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The vaccination debate in the "post-truth" era: social media as sites of multi-layered reflexivity

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Abstract:	<p>This paper analyses the contemporary public debate about vaccination, and medical knowledge more broadly, in the context of social media. The study is focused on the massive online debate prompted by the Facebook status of the digital celebrity Mark Zuckerberg, who posted a picture of his two-month-old daughter, accompanied by a comment: "Doctor's visit -- time for vaccines!" Carrying out a qualitative analysis on a sample of 650 comments and replies, selected through systematic random sampling from an initial pool of over 10,000 user contributions, and utilising open and axial coding, we empirically inform the theoretical discussion around the concept of the reflexive patient and introduce the notion of multi-layered reflexivity. We argue that the reflexive debate surrounding this primarily medical problem is influenced by both biomedical and social scientific knowledge. Lay actors therefore discuss not only vaccination, but also its political and economic aspects as well as the post-truth information context of the debate. We stress that the reflexivity of social actors related to the post-truth era re-enters and influences the debate more than ever. Furthermore, we suggest that the interconnection of different layers of reflexivity can either reinforce certainty or deepen the ambiguity and uncertainty of reflexive agents.</p>

Title: The vaccination debate in the “post-truth” era: social media as sites of multi-layered reflexivity

Abstract

This paper analyses the contemporary public debate about vaccination, and medical knowledge more broadly, in the context of social media. The study is focused on the massive online debate prompted by the Facebook status of the digital celebrity Mark Zuckerberg, who posted a picture of his two-month-old daughter, accompanied by a comment: “Doctor's visit -- time for vaccines!” Carrying out a qualitative analysis on a sample of 650 comments and replies, selected through systematic random sampling from an initial pool of over 10,000 user contributions, and utilising open and axial coding, we empirically inform the theoretical discussion around the concept of the reflexive patient and introduce the notion of multi-layered reflexivity. We argue that the reflexive debate surrounding this primarily medical problem is influenced by both biomedical and social scientific knowledge. Lay actors therefore discuss not only vaccination, but also its political and economic aspects as well as the post-truth information context of the debate. We stress that the reflexivity of social actors related to the post-truth era re-enters and influences the debate more than ever. Furthermore, we suggest that the interconnection of different layers of reflexivity can either reinforce certainty or deepen the ambiguity and uncertainty of reflexive agents.

Keywords: conspiracy theory, Facebook, post-truth, reflexivity, social media, vaccine

Word count: 8391

Introduction

On 8 January 2016, Facebook CEO Mark Zuckerberg posted on his Facebook profile a picture of his two-month-old daughter, accompanied by a comment: “Doctor's visit -- time for vaccines!” In only few days, the post attracted more than 83,000 comments. The debate between proponents and opponents of vaccination that followed the statement made by the global celebrity provides a unique insight into the contemporary character of the public debate about vaccination, and medical knowledge more broadly.¹ Furthermore, the analysis of this specific case empirically informs the theoretical debate about patient and citizen reflexivity in late modern societies.

Against this backdrop, the aim of this paper is to analyse the debate about vaccination in the global public space. The following questions are addressed: What topics and arguments were articulated during the Facebook debate about vaccination? What are the theoretical implications for our understanding of public debates about medical knowledge in the digitalised post-truth era? How does this particular analysis empirically inform the theoretical notion of a reflexive patient? These questions are answered utilising a qualitative thematic analysis of the user comments and replies below the aforementioned Facebook status of Mark Zuckerberg.

This paper provides a contribution to the theoretical debate on reflexivity of patients, exemplified by the highly debated case of vaccination. The study is contextualised within the broader theoretical debate about the changing character of the public sphere in the so-called post-truth era, characterised by the intensified marginalisation of factually-based evidence; increasing diffusion of inaccurate claims; “fake news” and “alternative facts” spread mainly through social media platforms as well as by the fragmentation and polarisation of media audiences.

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The study is organised into the following four parts. First, we outline the debate concerning the changing status of expert systems and evidence-based knowledge as one of the main features of the so-called post-truth era, with a particular focus on vaccination. Second, we discuss the notion of a reflexive patient. After presenting our research methods we provide an empirically informed debate about different facets of reflexivity emerging in the context of the post-truth global public debate. Finally, we discuss the relationship between the multi-layered nature of reflexivity and the construction of new uncertainties in late modern societies.

Internet, post-truth and the transformation of expertise

The contemporary information environment features an increasing dominance of digital communication technologies and social media platforms, becoming an ever more important source of news and general information for the majority of the population. According to Pew Research Centre (2017), two-thirds (67%) of American adults get their news from social media, and 45% of Facebook users say that they get their news from this platform.

However, while certainly contributing to a greater pluralisation of our information ecosystem, the growing penetration and importance of online and social media raises serious concerns over the quality, accuracy and credibility of circulated information and knowledge. The affordances of social networking sites, stimulating the creation of “echo chambers” that amplify and reinforce existing views rather than support confrontation with dissenting perspectives (see e.g. Sunstein 2017), contribute to a faster and deeper polarisation of opinions, whilst allowing for factually incorrect, misleading or entirely fabricated information to gain the kind of prominence and impact that previous communication technologies could never have provided (Iengar and Massey 2018, Van Aelst *et al.* 2017).

The viral diffusion and increasing societal and political influence of online “fake news” and hoaxes has been frequently portrayed as one of the key symptoms of the “post-truth age” Western societies have now allegedly entered. While the term – often used synonymously with “post-truth politics” – has been popularised by the media in response to events such as the 2016 US presidential election campaign or the UK Brexit referendum of the same year, both infamous for spreading false and manipulative statements (see e.g. d’Ancona 2017, Levinson 2017), it has recently become an object of academic reflection in many fields (Boler and Davis 2018, Corner 2017, Ylä-Anttila 2018), and particularly in the field of Science and Technology Studies (Fuller 2018, Hoffmann 2018, Lynch 2017, Sismondo 2017).

The studies and essays dealing with post-truth published so far often adopt, as a starting point for discussion, the Oxford Dictionaries definition of this term, according to which it is an adjective “relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief”.² Whilst the existing scholarship has not offered a more comprehensive definition yet, and some scholars are explicitly critical of the interpretation established in the popular discourse (Lynch 2017), most authors agree that the concept of post-truth highlights the changing mechanisms of social construction and legitimisation of knowledge, including the decline of trust in institutions that have traditionally been accepted as its symbolic guardians, such as science, universities, and the mainstream and elite media (Brubaker 2017). Fuller (2018) talks in this respect about the post-truth world as “*the inevitable outcome of greater epistemic democracy*”, enabled by opening access to instruments of knowledge production to the general public, thereby dismantling the old epistemic hierarchies. In a more critical fashion, Brubaker (2017) utilizes the concept of “epistemological populism”, first coined in Saurette

and Gunster's (2011) analysis of Canadian political talk radio, to describe the favouring of "common people's knowledge" over knowledge that is produced by expert systems.

As various authors have argued, this increasing disdain for "expert" knowledge has been stimulated by the perceived wisdom of the crowd on the Internet and social media. In his book "The Death of Expertise", Tom Nichols voiced fears "*a Google-fuelled, Wikipedia-based, blog-sodden collapse of any division between professionals and laypeople, students and teachers, knowers and wonderers – in other words, between those of any achievement in an area and those with none at all*" (Nichols 2017: 3). Pointing more specifically to the area of scientific knowledge, Brubaker (2017) observes a deepening of the gaps that "*divide the views of scientists from those of the public about subjects such as evolution, the causes of climate change, the safety of vaccines, and the safety of genetically modified foods*" (Brubaker 2017).

According to d'Ancona (2017), the modern campaign against vaccination is the most palpable example of "*scientific denialism*", "*the growing conviction that scientists, in league with government and pharmaceutical organisations ('Big Pharma'), are at war with nature and the best interests of humanity*" (d'Ancona 2017: 70). With claims like these, the anti-vaccination campaign often shares common ground with conspiracy theories, which Ylä-Anttila describes as a "type of counterknowledge" – alternative knowledge which challenges dominant epistemic authorities – centred around the conviction that "*common people are misled in secrecy by an elite*" (Ylä-Anttila 2018: 6).³ Even though the rise of conspiracy theories cannot be associated solely with either the digital age or with the "post-truth" era, as they date far back into history (van Prooijen and Douglas 2017), some authors claim that they are now part of our "*contemporary political zeitgeist*" (Einstein and Glick 2015) and that the online environment as well as the anti-expert climate of epistemic populism offer them

particularly conducive conditions to flourish, as the anti-vaccination campaign arguably demonstrates (Iyengar and Massey 2018, Lewandowsky, Ecker and Cook 2017).

While the anti-vaccination movement has a long history, dating back to mid-19th century (Blume 2006, Song and Abelson 2016), the modern-day wave of the campaign was famously sparked after a study by Dr Andrew Wakefield was published in the Lancet in 1998, which claimed to have found a link between the MMR (measles, mumps and rubella) vaccine and autism. Even though the study was eventually retracted and its findings refuted, numerous opponents of vaccination still reference the study, which could have contributed to a decline in MMR vaccinations in many countries, leading to the outbreak of a measles epidemic in the U.S. and Canada in 2014/15 (Song and Abelson 2016).

It is beyond doubt that the Internet and Web 2.0 platforms have been crucial in the spread of the anti-vaccination campaign, bringing it to a global level and enabling the activists and supporters to better organise and efficiently disseminate information among them. The online anti-vaccination movement has also greatly benefited from the involvement of celebrities endorsing the campaign and bringing their own “expertise” in support of claims about the harmful effects of vaccination. The one that received the most publicity was Jenny McCarthy’s appearance on Oprah Winfrey’s television talk show in 2007, where she defended her competence to speak against vaccination by claiming that she simply found information on Google, adding that “*the University of Google is where I got my degree from*” (d’Ancona 2017: 73).

Despite the charismatic power of celebrities and viral potential of online misinformation in the alleged post-truth age, the majority of Americans still agree that the benefits of childhood vaccines outweigh the risks, and overwhelmingly trust medical scientists over any other source of information on that issue (Pew Research Centre 2017). However, there seems to be more widespread scepticism among younger generations, with

only 39% of 18-29-year olds agreeing that medial scientists understand the effects of MMR vaccines “very well”, as opposed to 48% of 30-60-year olds and 51% of people above the age of 61. Likewise, the majority of young people don’t believe the media are doing a good job covering science (Pew Research Centre 2017). According to a recent survey focused on medical conspiracy theories in the United States, 20 % of Americans believe that doctors are willing to vaccinate children even though they know vaccines can cause autism and physical disorders. A further 36 % neither agree, nor disagree with the statement (Oliver and Wood 2014a).

Reflexive patient

Decisions of contemporary social actors about vaccination are potentially made as part of complex reflexive scrutiny. The capacity of social agents to consider the possible risks associated with vaccination emerges in the broader context of reflexive modernisation. Following the sociological meta-narrative about reflexive modernisation that had acquired a prominent position in social theory beginning in the early nineties, the notion of reflexive (Adams 2011, Lupton 1997, Nettleton and Burrows 2003, Newman and Kuhlmann 2007) or informed patient (Kivits 2004) has been elaborated in the context of health care. The modern division between experts and lay persons has been blurred. Notwithstanding a recognition of the possible limits of lay knowledge (Prior 2003, Ziebland 2004), the notion of a reflexive patient referred to “*increasingly reflexive and decreasingly deferential citizens*” in the “*fundamentally changed late-modern society*” (Martin 2008: 41).

The notion of a reflexive patient might be discussed through two interconnected dimensions, depending on the object of reflexivity represented either by one’s own health or the health care system. Firstly, reflexivity refers to the general capacity of late modern actors to reflexively consider their own health in light of medical knowledge proliferated in late

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3 modern societies. In this vein, patients become proto-professionalised (de Swaan 1988); hand
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5 in hand with the medicalisation of everyday life, they embrace expert medical vocabulary and
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7 knowledge to reconsider their health conditions. Hence, reflexive patients are actors who are
8
9 informed about and responsible for their own health (Adams 2011, Lupton 1997). In other
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11 words, late modern actors incorporate reflexive reasoning while making decisions about
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13 health and well-being (Giddens 1991). The increased reflexive engagement is performed by ill
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15 patients in search of health care as well as by healthy people who more and more consider
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17 their own health vis-à-vis the new expert evidence⁴, frequently mediated by internet platforms
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19 and social media (Miah and Rich 2008). Patients become proto-medical experts who either
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21 make their own individual choices or just merely reply to the policy or market pressures on
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23 patients to behave as reflexive, and therefore responsible, consumers (Dent and Pahor 2015,
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25 Nettleton and Burrows 2002, Newman and Kuhlmann 2007) and digitised health citizens
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27 (Lupton 2017).⁵

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33 Secondly, reflexivity refers to the critical capacity of patients to express discontent
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35 with health-care institutions and professionals. In other words, late modern patients, in
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37 addition to being proto-medical experts who embrace medical knowledge to assess their own
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39 health conditions, question traditional medical authority, problematise the position of
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41 biomedical knowledge or assess the performance of health care professionals and institutions.
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43 Reflexive behaviour not only represents a way of coping with new uncertainties and
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45 insecurities arising from the application of expert knowledge. Simultaneously, the increased
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47 reflexivity also contributes to the production of new insecurities hand in hand with the
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49 problematisation of expert knowledge (Beck *et al.* 2003). More specifically, while seeking
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51 certainty, the reflexive patient often manufactures new risks and uncertainties.
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56 The topic of vaccination represents a typical example of a specific health-related issue
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58 becoming an object of reflexive reasoning. The reflexive stance of citizens constitutes part of
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the vaccination debate and was apparently influenced by new information and communication technologies that, in the so-called post-truth era, disseminate knowledge and information of different quality, accuracy and credibility. As suggested by the example of the debate around the MMR vaccination, in the context of reflexive modernisation and also in the context of an increasingly digitalised information environment, vaccination appears under reflexive scrutiny (Nettleton and Burrows 2002).

More generally, the Internet provides a platform where simple monitoring or even dissatisfaction with provided health care is confronted and expressed (e.g. Adams 2011, Kivits 2009, Lupton 2017, Miah and Rich 2008). The intensification of information and communication technologies has apparently contributed to the increased reflexivity of patients and with the afore-mentioned dominance of digital communication technologies and social media platforms, more space for various expression of reflexivity has opened up.

Information and digital technologies are therefore understood primarily as facilitators and vehicles of reflexivity. Nettleton and Burrows (2003: 171) argued that proactively engaging in these “*reflexive resource[s]*” may result in a “*strategic advantage in the real world*”. These ideas were further developed by Martin (2008) who argued that these resources provide people with knowledge which, together with their experience with the disease, can lead to developing “*a new, positioned perspective on the science or delivery of medicine*” (ibid: 39). Ziebland (2004), who connects the development of the Internet as an easy source of information with a changing relationship between doctors and patients, points out the complexity of the situation. The potentially negative consequence of this trend, a decline in trust in expert knowledge, may well be compensated for by the rise of self-confident, mutually supported patients who are able to act as partners in the doctor-patient relationship.

While previous studies suggested that information and digital technologies are mere facilitators and vehicles of reflexive scrutiny, our study aims to go beyond this perspective by suggesting that the contemporary information environment, characterised by an increasing dominance of digital communication platforms, itself represents another object of reflexive scrutiny. In other words, our analysis is based upon the assumption that a patient is not only potentially more cognizant of medicine and health care, but also cognizant of the logic of the mass media and social media. The aim of our analysis is to identify different facets of patient reflexivity, analyse the interconnection of these different facets and explore their links with different perspectives on compulsory vaccination.

Methods

A qualitative thematic analysis of user comments and replies below the aforementioned Mark Zuckerberg Facebook status was carried out with a specific focus on the diverse discursive practices of the users. The case of the debate following Mark Zuckerberg's post represents an empirically unique opportunity to understand the nature of contemporary global debate surrounding compulsory vaccination; it resembles a sociological vignette used to stimulate the debate and reaction of respondents in a real-life situation. Mark Zuckerberg's Facebook profile is a relatively neutral site for the exchange of opinions that does not remain closed in their "echo chambers", which would just amplify and confirm existing opinions. Furthermore, the plurality of standpoints and heterogeneity of reactions in the sample was facilitated by the resonance that Mark Zuckerberg's post acquired in mainstream media.⁶

With an aim to explore the complexity of topics and arguments rather than to provide a representative overview of different positions, our data were selected in two steps. First, 1263 most relevant comments and related 9312 replies to comments and replies to replies were selected. We acknowledge that this selection is highly dependent on the power of

Facebook algorithms and is not fully representative of the whole debate beyond the Facebook post. However, we acknowledge that these posts attracted the highest attention and were followed by the most intense interaction of Facebook users. Furthermore, considering our data against the previous research, we are confident that the nature and plurality of themes and arguments reflects the main themes and argumentations spelled out in past debates. The first selection of data was, second, followed by a systematic random sampling method and the data collection continued until empirical and theoretical saturation was achieved. More specifically, in total 650 comments and replies were analysed.

We employed the first two steps of the grounded theory approach, open and axial coding (Strauss and Corbin 1998), to categorize the data and identify patterns in the pro- and anti-vaccination comments of discussants with a specific focus on the two abovementioned layers of reflexivity. During the process of open coding, the main topics and arguments in the vaccination debate and the position of the participants were first identified, leading to a basic set of categories structuring the debate, its proponents, topics, and actors (the content related reflexivity). In the second step, we put a systematic emphasis on comments and replies that did not focus on vaccination itself but on the debate about vaccination. These comments represented a significant aspect of the discussion and revealed the form-related reflexivity, i.e. the means by which vaccination proponents and opponents promoted their position by discussing with public health authorities, the pharmaceutical industry, biomedical knowledge production as well as the media (both mainstream and social) and their alleged role in the vaccination discourse.

During this coding phase, we focused specifically and selectively on the presence and type of information sources as well as the links to them, references to and evaluation of the actors considered important in the vaccination discourse, the argumentation position of the participant (i.e. how and whether the commentators reflect and stress their experience with the

topic and position in the debate), the level of rationality of the arguments (i.e. the presence of some kind of supportive reasoning or evidence in the comment – Wright *et al.* 2017), and the presence of arguments reflecting power relations in the vaccination debate (including conspiracy contributions). This coding phase resulted in a more detailed picture of the argumentation strategies of the vaccination debate participants and the reflexivity of these discussants in relation to various actors in the vaccination discourse, including information sources and the role of the Internet and social networking sites.

The accessibility of social media data does not necessarily indicate their availability for research purposes (Hine 2011). The study has thus necessarily been related to several ethical concerns, also in light of the changing rules governing the privacy settings of social networking sites. At the same time, the intrinsically contextual way in which Facebook users experience their privacy (Marwick 2014) was considered. In our research, we analysed comments and replies below a single post on Mark Zuckerberg's public page. According to the Facebook privacy policy such content posted with the privacy settings set to public may be accessed and seen by anyone, and it "*can be seen, accessed and reshared or downloaded though third-party services*".⁷ We suppose that users perceived the page as public space where they intentionally wanted to express their own opinion on vaccination. On the other hand, we also suppose that many users are not completely aware of the privacy setting and its consequences (Williams *et al.* 2017) and we thus considered the risk of harm and the sensitivity of the data (see Townsend and Wallace 2016). In light of this consideration, several potentially illustrative quotations were dropped or trimmed down.

Findings

The debate stimulated by Zuckerberg's post (Figure 1) has apparently mirrored the previous debates on vaccination (see e.g. Blume 2006, Hobson-West 2003, Kata 2012, Poland and Jacobson 2001, Skea *et al.* 2008). Among the users commenting on Zuckerberg's post not only were there strict proponents or opponents of vaccination but there were also those who provided more neutral and ambivalent comments. By advocating different perspectives, Facebook users supported their view with references to their direct experience, instinct, common sense, as well as with references to biomedical expertise, scientific evidence, the statements of celebrities, and articles in the mass media and on social media platforms. Furthermore, discussants commented on the risks related to vaccines and their quality, and reminded others of their secondary and adverse effects. Opponents of vaccines juxtaposed their criticism of the unnatural character of vaccines with comments about their toxicity. Based on historical and epidemiological evidence, individual responsibility for collective immunisation was emphasised against the "free riding" behaviour of some parents and "pro-choice" calls, framed by broader arguments such as civic liberties and human rights.

Insert Figure 1 here

In a more theoretical vein, the richness of arguments and themes in the debate puts the contributors in the position of reflexive agents who are "(...) *faced with an overwhelming range and chaotic juxtaposition of (re)sources, making time and space for considered reflection virtually impossible*" (Nettleton and Burrows 2003: 181). Considering the rich plethora of arguments, the example of discussion below Zuckerberg's post would lead us to a similar theoretical observation. However, considering this quote relates to the early stages of the Internet's diffusion, we should emphasise that reflexivity of actors in the so-called post-truth era is different, notably thanks to the proliferation of social media platforms. In this

context, not only is the diffusion of the variety of arguments intensified, but the nature of the arguments changes as well. More specifically, the content-related reflexivity focused on vaccines is more commonly accompanied with form-related reflexivity, focused on the debate about vaccines. Under these circumstances, the overwhelming range of resources and the questions of their origin not only presented an object of sociological commentary but also increasingly an object of the lay comments of social actors.

The debate about the vaccination debate: multi-layered reflexivity

The data analysis suggests that in addition to the debate about vaccines, increasing attention is paid to the economic, political, and information environments in which this debate takes place. The identification of economic, political and information layers of the vaccination debate leads us to the introduction of the notion of *multi-layered reflexivity*. The concept of multi-layered reflexivity puts a stronger emphasis on the capacity of social actors to reflect upon the processes of production, governance, distribution and, most importantly, a mediated interpretation of the role of vaccines.

Reflexivity and information environment

As part of the vaccination debate, Facebook users, regardless of their standpoint towards vaccination reflected the role played by the information environment, in particular the role of the mainstream media, the Internet and social media platforms. The opponents of vaccination warned against some of the politico-economic aspects behind the production of media content. More specifically, they blamed the mainstream media and a political or economic interest group for denying access to alternative voices and those revealing the negative effects of vaccination, as can be illustrated by the following quote: “*Why parents of vaccine injured child are not*

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3 *permitted to talk in mainstream television. Thinks about it.*"⁸, or explicitly labelled them as
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5 propagandist or manipulative:
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8 Considered a member of the elites, Mark Zuckerberg himself was often blamed by anti-
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10 vaccination users for having a financial interest in promoting vaccination. These discussants
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12 also frequently claimed they did not believe Mark Zuckerberg was vaccinating his child – an
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14 argument stemming from a conviction that elites are informed about the harmful nature of
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16 vaccines and protect their children from it (or have access to better-quality vaccines).
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21 *"How much were you paid to post this? I know there's no way you'd vaccinate for many reasons*
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23 *the truly informed parents already have stated. Do you not make enough from Facebook or is*
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25 *your back pocket change running low?"*
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30 Comments criticizing Mark Zuckerberg as a personification of digital media's financial
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32 interests belong to a wider trend noticeable also among vaccination proponents (see below) who
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34 employed reflection on the role of the Internet in current information exchange and approached
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36 online media with scepticism. Whereas the pro-vaccination stance focused mainly on digital
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38 media as a possible source of misinformation in the post-truth era, opponents of vaccination
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40 stressed the importance of the financial interests of both media owners and individual people
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42 (labelled as trolls or fake profiles) allegedly using social media to make money by serving the
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44 interests of the pharmaceutical lobby.
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49 On the proponents' side, the argumentation concerning the role of the media in the
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51 vaccination debate dominantly stemmed from a focus on facts and truth, the responsibility of
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53 informed people (responsible parenting, responsibility concerning herd immunity) and 'real
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55 science' providing us with facts. These aspects were presented in strong opposition to what
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57 people could get from online information sources, mainly search engines represented by Google
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59 and social networking sites such as Facebook or YouTube. The anti-vaccine position was often
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3 labelled as ‘anti-science’ or ‘pseudo-science’ by proponents of vaccination and was typically
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5 connected to the allegedly poor role the Internet and social media platforms played in informing
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7 people. In this logic, Zuckerberg was celebrated for “*being a responsible parent [...] listening*
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9 *to the experts and not following an antiscience, trendy, elitist, poorly educated stance*” who
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11 could, unlike many “*antiscience, trendy, elitist*” and ‘*Google-miseducated*’, tell which
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13 information sources were valid, and which were not.
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17 As mentioned above, reflections on the role of the Internet in the distribution of
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19 knowledge, and specifically disinformation, were an inherent part of the pro-vaccination
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21 discourse. Digital media (specifically Web 2.0) were considered the main source of ‘*anti-*
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23 *science*’ or lay knowledge opposed to expert, well-informed knowledge deriving from scientific
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25 research. The voice of the opponents of vaccination was disputed due to low media literacy
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27 related to an uncritical approach towards the Internet and social media platforms, ironically
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29 referring to “*Google University*”, “*Facebook scientists*” or the truth about vaccination which
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31 “*is out there*”, on YouTube.
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35 We identified stress on factual correctness and explicit mention of the difference in
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37 relevance of internet sources and scientific information as a crucial part of pro-vaccination
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39 argumentation. Together with references to social media platforms and Internet more broadly
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41 as a non-reliable source, accompanied by suggestions such as “*Don’t ever take advice from*
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43 *someone on the Internet. Or google. Or Facebook,*” or “*Don’t ever listen to uninformed crazies*
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45 *on Facebook*”, vaccination proponents often employ biting humour and sarcasm to laugh at the
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47 other side’s argumentation.
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53 “*Vaccine research laboratory: 200 years of research and development. Anti-vaccine research*
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55 *laboratory: 200 minutes of web browsing.*”
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3 It is precisely in the comments of pro-vaccination discussants where the penetration of
4 the discourse on the “post-truth” age and “fake sources” in the vaccination discourse becomes
5 most obvious. Proponents of vaccination and those relativizing the veracity of anti-vaccination
6 claims reveal alleged “fake profiles” or “trolls” as unworthy participants of the discussion⁹ and
7 name specific websites as well-known sources of unreliable information, referring to *Collective*
8 *Evolution*, *NaturalNews* or to chat forums such as *The Agenda*, *The Illuminati Revealed* and
9 *What They Don’t Want You to Know*.

10
11 The previous illustrations imply that patient reflexivity is in fact more complex than
12 what the previously elaborated notion of “reflexive patients” would suggest. The object of
13 reflexivity in the so-called post-truth era has been extended. In this vein, the contemporary
14 reflexive patient is not only a proto-medical expert but also a proto-sociologist. In relation to
15 vaccination, citizens as proto-medical experts problematise the medical knowledge.
16 Furthermore, citizens as proto-sociologists problematise the contemporary information
17 environment in which the debate about vaccination takes place. Through the spread of the proto-
18 sociological perspective in society, we could observe the mechanisms already described by
19 Giddens (1984) in his discussion of the notion of the double hermeneutic; i.e. the processes
20 during which social scientific concepts are adopted by lay actors and contribute to the
21 constitution of the social world that social sciences observe. The proto-sociological discussion
22 of existing communication patterns underlying the compulsory vaccination debate are thus
23 constitutive of the vaccination debate itself.

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56 ***Reflexivity and the pharmaceutical industry***
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As suggested in some of the previous observations related to the media, Facebook users tended to identify the key subjects who presumably had some interest in skewing the mediated picture of vaccination. The pharmaceutical industry and the government (together with the media) were, from the perspective of political economy, perceived as mutually collaborative institutions motivated by financial profits. From this perspective, Zuckerberg's post was perceived as part of the propaganda or PR campaign of the pharmaceutical industry, wondering "*how much big Pharma paid him to pose*" and emphasising that "*[m]illions are spent on pr campaigns and propaganda.*"

Proponents of vaccination were perceived as naive targets of the pharmaceutical lobby which was portrayed as a "*greedy machine [...] driven by financial interest*" or an unscrupulous "*fraudulent multi-billion dollar industry,*" compared to companies producing GMO plants and allegedly harmful chemicals such as Monsanto. These companies were considered to be manipulating and corrupting everyone, including governments, scientists, and the media and multiplying the numbers of vaccines recommended to people, thereby causing severe health problems endangering the population:

"... their only studies are Pharma funded no private or third party studies, no double blind, no test for carcinogen, no test for neuro-toxins no safety studies for injecting 69 doses."

With regards to the portrayal of pharmaceutical companies, proponents of vaccination adopted a clearly defensive position – unlike in the case of the media where pro-vaccination discussants had their own specific narrative available differing completely from the narrative of vaccination opponents; in relation to 'Big Pharma', they tended to simply disprove the oppositional arguments by pointing to their illogicality, such as pointing to the incorruptibility of someone as wealthy as Mark Zuckerberg or by stressing that those blamed for poisoning other people and their children vaccinate their kids as well.

The reflexivity related to the pharmaceutical industry was sometimes encroached with the construction of broader conspiracy theories. Within this line of argumentation, links between historical events and crimes against humanity to the contemporary promotion of vaccination were developed. The pharmaceutical industry was being connected explicitly with WWII crimes through an alleged personal interconnection between the Nazi administration, research and leading pharmaceutical companies. The Facebook commentators have thereby echoed long-established conspiracy theories about powerful, often hidden elites, manipulating common people by concealing important information from them (see Oliver and Wood 2014b).

Through the lens of a conspiracist, as As Ylä-Anttila (2018) reminds, “[t]he elite holds not just secret power but secret knowledge”, which the conspiracist attempts to challenge by raising him/herself “to the position of an alternative knowledge authority, a true expert instead of ‘false experts leading us astray’” (Ylä-Anttila 2018: 6). While the tendencies to produce and legitimise counterknowledge or “alternative knowledge” are certainly not idiosyncratic in the so-called post-truth era, the analysed comments provide support for the claim that they are further intensified within the new communication ecosystem enabling the mass dissemination of content that provides a somewhat objectivised counter-expertise – one that is not only based on folk wisdom but also on alternative data and evidence (Ylä-Anttila 2018).

Reflexivity and politics

In line with the traditional political-economic argumentation, anti-vaccination discussants presented the role of government in the vaccination issue as one of a servant of pharmaceutical companies, rather than a desired regulator of the industry and protector of citizens.

“Unless there is enough questioning and counter-force, there is no motivation for companies to make better safer products. When government forcefully sells everyone a product (and with vaccines, unlike car seats, you don't have a range of brands to choose from), the producers are

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3 *not stimulated in any way to do anything better -- their product will be sold either way. Don't*
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5 *you see a problem with that?"*
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10 The desired role of the state (government) in forcing the pharmaceutical companies to improve
11 their products in terms of safety was ubiquitous in the argumentation of both clear opponents
12 of vaccination and more neutral participants who stressed the importance of further research,
13 medical and governmental independence as well as free-market competition ensuring better,
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19 safer pharmaceutical products.
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23 *"All of you ppl with negative comments, you r missing my point. I'm not against vaccines. I'm*
24 *against gov't mandated vaccination unless there are massive outbreaks. There are still things*
25 *to improve and more research to do to make vaccines safer. And pharm companies should not*
26 *have this option of forcing their product through gov't."*
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34 On the other hand, when it came to the role of government, proponents of vaccination offered
35 a specific narrative of governmental protection as their main argument in the discussion.
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Vaccination was considered important for the protection of all the people (the importance of 'herd immunity') and specifically of those who cannot be vaccinated for different reasons (intolerance/allergy to vaccines, diseases, etc.). In this logic, the government was perceived as the institution taking care of public safety and ensuring the population will not be jeopardised by irresponsible people who reject vaccination:

52 *"They should force-inject for all the idiots who don't care enough to not infect other people and*
53 *their healthy children."*
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3 Similar to the reflexivity related to pharmaceutical companies, the anti-vaccination discourse
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5 located the position of government in the context of broader conspiracies, in particular in
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7 relation to worries about personal freedom and forced governmental decisions about people's
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9 bodies. This way of thinking can be identified even in the comments of people who did not
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11 present themselves as clear opponents of vaccination.
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17 *"And WITH YOUR SUPPORT, the gov't might soon laws to FORCE MEDICAL PROCEDURES*
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19 *ON ALL OF YOUR WITHOUT YOUR CONSENT!!"*
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21

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23 *"I think it's fine for Mark Zuckerberg to encourage ppl to vaccinate if he wants, but he adds*
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25 *inertia to a snowball that might soon create a situation when police will force-inject you with*
26
27 *whatever they decide."*
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33 Furthermore, conspiratorial arguments embraced references to power interests as part of
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35 broader political objectives. In some of the comments, the "new world order" was mentioned
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37 as a goal of these efforts and the identity of Mark Zuckerberg was compared to "*JACOB*
38
39 *GREENBERG, GRANDSON OF DAVID ROCKEFELLER OF THE NEW WORLD ORDER."*
40
41 The typical discursive strategy tended to separate 'us' (the people) from 'them' (wealthy, global
42
43 elites, governments owned by wealthy people) and proposed theories in which 'they' (e.g. Mark
44
45 Zuckerberg, Bill Gates, George Soros) aimed at "de-populating", "culling the herd", "poisoning
46
47 and sterilizing" 'us' or 'our kids'.
48
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53 *"And of course we should just accept vaccinations, flouride and chemicals in our water, GMO*
54
55 *food, and anything else the government (owned by people such as Zuckerberg) not his real*
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57 *name by the way. Because we love our government. They would never hurt us. They for sure*
58
59 *would not hurt our children."*
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Again, the arguments about external political power interests are nourished by a proto-sociological hermeneutics of suspicion that aims to unmask the commercial and political interests behind vaccinations. Notwithstanding the common appearance of conspiracy plots in the Facebook discussions, the critical voice does not have to be necessarily reduced to conspiracy theories. The critical approach towards vaccinations, notably among highly educated parents, can be caused by responsibilised and reflexive citizens who react to the absence of critical debate in the context of governmental normalisation of vaccination (Hasmanová Marhánková 2014).

Discussion and conclusions

Through the analysis of the vaccination debate stimulated by Mark Zuckerberg's post on Facebook, we complement the previous scholarship on vaccination by analytically distinguishing between different layers of reflexivity, and by systematically examining those reflexive layers that focus on the context of the vaccination debate. As we suggest, the reflexivity relates to the "post-truth" discourse in two ways. On the one hand, reflexivity can deconstruct the "post-truth" discourse and disclose the production of counterknowledge. On the other hand, reflexivity itself can be incorporated in the post-truth discourse and reinforce the production and reproduction of misinformation and conspiracy theories, rather than deconstruct them. Therefore, contemporary reflexive agents are cognizant of medical sciences as well as of social sciences that help them understand the key mechanisms of the vaccination debate, including factors influencing the production and diffusion of biomedical knowledge. However, the familiarity of reflexive agents with both medical and social sciences is limited, rooted in everyday life and experiences, necessarily based on selective reading and dependent on the resources of their knowledge and counter-knowledge. Thus, the epistemological capacities of

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3 reflexive agents cannot be overestimated. At the same time, regardless of the accuracy and
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5 validity of their reflexive claims, these claims continue to shape the debate. The reflexivity
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7 related to economics, politics, and the increasingly digitalised information environment can
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9 significantly influence the level of perceived certainty about vaccinations. The
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11 acknowledgement of a possible “post-truth” nature of the debate by reflexive agents, however,
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13 does not necessarily bring more certainty; although it can represent a pillar of certainty for
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15 already established opinions, it can – and often does – equally increase ambiguity and deepen
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17 the uncertainty in the debate.
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21 The contribution of the paper is threefold. First, the paper empirically captures the
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23 debate about vaccination in the so-called post-truth era. The relatively neutral environment
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25 below Mark Zuckerberg’s post, thanks to its openness to a variety of users, brought together
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27 proponents and opponents of vaccination as well as actors with a more ambiguous standpoint.
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29 The analysis suggests that participants in the global debate have increasingly taken into
30
31 consideration the political and economic aspects of vaccination and the digitalised
32
33 information environment.
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37 Second, the analysis is situated within the context of previous public debates on
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39 vaccination. While we argue that the key themes and arguments mirror the previous debates
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41 (e.g. Blume 2006, Hobson-Best 2007, Kata 2012), we also highlight that the vaccination
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43 debate has its own history, which has had “post-truth” attributes (e.g. conspiracy theories)
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45 since the beginning, and that this history is considered by participants in the debate. For
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47 example, the prevailing conspiracy myths about the misuse of vaccination to secure political,
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49 ideological, or religious dominance are not only reproduced thanks to social media, but are
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51 also, and once again, deciphered and problematised.
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55 Third, this paper extends the notion of patient reflexivity, previously elaborated in a
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57 discussion of the role of the Internet and the informed patient (e.g. Adams 2011, Lupton
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1997). Attempting to add to the existing scholarship while acknowledging the changes in the contemporary information environment, we have introduced the notion of multi-layered reflexivity. Through this notion we argue that the contemporary patient is still reflexive; however, this reflexivity is different compared to the previously developed sociological narratives of the “reflexive patient”. More specifically, we emphasise that reflexivity is nowadays not expressed only in relation to the topic of vaccination but also in relation to the perceived “post-truth” conditions, within which this discussion takes place and of which (at least some) of the participants are aware. In other words, mass media, the Internet and social media platforms are not viewed only as potential *vehicles* of reflexivity but potentially also as the *objects* of reflexivity, often critical ones. Furthermore, we argue that these layers of reflexivity, i.e. the layer concerning a health topic such as vaccines and the layer concerning the political, social and economic determinants surrounding vaccination, are potentially interconnected.

In this context, the dynamics between proto-medical reflexivity and proto-sociological reflexivity must be taken into consideration. Hence, the post-truth nature of contemporary debates does not only structure contemporary discussions; simultaneously, the post-truth nature of the debates increasingly represents an object of these discussions. The post-truth context has therefore further expanded the universes of social reality that represent the object of form-related reflexivity, progressively built around the content-related reflexivity. Therefore, either strategically or ingenuously used reflexivity related to the “post-truth” era re-enters the debate and influences its very nature and the position of social actors. Even if the debate about vaccination has from the beginning displayed certain features which are nowadays associated with the “post-truth” era, our findings suggest that the contemporary information environment characterised by the increasing dominance of digital communication

technologies and social media platforms, the “post-truth” character of the debate is much stronger than ever.

Furthermore, while elaborating the concept of multi-layered reflexivity, rather than developing a singular notion of “reflexive patient”, the existence of a plurality of “reflexive patients” would be more appropriate. This plural notion refers to several ways in which different layers of reflexivity are potentially interconnected. In this vein, reflexive patients are potentially reflexive alongside different layers in a variety of manners. Such a variety refers to different configurations of different layers of reflexivity and to different ways in which these layers are connected, disconnected, juxtaposed, bracketed, prioritised or hierarchised. In other words, the importance attributed to different layers of reflexivity varies in a similar way to the degree of certainty or uncertainty that reflexivity, expressed in different layers and connections among them, may imply.

While this paper explored some of the most commonly appearing configurations between layers of reflexivity – e.g. the connection between anti-vaccination discourse and criticism of the pharmaceutical industry and mainstream mass media on the one hand, or the pro-vaccination stance connected with criticism of the naïve approach towards social media and counterknowledge on the other hand – it mainly attempted to identify and describe the nature of the multi-layered reflexivity by pointing to its increasing importance in the post-truth context. The dynamics between different layers of multi-layered reflexivity could be further explored. We argue that the concept of multi-layered reflexivity has analytical utility beyond the vaccination debate and medical context and that our findings may be applied to examine contemporary controversies related to environmental issues, science more broadly or migration as well as in political debates emerging in the post-truth context. As with the topic of vaccination, debates about environmental issues, science, migration or politics have

increasingly been connected with the debate about the, economic and mediated contexts in which these debates take place.

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Notes

1. We should add that not all of these comments concerned the vaccination debate. Many comments were regarding the appearance of Zuckerberg’s daughter or simply approved the act of vaccination. Moreover, numerous actors used the visibility of the profile to address other topics (e.g. the humanitarian crisis during the war in Syria).
2. <https://en.oxforddictionaries.com/definition/post-truth>, accessed 6 January 2018.
3. As Ylä-Anttila reminds, counterknowledge – including conspiracy theories – should not be conflated with misinformation or “fake news”; counterknowledge is not necessarily wrong, but it is rather difficult to falsify, which is precisely one of the reasons conspiracy theories tend to persist (Ylä-Anttila 2018).
4. As Lupton (1997) suggested, this method of individual reflexive agency is not necessarily embraced by all patients; many patients seek to eliminate any uncertainty from their treatment, and prefer to maintain a trustful and passive relationship with doctors.

5. Following Lash's (1994) distinction between "reflexivity losers" and "reflexivity winners", it should be stressed that the potential for reflexive action is not distributed equally in societies and that it is located mainly in the middle and higher social classes.

6. It was actually our analytical interest in the media representations of vaccination that brought us towards this specific post.

7. <https://www.facebook.com/about/privacy/>

8. For the sake of authenticity, the comments of Facebook users are reproduced in the same way they appeared in the Facebook discussion, including errors, spelling mistakes and abbreviations. Only vulgar terms were amended.

9. The recent research even suggests the involvement of Twitter bots and trolls with the aim of skewing the vaccination debate as part of wider political objectives to divide and polarise societies (Broniatowski *et al.* 2018).

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Mark Zuckerberg’s post