined their limited knowledge and grasp of the more technical aspects of the H1N1 pandemic and medicine and science in general. But they also often spontaneously talked about their responsibility toward the vaccination campaign. Contrary to journalists who embraced wholeheartedly the “critical expert” stance, their experience of that news cycle was one of constant dilemmas, especially when it came to the issue of vaccine safety:

Journalist n°19 (female, weekly newspaper): “When you are a journalist, it can be rather complicated, when you are asked to put out some general interest messages. You can be kind of schizophrenic between the idea that the goal is good for the population but then at the same time, not everything is being said to people.”

This same journalist explained at length why she was very frustrated by the fact that she couldn’t make up her mind on whether people should get vaccinated. But at the same time, she told me that she kept looking for alternative sources of information, ones that were not linked to pharmaceutical companies or to the government. But she was also dissatisfied with the quality of their arguments. She deemed them “too irrational”. Much like most of the journalists who fall in this third category, her production during that period was characterized by its versatility both in contents (critical or not) and formats (service pieces, debates, factual reporting, personal stories...). One format that was typically produced by this third category of journalists was pieces presenting the public’s opinion on the subject of vaccination. The journalist would create a narrative piece around public opinion polls, questions asked directly to passer-bys or comments found in chat-rooms and social media.

These journalists were confronted to contradictory injunctions and their production was very diverse. This can be explained by the fact that they had all only fairly recently started covering health issues (less than five years). Actually, five of them were not specialised in the coverage of health issues and were just sometimes assigned to these issues when help was needed on a given day. They did not cover the whole pandemic flu news cycle, but rather made daily or weekly forays. These journalists had less control over what to cover. They often ended up doing the pieces that “needed to be done” and which were less prestigious (government announcements, summarizing the argument in a press release, developing wire briefs...). They often told me that they wished they had had more time to do “analysis”. This is typical of the very classical form of journalism called *beat* or *routine* journalism where journalists have a set of regular sources they turn to for each circumstance and where work is characterized by a strong dependence on dominant sources and the need to produce lots of content. Their production was characterized by its variety, with formats that imply deference to dominant sources (such as service pieces) and pieces that imply a certain distance towards them (such as pieces focused on showing opposing sides based on heterodox sources identified via newswires).

4.2 Different media, different styles

These journalists’ different conceptions of good health journalism transpire in their actual coverage of the pandemic flu vaccine’s safety.

Common features: the vaccine safety news cycle

A superficial glance at the coverage offered by our sample of media suggests that traditional accounts of the role of media in sociotechnical controversies are correct and that all media should be lumped together and treated as a counterforce in the domain of science. Indeed, they all mentioned the heterodox subject that was vaccine safety and presented the main arguments put forward by critics.

The timeline of this media coverage also followed a similar pattern. News around vaccine safety can be divided into several periods where all media focused on the same aspects of the issue. From the 27th of April 2009 until the end of June, coverage of the pandemic flu was intensive and the hope that a vaccine would be available was often mentioned. The issue of its safety was only rarely touched upon and, when mentioned, treated as a technical issue that was being taken care of. A second phase started when the government announced its purchase of 94 million doses of vaccines at the end of June. From then until the end of August, there were more references to safety, but the overwhelming majority of them still framed it as a problem soon-to-be-solved. The very first public critiques of the safety of this vaccine emerged during this period. But this issue became a news segment as such, with pieces entirely dedicated to the subject, only in the very last days of the month of August. During the month of September, many pieces were published on the subject, pitting critics against official experts, but also reporting on the perception of the vaccine among the general population and nurses. During that period, vaccine safety and vaccination intentions became central in the coverage of the pandemic flu in general and almost all pieces mentioned it at least in passing. After a short slump in the coverage of pandemic flu in mid-October, the subject of vaccine safety made the headlines again at the start of the vaccination campaign for medical professionals (October, 20th) and for the general population (November, 10th). From then on, this subject was mostly presented as a concern for the population rather than as a real scientific or political issue. Also, the first cases of suspected adverse events participated in maintaining it in the news in November and December. Finally, the issue of vaccine safety died out progressively in December and almost completely after the winter holidays. It was very marginal in the pieces published at the beginning of January 2010 in which journalists drew lessons from the “fiasco” of the vaccination campaign. In these pieces, vaccine safety was always framed as one revealing the lack of trust in public health authorities rather than real scientific uncertainties.

But this homogeneity belies crucial differences in coverage either at the level of the media or at the level of each individual journalist. The media in my sample can roughly be divided in three categories: those that mainly adopted a critical stance, those that delegitimized this issue and the versatile media.

The critics

Firstly, very few media proposed a coverage that focused on frames that legitimize heterodox sources – by publishing pieces emphasizing the controversial nature of the debate or endorsing the point of view of vaccine critics. The only ones to do so were *L'Humanité*, *Marianne*, *Rue89*, and *Arrets sur Images*.

Marianne is a weekly newspaper created in 1997 by the founder of *L'Evenement du Jeudi* after it shut down. *L'Evenement du Jeudi* is the newspaper that “created” the contaminated blood scandal at the turn of the 1990s and was a crucial actor in the conversion of health journalism to a more critical ethos. *Marianne* was created to take over the legacy of this critical and politically “sensationalist” newspaper and it is renowned today for its critical stance. This stance was particularly well exemplified during the pandemic period with a full dossier entitled “the canards of the A flu” which featured several paragraphs on the claims that the vaccine was safe and effective. The subject of conflicts of interests was also extensively covered in its pages.

Rue89 is even more of a newcomer on the media market in general and health news in particular. This news website was created in 2007 and is oriented towards “participation”: it publishes contents produced by its readers and it hosts blogs. But it also has an in-house newsroom with journalists who generate their own material, often based on recommendations or suggestions from their readers. *Rue89* did not publish many articles on the flu, but most of them dealt at least in part with the issue of the safety of the vaccine. The only piece containing arguments in favour of the vaccine published on this website was a debate they organised between an expert involved in the government response to the flu and one of the main critics of this vaccination campaign.

Arrets sur Images is a website created in January 2008. It occupies a special position in my sample. It specialises in deconstructing media discourse on a given subject but it also provides its own covering a limited number of issues. Its editorial line is therefore one of criticism squared: they position themselves as watchdogs, not only of dominant sources, but also of their colleagues who fail to distance themselves sufficiently from them. They are also a very small newsroom. This explains why *Arrêts sur images* has taken little interest in the subject of the pandemic flu vaccine’s safety and in the pandemic flu in general. Three pieces constitute most of this website’s production on the subject during this period: a piece on “conspiracy theorists” on the internet published in August, a debate between a vaccine critic and a famous virologist at the beginning of September and the denunciation of the lack of transparency in the publicisation of the first side effects of the vaccine.

L'Humanité is a daily newspaper who was the official organ of the French Communist Party until 1994. Its editorial line is defined by partisanship rather than market pressure. It has opened up to other strands of the French far left since 1994 and this has expanded both the types of subjects covered in the newspaper and the frames mobilised to report on them. This has led to an increase in coverage of health and medicine with a specific focus on hospital and health care reforms and on conflicts of interests. *L'Humanité's* coverage of the pandemic flu vaccine’s safety was quite similar to that of *Marianne*. In the first months of the pandemic period, they only published a couple of papers on the

subject. But when critics emerged in full force at the end of August, they started investing more heavily in the subject. Between the end of August and the 19th of September, five papers were dedicated to the issue of vaccine safety and none of them presented arguments defending the vaccine. They also produced a two page dossier siding with a nurses' union criticism of the vaccine and of the treatment of health care workers in this campaign.

For some media: criticism is illegitimate

On the contrary, journalists at *Le Figaro*, *Libération*, *Le Point*, *L'Express*, *Slate*, *Le JDD*, and *Médiapart*, barely presented critical arguments (in terms of volume). Even when they did present them, criticism was always presented next to orthodox discourse and the presentation favoured arguments in defence of the vaccine's safety.

Le Figaro pushed this tendency to the extreme. This daily newspaper mostly targets a high-brow, higher income and right-leaning audience. It is one of the oldest newspapers in France and it has covered health since before the 1980s. It covered the subject of the pandemic flu extensively (with more than 400 articles devoted to the subject). When the subject of vaccine safety made its way in the overall news cycle in September and most media were framing this subject as a controversy, journalists from *Le Figaro* presented it as already resolved and as an issue of false perceptions by the public. While they produced many pieces on the subject, it is also quite surprising that they only summarily presented the arguments of critics. These arguments were almost systematically explored through the perspective of the answers they had already been given by orthodox sources⁸. Arguments defending the safety of the vaccine were repeated again and again during the period. The head of the health rubric even went so far as publishing an editorial denouncing the critics' influence on the campaign and on vaccination in general. This is how the dossier accompanying this editorial was announced on the cover of the journal:

"A flu: What needs to be known before getting children vaccinated
Vaccination against the H1N1 virus in secondary and high schools, which starts this week, has parents wallowing in uncertainty. For paediatricians and virologists, the benefit of vaccination is without any doubt, especially since side effects are minimal."

Le Figaro, November 24, 2009

Libération is a daily newspaper who targets a highly educated and left-leaning audience. It invested in coverage of health only around the end of the 1980s. Its coverage of the issue of vaccine safety was quite similar to that of *Le Figaro*: the subject of vaccine safety was mainly framed as a movement in public opinion, the issue wasn't presented as a real scientific controversy and vaccination was clearly encouraged. The director of the newspaper also took position against vaccine critics and wrote an editorial similar to the one published by *le Figaro*.

⁸ The same tendency is manifest in *Le Point*'s coverage.

This delegitimising of vaccine critics was also particularly clear at *L'Express*. For instance, this right-wing high-brow weekly newspaper announced the result of an exclusive opinion poll on the subject of vaccination intentions among health care workers which suggested that vaccine safety was a major concern in that population. But this piece strangely didn't contain the arguments published by a nurses' union who had been all over the news in the preceding week. Its Q and A on the subject of vaccination, published just when the campaign was starting in November, brushed aside these concerns about safety.

Another way these media delegitimized vaccine criticism was by associating it with "conspiracy theories" and other types of "rumours" that circulated "on the internet". It was especially the case for *Le Figaro*, *Libération*, *Slate* and *La Croix*, like in this excerpt from a paper published by *Slate* in January 2010 and dedicated to drawing conclusions from the debacle:

"In sum, we open an unprecedented sanitary shield, so heavy that we cannot adapt it when we start to understand that the enemy is less menacing than we expected. This was enough to generate and feed all the rumours, starting with those on the vaccine's dangers and the existence of occult and financial ties between political deciders and pharmaceutical multinationals."

Slate, January 10, 2010

For the others: two phases in the coverage

Next to these opposite stances, the coverage of this issue by the other media of our sample was contrasted. It can roughly be divided into two successive phases. *Le Monde*, *Le Parisien*, *TF1*'s lunch and dinner news programs, *France Soir*, *La Croix*, *Valeurs Actuelles* and *Le Nouvel Observateur* opted for pieces that gave credence to heterodox sources only around the month of September. But from October on, their depiction of the controversy was mainly one that opposed the public's fears and superficial arguments to the sound answers of science presented by public health officials or experts involved in the handling of the flu. Also, when they did give voice to vaccine critics, they never went so far as to explicitly endorse their arguments, contrary to the media from the first group. They also never presented them on their own. Indeed, in their most heterodox-friendly pieces, they favoured a simultaneous presentation of accusations and defences of the vaccine's safety to texts entirely dedicated to criticism. These media therefore painted the picture of a controversy that was already resolved by the beginning of the vaccination campaign.

For *Le Monde*, *Le Parisien* and *TF1*'s news bulletins, this versatility is due at least partly to the large number of journalists covering the subject and to their varied profiles. Those presenting the *vulgarizer* or *routine* profiles covered the whole pandemic sequence, while the more *critical* journalists only took an interest in the subject during the period when the controversy was rife (September) and only made small forays on the subject at selected moments.

These differences cover in part the lines of fracture that structured the field of health journalism at the turn of the 1990s, as described by Marchetti, with newcomers to the field composing most of the first group and the highbrow press composing most of the second. The main break with Marchetti's analysis or case study was that the media that targeted a working class audience did not focus on a critical stance, but belonged rather to the third group. Also, partisanship seems to have been an important variable here, unlike in the case of the contaminated blood scandal. With the government at the time being clearly right wing, it is maybe not so surprising that right-leaning media are over-represented in the un-critical group. Finally, it seems that weekly newspapers were marginal in this news-cycle.

5. Conclusion

Recent research in the sociology of journalism has highlighted the existence of a variety of potentially contradictory norms and constraints that bear upon the work of journalists. In doing so, they have brought attention to the variety of ways this work is performed, depending on the professional trajectory of each journalist, the state of the media industry in a given context and the position of each media on the market. Applied to a techno-scientific issue such as the pandemic vaccination campaign in France, this approach has helped highlight variations in the propensity of journalists to give voice to dissenting views but also to make sense of these variations. This approach offers a fruitful pathway to go beyond traditional accounts of the role of journalists in sociotechnical controversies that tend to present journalists as a rather homogeneous profession which abides by norms antithetical to scientific research.

In the case of health journalism in France, Marchetti's work suggests that an increase in market pressure (arrival of new competitors, drop in demand...) led to journalists adopting a more critical/heterodoxy-friendly stance. Media new to the market – mainly media targeting the working classes - adopted this approach to gain notoriety and market shares. The success of this strategy at the beginning of the 1990s led to a global shift in the industry. All the media turned at least partly to this more “normal” approach to journalistic work, but with strong differences in the degree of endorsement of this conception of health journalism remaining between generations of media and journalists. These divergences were still apparent fifteen years later in the coverage of the safety of the pandemic flu vaccine. But it was also noticeable that media targeting a more working class audience presented a coverage that was versatile rather than purely critical. Their coverage combined two types of formats known to be popular and gain market shares: pieces focused on controversies, scandals, etc. which follow a “newsmaking” logic; and service pieces which are meant to provide the audience with clear solutions to a practical question such as “should I get vaccinated and how?”. Market pressure does therefore not only drive media and journalists towards heterodox-friendly stances, but also, paradoxically, towards orthodox-friendly ones.

751 This brings me to a crucial point. The factors that lead to journalists' being heterodox-
752 friendly are highly dependent on the state of the market under scrutiny. In the case of French health
753 news between the end of the 1980s and at least 2009, finding scoops and organizing debates seems
754 indeed to have been one of the core modes of the competition between media. However, it is not so
755 evident that investing more in the *newsmaking* logic was the main strategy to gain or maintain market
756 share everywhere. It is not even certain that it is still the main strategy on the French market for health
757 news. Since 2009, more pure players have entered the competition and all media have heavily invested
758 in their online activities. With the possibility to measure the number of times a piece was consulted on
759 the internet, access to feedback via comments posted on the webpage and many other tools built to
760 identify the needs and desires of the audience, new popular formats that focus on attention-grabbing
761 (so-called "click-baits"), content personalization and participation of the audience seem to have
762 become important fixtures of contemporary media competition (Alexander, Breese et Luengo, 2016 ;
763 Benson, 2013). Also, we have seen that, in this particular case, partisan affiliation of the media seems
764 to have been a significant factor. Partisanship can be a very important aspect of market competition as
765 is testified in the current state of the national media market in the US since the rise of Fox news
766 (Benson, 2013). This means that social scientists working on scientific journalists need to pay
767 attention to how structural factors - such as vulnerability of the position of their media on the market,
768 target audience and professional profile of journalists – are mediated through contextual factors linked
769 to the specific history of a given media market. This has methodological implications: a fine-grained
770 analysis of media contents needs to be grounded in a richer study of both the practices of the
771 journalists who produce these contents and of the trajectory of the media market in which they operate.

772 For my last remark, I will shift the focus back on vaccines. In this paper I have proposed a
773 first point of departure from the traditional account of why vaccine criticism emerges in the news. In
774 this traditional account, journalists as a whole are welcoming towards the "antivaccine movement" and
775 are interested in fostering controversies on vaccination. I have shown that not all journalists adopt this
776 conception of health journalism. But it is also important to depart from this traditional account in
777 another way, by paying attention to how journalists circumscribe public debates to a limited number of
778 arguments and actors. How journalists select among the various heterodox sources is particularly
779 important when it comes to vaccination. Indeed, there is a great diversity among vaccine critics (for a
780 review, see (Ward, 2016). There are significant differences in scientific and political legitimacy
781 between these actors. Not all vaccine critics reject all vaccines or promote exotic conspiracy theories.
782 Far from picking anyone among the variety of heterodox sources available on a given subject,
783 journalists evaluate their credibility and select a limited number of actors they turn to for dissenting
784 views. As I have shown elsewhere, neo-institutionalist sociology of journalism also helps account for
785 this common boundary-making work (Ward, 2019). Indeed, health journalists covering the subject of
786 the 2009 pandemic flu vaccine's safety did not give voice to radical antivaccine activists. On the

contrary they defended the principle of vaccination and only gave voice to actors who presented a conditional critique of this vaccine in particular.

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Annex: Analysis of the media coverage of the controversy over the safety of the 2009 pandemic flu vaccine

To analyse the media coverage of the issue of vaccine safety I followed the dominant approach in communication studies: framing analysis. Framing analysis is a form of content analysis grounded in an understanding of the concrete work of journalists which consists mainly in making sense of information by setting it against the backdrop of wider issues and cultural tropes that are already familiar to the audience (*frames*). This framing is apparent not only in the ideas that are presented in a given piece. It is also apparent in the style, narrative and format chosen to present this sense-making (Scheufele, 1999).

My analysis departs somewhat from standard framing analysis applied to media contents. Most analysts study a specific news cycle and attribute one or several frames to each piece they analyse. The issue of the safety of the 2009 pandemic vaccine was part of a wider news cycle (pandemic flu). This means that many contents pertaining to this issue were actually part of pieces dedicated to the flu in general. Because these small snippets are meaningful for the question I ask in this study, I decided to include all pieces dealing with the subject in my sample even if the issue was only very marginally broached. After reading each piece, I attributed to each of these pieces one or several of the 7 frames applied to the issue of vaccine safety I identified during this period. But, to reflect the discrepancies in volume dedicated to the subject, I also attributed to each piece one of four classes of volume: minuscule (less than 3 sentences), small (between three and 12 sentences), middle (two to three paragraphs or less than 2 minutes of video, but more than 12 sentences) and big (more than three paragraphs or more than 2 minutes of video). The application of this scheme was not completely rigid. For instance, in some cases I took into consideration the size of the paragraphs and of the articles/video pieces in order to control for differences in the overall style of these different media.

The seven frames were built after extensive consultation of the database and after having conducted interviews with a sample of journalists. They reflect different degrees of proximity towards orthodox or heterodox sources but also different conceptions of the journalist's role during a pandemic:

Scandal: The journalist presents the issue of vaccine safety as a "scandal". This entails direct accusations of deliberate wrongdoing on behalf of the people in charge of handling the pandemic and a vindictive style. Journalists explicitly side with heterodox sources. Editorials or "dossiers" dedicated to "revelations" are formats typically associated with this framing

934 Critique: The piece is still centred on critiques and the heterodox sources that produce them. However,
935 journalists don't explicitly side them. The traditional norms of distancing between journalists and
936 their sources (quotes, use of the terms « alleged », « according to »...) are respected. However, the
937 content of the piece remains purely critical. The format of the interview is typical of this format.

938 Controversy: The journalist presents the issue in the form of a controversy pitting orthodox and
939 heterodox sources and discourses against each other. In doing so, they show their distance towards
940 both types of sources.

941 Uncertainty: The fourth frame is actually almost an absence of framing. It focuses on the question of
942 the safety of vaccines without evoking either orthodox arguments or heterodox ones. Journalists
943 simply evoke the fact that there is an uncertainty or a set of "facts" suggesting that there might be.
944 Journalists stick to the classical « who? What? When? Where? Why? How? » model of factual
945 reporting or made quick references to the issue in the form of questions such as « but will the vaccine
946 be safe and effective? ».

947 Public opinion: The issue is presented as a phenomenon in public opinion. Vaccine safety concerns
948 become interesting not necessarily or only because they reflect a real medical issue but also because
949 they affect the success of the vaccination campaign. Journalists therefore turn to "the public" for
950 criticism and doubts about the safety of the vaccine rather than to the nonprofits, politicians, bloggers,
951 etc. who produced these arguments in the first place. This took the form of articles focused on the
952 results of opinion polls, on comments found on chatrooms and other websites, on people in the street
953 answering the journalist's questions, etc. These « public perceptions » were often set against the
954 backdrop of more global cultural transformations: individualisation, loss of trust in public authorities,
955 etc. To do so, journalists often mobilised non-medical experts: social scientists, economists and
956 psychologists.

957 Expert answers: This frame the exact reverse of *critique*. Journalists only present the orthodox «
958 answers » to vaccine-critical arguments. This often took the form of interviews with public health
959 officials or medical experts involved in the handling of the flu. But it also took the form of *service*
960 journalism where the writer gives direct advice to its readership and sums up governmental
961 recommendations in a simple Q and A format.

962 Bad influence: Many pieces were written to denounce some form of vaccine criticism or another. It
963 could take the form of editorials denouncing "the antivaccine movement" and advocating for a defence
964 of the principle of vaccination against « anti-science » tendencies. This framing also took the form of
965 pieces dedicated to « rumors » and « conspiracy theories » which focus on exotic forms of vaccine
966 criticism found on the internet. This framing often complemented the previous one, suggesting that the
967 irrationality of the public was due to this bad influence With this last form of framing, journalists side
968 with more orthodox sources and denounce vaccine criticism.

This double coding (size and frames) allows for a simple visualisation of my data for each media along a time frieze. Each article or video included in my sample is placed on this frieze with daily increments for simplicity⁹. To represent the volume dedicated to the issue of vaccine safety in each piece, the frieze is 12 increments thick for each media. Each piece is therefore represented as a 12 increments' high bar placed on a given day in the frieze. Depending on how much of the piece is dedicated to the issue of vaccine safety, a great or small proportion of the bar is filled with colour:

- Minuscule: 2 increments
- Small: 4 increments
- Middle: 8 increments
- Big: 12 increments

Each frame is associated to a given colour (see table 1). Since several frames could be included in a given article, the number of increments filled with each colour depends on its relative importance in the article.

Table 1: the seven frames used by French journalists to cover the safety of the 2009 pandemic flu vaccine

Scandal	Critique	Controversy	Uncertainty	Public opinion	Bad influence	Expert answers

⁹ When several papers were published on a given day, I chose to put them on the adjacent increments. This choice means that in the tables 2 and 3, the pieces can have been published up to 4 days prior to or later than when they are presented as being published.

989 **Table 2: Chronology of the French agenda-setting media’s coverage of the safety of the 2009**
990 **pandemic flu vaccine from April to August 2009**

992 **Table 3: Chronology of the French agenda-setting media's coverage of the safety of the 2009**
993 **pandemic flu vaccine from September 2009 to January 2010**