Minerva (2023) 61:357–381
https://doi.org/10.1007/s11024-023-09498-9

Vaccine Hesitancy and the Concept of Trust: An Analysis Based on the Israeli COVID-19 Vaccination Campaign

Ori Freiman[1]

Accepted: 20 May 2023 / Published online: 10 June 2023

Abstract This paper examines the trust relations involved in Israel's COVID-19 vaccination campaign, focusing on vaccine hesitancy and the concept of 'trust'. The first section offers a conceptual analysis of 'trust'. Instead of analyzing trust in the vaccination campaign as a whole, a few objects of trust are identified and examined. In section two, the Israeli vaccination campaign is presented, and the focus is placed on vaccine hesitancy. In section three, different trust relations are examined: public trust in the Israeli government and health institutions, interpersonal trust in healthcare professionals and experts, trust in the pharmaceutical companies that make the COVID-19 vaccine, the US FDA, and trust in the new vaccine and the new technology. Through this complexity of trust relations, I argue that it is impossible to completely separate the trust that the vaccine is safe and effective from social aspects of mistrust. Additionally, practices of silencing and censoring the concerns of vaccine hesitaters – both experts and among the public, are pointed out. I contend that these cases further minimize vaccine hesitaters' trust in vaccine-related entities. In contrast, in section four, I suggest the 'trust-based approach': since vaccine hesitancy is not solely the result of knowledge deficiency but also a lack of trust relations, any campaign that addresses vaccine hesitancy should also focus on trust. The advantages of this approach are spelled out. For governments, a discussion based on trust is, ultimately, the best democratic way to encourage hesitaters to take the plunge and get vaccinated.

Keywords Trust · Knowledge deficiency · Vaccine hesitancy · COVID-19 · Israel

✉ Ori Freiman
freimano@mcmaster.ca

[1] Digital Society Lab, McMaster University, Hamilton, ON, Canada

Introduction[1]

Trust plays a crucial role in determining whether or not individuals choose to get vaccinated. On closer inspection, the phenomenon of trust reflects numerous relations between the individual and people, institutions, and artifacts regarding different functions. For example, trust can be directed at a vaccine, government, health institutions, healthcare professionals, or pharmaceutical companies. Therefore, understanding the different relations can be essential for designing effective strategies to encourage people to vaccinate.

The case of the Israeli COVID-19 vaccination campaign provides a unique perspective on vaccine hesitancy. As discussed in the paper, Israel was the first country to give the ground for effectively administrating the novel Pfizer-BioNTech COVID-19 vaccine and a world leader in the rate of administrating it. However, the Israeli vaccination campaign faced challenges and resistance from various fronts. Among them are the inability to reach different populations, and concerns about the safety and efficacy of the vaccine, the procedure and speed of its approval- all had effects on a range of trust and distrust relations that ultimately influenced the individuals' willingness to get vaccinated. In this paper, I analyze the Israeli vaccination campaign through the prism of the concept of trust.

My main assumption is that the reasons for vaccine hesitancy and refusal cannot be attributed solely to epistemic deficiency, i.e. to a subject's lack of knowledge. Therefore, the focus is placed on trust. Building upon scientific empirical findings and journalistic reports to illustrate the complexity of different trust relations, I argue against the practice of ridiculing anti-lockdown protestors and vaccine skeptics,[2] censoring their concerns in media debates, and discrediting them and dismissing their potentially valid criticism. I do so by advocating for the view that pluralism and disagreement among experts are vital as an alternative to dogmatism. I maintain that publicly addressing concerns will likely lead to the formation of various trust relations between vaccine skeptics and institutions related to vaccines. The conclusion is that a discussion based on trust is the favourable democratic way for governments to encourage skeptics to change their mind and voluntarily get vaccinated.

The methodology of this paper is a philosophical inquiry involving a conceptual analysis. It is illustrated with empirical examples, collected throughout the pandemic. The first section describes different aspects of the concept of trust – to illustrate the complex trust relations. I conceptually analyze the concept of trust, and synthesize it with a fundamental insight from the fields of Science and Technology Studies (STS) and Infrastructure Studies: analysis of internal relations between different infrastructure components, rather than analysis of the infrastructure as a single bundle of things, reveals unseen components (Star & Ruhleder 1996).

In section two, the Israeli vaccination campaign is described. I point out three main populations that vaccine hesitancy prevailed: Arabs, Orthodox Jews, and later on

[1] This article is part of the Special Issue "Corona Truth Wars" guest edited by Jaron Harambam and Ehler Voss.

[2] Throughout this paper, I use the term 'vaccine skeptics' to refer to the plural form of 'vaccine hesitant'.

– youth. I then draw attention to another phenomenon: vaccine-related concerns and those who raised them – experts and the public, were often dismissed and censored.

In section three, I apply the logic constructed in the first section on the Israeli vaccination campaign. Instead of analyzing citizens' trust in the vaccination campaign as a whole, a few significant entities are identified and analyzed as objects of trust. Different trust relations are examined: with the government, health institutions, experts, science, pharmaceutical companies, the US FDA, the new vaccine, and the new vaccination technology. The third section ends with examples that focus on the censorship of an expert and the dismissal of public concerns while managing misinformation online. Since it is impossible to separate social aspects of mistrust from trust that the vaccine works, I maintain that practices of censorship and dismissal are counterproductive to the formation of trust between vaccine skeptics and official authorities.

Lastly, in section four, I make the case that knowledge alone cannot convince vaccine skeptics to lose their skepticism and take the vaccine; and any vaccination campaign should also take into consideration issues that relate to trust. I suggest the trust-based approach, where trust formation is complementary to disseminating vaccine-related knowledge. Under this approach, trust relations are strengthened by having a dialogue with vaccine skeptics. Beyond the advantage of being a more democratic approach than the practice of dismissal and censorship, this approach also encourages more communication, which ultimately enables vaccine skeptics to receive more knowledge from official authorities – and consider it reliable. The consequence of increasing trust would, most likely, reduce vaccine hesitancy.

A Conceptual Analysis of 'Trust'

Trust can be described as a 'social glue', enabling human society to flourish. However, when it comes to building trust relations, a common problem is the impossibility of simply deciding, rationally, to form trust. This is true with romantic partners, between friends, within the family, in the workplace, in business, in politics, and of course - with decisions to get vaccinated (Freiman 2021a). In this part, I point out that despite the crucial role trust plays in human relations, it is not so clear. I focus on the field of philosophy and drill down to the subfield of the epistemology of trust, to adopt a view of trust as a three-way relation and to point out existing distinctions - between institutional and interpersonal trust, and social and epistemic trust. Ultimately, trust enables us to reduce the complexities involved in collaboration and knowledge production. These distinctions will be used in my analysis of trust.

Different fields use the concept differently, and even within a similar field, different conceptualizations are made (Isaeva et al. 2015; Söllner et al. 2016). Within the field of philosophy, it is acknowledged that "there is no single phenomenon that 'trust' refers to" (Simpson 2012: 551), and that "as pervasive trust appears as a phenomenon, as elusive it seems as a concept" (Simon 2013).

In the epistemology of trust, it is commonly accepted that the concept consists of a three-way relation between a trustor, a trustee, and an action the trustor expects the trustee to perform (or not to) (Horsburgh 1960; Kallestrup 2019; c.f. Domenicucci

and Holton 2017 who question this view). This view of trust is termed the 'triad view', as A trusts B to perform C. As a relation, the phenomena of trust can be described as a matter of a degree, rather than merely binary. Within the field of epistemology, trust is discussed as an attitude, mainly when a person relies on the trusted party's goodwill or has expectations from the trustee about something. Not once, expectations depend on the trustor's past experience with the object of trust and their sense of predictability (Freiman 2021b).

Despite its conceptual elusiveness and plural meanings, the leading paradigm on trust within analytic philosophy refers to interpersonal and institutional trust notions. Interpersonal trust is an individual's attitude toward others (McLeod 2021 [2006]). Additionally, trust can be directed at groups, states, and other social groups and collective entities (Boyd 2019; Faulkner 2018) and directed at the truth of their testimony (Fricker 2012; Lackey 2014; Tollefsen 2007, 2009). When institutions are the objects of trust, the concept of 'institutional trust' becomes relevant. After all, we can have expectations from institutions, too.

Another distinction that originates from the epistemology of trust is between the concepts of 'epistemic trust' and 'social trust'. Epistemic trust treats the justification of beliefs in propositions: I epistemically trust my friend that she told me the truth. Social trust, on the other hand, is "trust that someone will act co-operatively, or with one's best interests in mind, and in accordance with the social mores of the society […]" (Mcdowell 2002: 54; Nickel 2013). For example, I socially trust my friend to keep my secrets. In an institutional context, I epistemically trust the health ministry to publish correct data; I socially trust the ministry of health to have mechanisms to ensure that people's interests are guarded.

The topic of vaccines exemplifies how complex trust relations are. One of the reasons for this complexity is the many different entities involved. Trust (or distrust) in only a single of the entities can lead to trust (or distrust) in other related entities (Hall et al. 2001; Nickel & Frank 2021). Trust that enables institutions and individuals to build upon the work of others is at the heart of the vast division of epistemic labour that characterizes much of the knowledge production (Miller & Freiman 2021a, b). As both phenomena and concepts, trust enables the reduction of this complexity.

Focusing on Various Objects of Trust

A fundamental insight into infrastructure comes from the overlapping of the fields of STS and the study of infrastructure. For example, Star (1999) argues that instead of analyzing infrastructure as a single bundle of things, the internal relations between different infrastructure components should become the object of research. Additionally, by focusing on the infrastructure's components rather than the infrastructure as a whole, the "invisible" nature of these components, operating in the background, can be revealed (Star & Strauss 1999; Star & Ruhleder 1996).

From the outside, trust in the vaccination campaign might be perceived as a singular object of research. However, closer inspection reveals the different components and their nature. Instead of focusing on trust in the Israeli vaccination campaign as a

whole, I shift the focus between different 'components' of that trust – different entities that relate to the vaccination campaign. This shift enables one to focus on perceived views, decision making, and other social aspects that regard trust and its lack.

Introducing the Israeli Vaccination Campaign: Hesitancy and Debates

On December 20, 2020, the State of Israel began a vaccination campaign (Times of Israel 2020). Until the middle of May 2021, Israel had administered the most COVID-19 vaccine doses per capita, thereby becoming a world leader in vaccination (Our World in Data 2021; for different policy responses around the world, see Our World in Data 2022). The high demand for COVID-19 vaccination was quickly met, thanks to the national health insurance coverage for all of the citizens and the efficient coordination of Israel's national healthcare providers (Shilo et al. 2021; Mallapaty 2021; Gurwitz 2021).

During the first months of the administration of the COVID-19 vaccine, the Israeli government, health care leaders, and media – promoted national pride in the achievements of having early and enhanced access to the vaccine, thus being ahead of other countries (Rosen et al. 2021). Prime-time newscasts aired from vaccination sites, almost always presenting the enthusiasm of newly vaccinated citizens.

Various factors contributed to the success of the Israeli vaccination campaign. Foremost, the vaccination campaign was prioritized as a primary response to the pandemic. In addition to efficient coordination, the ability to meet the high demand, and enthusiastic coverage mixed with pride - the campaign was successful also due to factors such as the relatively small size of the country, its high degree of preparedness and experience in dealing with emergencies, public infrastructure and trained workforce to administer the vaccine, online scheduling and call centres to book vaccination appointments - among other measures (beyond the vaccination campaign) that levelled down the circulating infection (McKee & Rajan 2021; see also Table 1 in Rosen et al. 2021).

The population's willingness to vaccinate and the consequent success of this campaign could be thought of as a knockout to corona deniers, anti-vaxxers, anti-lockdown protestors, and those who intentionally spread disinformation about the vaccines. However, despite the success of Israel's vaccination campaign, many Israelis still hesitated and refused to get vaccinated. Unlike anti-vaxxers - who refuse any vaccine in principle, those who are hesitant to receive vaccines might change their minds. Vaccine hesitancy is a "delay in acceptance or refusal of vaccination despite the availability of vaccination services" (SAGE Working Group on Vaccine Hesitancy 2014: 7; see also MacDonald 2015). It is "complex and context-specific, varying across time, place and vaccines" (ibid). Hesitancy and refusal were found at every demographic and political extreme in Israel, and had diverse causes (Zulat Institute & Physicians for Human Rights 2021), such as concerns about the vaccine's safety or the procedures of its approval.

Two central populations showed higher vaccine hesitancy - Arabs and ultra-orthodox Jews. One explanation is that mainstream mass media is less accessible to these populations (Rosen et al. 2021). In general, this is not a unique phenomenon:

minorities worldwide tend to trust less in their local healthcare systems (Boulware et al. 2003; c.f. Gross 2009).

About a year later, on May 10, 2021, the FDA expanded the Emergency Use Authorization for the Pfizer-BioNTech COVID-19 vaccine, to include teenagers aged 12 to 15 years (Wallace 2021). The immunization expansion campaign, to include teenagers 12–15 years old was approved by Israel's Ministry of Health in June 2021. At first, parents were left with the option of whether or not to vaccinate their children. However, following outbreaks in schools and the emergence of the Delta variant, the Ministry of Health issued a formal recommendation for vaccinating 12–15-years-olds (Efrati and Reuters 2021). In addition to the vaccine hesitancy common among Arabs and ultra-orthodox Jews, vaccine hesitancy thrived in another population: teenagers.

The phenomenon of COVID-19 vaccine hesitancy among young people was observed in various developed countries (Murphy et al. 2021), and this phenomenon did not skip Israel. Despite the media campaigns and conclusive evidence for the effectiveness of the Pfizer-BioNTech COVID-19 vaccine, younger people in Israel refused to get vaccinated (Shahbari et al. 2020). Common reasons include a lack of knowledge about the harms of the vaccine in the long run, the lack of previous vaccine safety testing, and believing the Coronavirus is not dangerous (Gewirtz-Meydan et al. 2021). The common reasons associated with vaccine hesitancy are usually addressed by vaccination campaigns that offer information, rather than focus on trust (see also Drążkiewicz 2021).[3]

Notwithstanding vaccine hesitancy among Orthodox Jews, Arabs, and young people, and in contrast - the relative success among the general population, there was another phenomenon to notice: vaccine-related concerns were almost always expressed without any experts who would speak against the official views – that of the authorities. Scientific controversies were fused with political public policy debates, such as wearing face masks, vaccinating only at-risk populations, using the emergently approved vaccine, and so forth. In many cases, the public discourses between experts were principally engaged between experts from the same group, holding different versions of an official view. By and large, the Israeli media refused to give airtime to anti-vaxxers, but also vaccine skeptics – experts and the public (more on that in "Mistrust and Silencing Concerns" section.).

Pluralism and disagreement are epistemically significant to the progress of science and democratic discourse (Mill 1978 [1859]; Feyerabend 1970). Despite the significance of pluralism and disagreement,[4] two-sided expert debates did not happen, at least not over the media. Instead, opposing experts who criticized official views were immediately labelled derogatorily as "anti-vaxxers" and "coronavirus deniers" and thus discredited and their potentially valid criticism dismissed. (for

[3] This claim is based on my own interpretation of the Israeli campaigns. However, further research about vaccination campaigns' strategies and efficiency, knowledge, and trust is needed.

[4] Disagreement can improve the quality of advice, but it can also make it harder for politicians to distinguish between political judgment and expert advice (Moore and MacKenzie 2020).

more on that, see "Engaging, Rather than Ignoring or Suppressing" section; Harambam 2020a),

The opposing experts included, high-level officials (Gesser-Edelsburg et al. 2021). Examples include the former director-general of the Ministry of Health, and more than 148 scientists and physicians, led by three relatively-known immunologists from Tel-Aviv University that opposed lock-down measures (Galula 2020). Physicians that deviated from the official view often faced procedures and were accused by the Ministry of Health of posing "a public health risk through the creation of an effect of intimidation and lack of trust" (Reznik 2021).

Trust Relations Within the Israeli Vaccination Campaign

Equipped with the insight that trust in the vaccination campaign could be broken off into different trust relations, and after introducing the Israeli vaccination campaign, in this section trust relations within the Israeli case are spelled out. Focus is placed on different trust, distrust, and mistrust relations of the public in the government, health institutions, experts, science, pharmaceuticals, the FDA, and lastly –the new vaccine and its new technology.

Trust in the Government

Trust in the government, state institutions, and leaders is crucial in any sovereign country. On February 20, 2020, Israel had its first confirmed COVID-19 case (Efrati 2020). By that time, the people of Israel had already experienced two very tense electoral campaigns (April and September 2019) that were inconclusive and resulted in a political deadlock. Third elections, just a few weeks later, resulted in a surprise coalition between the two main rivals, followed by the disappointment of many from both sides. By December 2020, the newly born government was already dissolved, sending Israel to a fourth election. The political instability ended only after the fourth election (March 2021). To avoid getting into the task of explaining Israeli politics and the endless turn of events, I exemplify trust in the government with the contract that fired the vaccination campaign.

The vaccination campaign followed an agreement between the government and the pharmaceutical company Pfizer. The Israeli government agreed on behalf of its citizens to serve as a large-scale testing ground for the COVID-19 vaccine and to share "real-world epidemiological evidence" (Ministry of Health of Israel & Pfizer 2021).

However, for whatever reasons, the public contract with Pfizer has been partially blacked out, raising difficult questions regarding medical information, the ethics of clinical trials, and trust. As a result of this agreement, Israelis were not offered vaccinations from other pharmaceutical companies, could not choose to get vaccinated with non-mRNA-based vaccines, and were not required to sign an informed consent to the vaccination. This agreement and the lack of transparency caused the public to

mistrust the Israeli government and the vaccination campaign as a whole (Gurwitz 2021).

Trust in Health Institutions and Healthcare Professionals

The raised levels of mistrust in the Israeli government came, in addition, to already low levels of trust. According to a 2020 annual survey published by the Israeli Democracy Institute (Hermann et al. 2020), more than half of the population agree, to different degrees, that "the democratic system in Israel is in grave danger" (42). The lack of trust in the political system is also evident in the erosion of trust in other state institutions. Contrarily, and perhaps surprisingly, a sharp contrast is seen in the relatively very high trustworthiness rating the Israeli public traditionally places in their healthcare system. Among both Jews and Arabs, the health maintenance organizations earn the highest trust rating, while political parties and the government have the least (Ibid).

Generally, trusting health institutions is important, since it means trusting that the information they disseminate is true (Ozawa et al. 2016; see also "More Communication is More Knowledge" section). For the health system to function successfully on a large scale, it is required that individuals also form interpersonal trust with the healthcare professionals they meet. The degree of interpersonal trust significantly affects one's desire to use health care (Meyer et al. 2008). Interpersonal trust is essential when it comes to vaccine hesitancy and refusal: trust plays a significant factor in shaping the individual's decisions (Dube, Vivion, & MacDonald 2015).

Pre-pandemic empirical studies in Israel point out that the levels of trust directed towards healthcare professionals were usually higher than the levels of trust placed in the Ministry of Health regulators (Vigoda-Gadot et al. 2016, cited in Shahbari et al. 2020). Additionally, a positive correlation was found between the trust an individual Israeli places in the healthcare professionals they meet and their decision to get vaccinated (Yamin et al. 2014). Additionally, the contrary is also true: lack of trust and negative attitudes towards Israeli healthcare professionals led to being suspicious of vaccines (Muhsen et al. 2012). Similar findings were also found elsewhere in the world (Shahbari et al. 2020).

Like many other places in the world, the intertwining of local politics and national health decisions affected public trust. Politics shadowed the trust the public health system and its professional personnel enjoyed. In addition to trust in the government, health organizations, and health professions, trust in science also played its role.

Trust in Experts

Between engaging with trust in health professionals and science (in the next section), an overlapping category exists: trust in experts. Since so much information was available to the general public, many laypeople perceived themselves as "capable of becoming well-informed on their own, and may thus reject being categorized as a 'non-expert'" (Boyd 2021). However, experts specialized in their domains

evaluate evidence in a way that laypeople cannot. Therefore, the topic of expertise received the focus from various disciplines, among them psychology (e.g. Ericsson et al. 2006), sociology (e.g. Collins and Evans 2002, 2007), and Science and Technology Studies (e.g. Eyal and Medvetz 2023). Their discussions initiated several modern debates (Quast & Seidel 2018) which often relate to classical papers in philosophy, such as those of Hardwig (1985) and Goldman (2001) – that focus narrowly on the individual's assessment of experts.

Hardwig (1985) argues that in some cases, a layperson rationally adopts the view of an expert because of the expert's superior epistemic authority. Contrarily, Goldman (2001) argued that while laypersons cannot themselves assess the experts' evidence, they have evidence for evaluating the experts and their testimonies. Goldman famously asked how a layperson can decide what to believe - when experts disagree. He describes heuristics that help laypersons make the decision, such as inquiring about their credentials, evaluating their track record, how well they respond to criticism, and determining if there is evidence about their biases (cf. Gelfert 2011).

In a more recent context, Levy (2021) argues that even within echo chambers that are blamed for producing polarization in society and individuals with bad beliefs, individuals assess evidence rationally. The problem, in his view, is not the echo chambers and the polarization, but the misleading evidence - in particular higher-order evidence. The views of experts, who respond to first-order evidence, are echoed in the echo chambers. In turn, laypeople calibrate their views accordingly, and rationally: "rational agents reliably form false beliefs when their evidence supports such beliefs" (Levy 2021: 13; 2022). Applying this logic to vaccine safety: it is not the evidence for its safety, but the evidence about the experts who assess the evidence.

However, evidence about vaccines and evidence about the experts might not be enough. John (2018) raises the point that especially in debates, laypersons "learn from individual human experts, [and] what they are told often concerns the state of consensus in some scientific field, rather than the world itself". In the context of vaccines, it is possible to say that claims about the vaccine often do not concern the vaccine itself but the consensus. However, the scientific consensus and its communication to the public has changed on a number of topics – such as the WHO's confusing guidance on masks (Chan et al. 2020) and whether or not hydroxychloroquine should be recommended as a treatment for COVID-19 (Branch et al. 2022). Furthermore, while an expert's support of scientific consensus might be an indicator of the expert's trustworthiness (ibid), the scientific consensus has been criticized for not being credible when supporters are not so different from each other (Goldman 2001) or when it represents self-reinforcing conclusions that are not based on knowledge (Miller 2013, 2019).

Trust in Science

According to popular belief, science is based on facts rather than values. The facts point to the truth - which any political leanings or ideologies simply cannot characterize. In addition, the scientific method, comprised of observation, hypothesis, and

experimental design - ensures the production of truth over time. In contrast to the religious truth - which we discover directly from God or through its messengers, the scientific truth has a different status: it is objective. Yet, these are naive conceptualizations of science and scientific truth.

The generation and dissemination of knowledge, including scientific knowledge, is a social process (Hardwig 1985; Kitcher 1991; Kusch 2002; Goldman 1999; Longino 2002, 2019 [2002]; Fuller 2002; Pritchard 2018; Miller 2011). In recent decades, philosophers, historians, and sociologists studying the sciences, have clearly shown that there is no such thing as "The scientific method" (with a capital 'T'). The scientific institution has many fields of science, and the methods used in one field are completely different from the methods in another. Furthermore, the basis for scientific truth is social, and such is the basis for trust in the inference of the scientific institution (Shapin 1995; Oreskes 2019; for epistemic trust in scientists, see Rolin 2020).

According to an international survey (that included Israel), the COVID-19 epidemic has increased public trust in science and scientists worldwide (Wellcome 2021; c.f. Funk et al. 2020). The increase in confidence is associated with the increased exposure to science and scientists, who regularly provided guidance and information for many (Wellcome 2021: 24). In addition, at the beginning of the pandemic - before the Israeli government signed the contract with Pfizer, the Israel Institute for Biological Research began developing an "Israeli vaccine" - IIBR-100. If that project were to succeed, it probably would have raised trust in the scientific institution and been a source of national pride for most Israelis. However, the latest news is that the locally manufactured vaccine is currently only in phase II (Jaffe-Hoffman & Brown 2020; see also Pushparajah et al. 2021: Table 4). Therefore, Israelis needed to trust the Pfizer-BioNTech COVID-19 vaccine and those who make it.[5]

Trust in Pharmaceuticals

When it comes to vaccines, another kind of trust is based on the public perceptions of the vaccine makers (Latkin et al. 2021). In the United States, and before the outbreak of COVID-19, the pharmaceutical industry received the highest negative attitude among all industries (McCarthy 2019, cited in Latkin et al. 2021). This negativity is probably related to the pharmaceutical companies' false promises that painkillers were non-addictive derivatives of opioids. Pharmaceuticals, in fact, sold narcotic drugs, while regulators failed to protect the public, leading to the terrible opioid epidemic (Marks 2020; Jalali 2020). It is easy to assume that the

[5] The trust that the Israeli vaccine would have been enjoyed, or the trust that the American or British vaccines already enjoy, can be contrasted with an attitude of distrust towards Russia and China's vaccines. Scientific institutions that function under non-democratic regimes will probably have a hard time going against the decisions of their rulers. Under a totalitarian regime, the authorities can decide that the vaccine "works". If this happens, it will probably be difficult, or even impossible, for the local scientific institutions to oppose such a decision, and hence the skepticism. This argument was raised (in a different version) by Harari (2021).

pharmaceutical companies' role in the opioid epidemic has led the public worldwide, including Israel, to reduce their trust levels in pharmaceutical companies that produce vaccines. Under this assumption, a direct consequence is increased levels of mistrust accompanied by vaccine refusals and hesitancy.

Trust in the US FDA

Mistrust does not stop with pharmaceutical companies. The FDA's role in the opioid epidemic increased vaccine refusals and hesitancy, too. For example, the FDA, which approved the emergency use authorization for the COVID-19 vaccine, failed to enforce marketing regulations properly, obtain evidence of long-term safety and effectiveness, and manage conflicts of interest (Kolodny 2020). Moreover, the President's Commission on Combatting Drug Addiction and the Opioid Crisis stated that the opioid crisis was caused (also) by "inadequate oversight by the Food and Drug Administration" (Christie et al. 2017).

People worldwide expect regulators to act in favour of the public. When this expectation is not met, the social trust that is directed toward the regulators - erodes. No wonder vaccine skeptics, and supporters in Israel too (e.g. Kopepper 2021), raised questions about the pharmaceutical companies and the US regulators' ability to distribute safe and effective COVID-19 vaccines. Furthermore, the vaccine's approval by the FDA had significant political consequences and was bounded by political pressure (e.g. Liptak and Collins 2020).

Trust in a New Vaccine and a New Kind of Technology

The last trust relation I wish to focus on is our trust in the new vaccine and new technology. The fact that the Pfizer-BioNTech COVID-19 vaccine relies on an innovative technology (mRNA) and that the vaccine was approved relatively fast, played roles in vaccine hesitancy. Vaccine hesitancy was not only a phenomenon to associate with laypeople but also with experts.

In early December 2020, before data about vaccine safety and efficacy was available, the Israeli Ministry of Health requested the medical staff to be one of the first groups to get vaccinated. However, the Israeli Medical Association rejected this demand, arguing that they lack the scientific data required to recommend to their doctors to get vaccinated. Professor Leonid Edelman, former head of the World Medical Association and chairman of a committee assembled in the Israeli Medical Association for the vaccines, expressed support for vaccinations in general. However, he raised concerns that, in this case, it was the first time that a vaccine was developed so quickly and during a pandemic (Beit-Or 2020).

Beyond trusting a new vaccine that was developed quickly and during a pandemic, the fact that it was based on a new kind of technology played a part in experts' hesitancy, too. For example, former director-general of the Ministry of Health, Professor Yoram Lass, expressed concerns about the new technology, twitting:

> Clarification. I'm in favour of the classic vaccines with proven efficacy and safety. I, myself, get vaccinated. I vaccinated the entire country against Polio.

> I raise doubts about vaccination with a new technology, born quickly out of hysteria. (Lass 2020, my translation)

Mistrust and Silencing Concerns

During the pandemic, Lass became a controversial person (e.g. Eliaz 2020). In one instance, he was interviewed by two well-known journalists for an alternative media outlet called 'DemocraTV'. The interview quickly gained more than 40,000 views online but was mysteriously taken off. This surprised many, since DemocraTV is outside the mainstream, aspiring to be a voice that supports democratic values, including that freedom of speech (Ice 2021). Could it be that the popularity of his interview would undermine the official efforts and the vaccination campaign? The reasons for removing this interview are left unknown[6]. The removal of this interview did not contribute to the formation of trust between vaccine skeptics and the official authorities.

The complexity of concerns, knowledge, and trust is also reflected in managing vaccine misinformation online.[7] For example, at the end of September 2021, the Ministry of Health wanted to tackle the misinformation on social networks about vaccination side effects. On Thursday night, they posted a relatively long and informative post on Facebook that began with the sentence, "Let's talk about the reported side effects right after getting the Corona vaccine" (Ministry of Health of Israel 2021, my translation[8]). Citizens viewed this as a chance to discuss side effects openly. Instead, what followed was massive censorship of comments that either raised criticism directed at the ministry, were not in line with the consensus, or simply reported side effects (Shmueli 2021). Despite the ministry's responsibility to avoid the spread of misinformation on its own Facebook page, the acts of silencing criticism, concerns, and self-reporting of side effects - after inviting the public to talk about it - reduces public trust and reinforces the opinions of those who hesitated before.

When it comes to managing misinformation during this pandemic, these anecdotal cases were a drop in the ocean, and much research is expected to be done on its various aspects. However, relevant to my point here is that both experts and public concerns, who dissent from mainstream and official views, were occasionally silenced. Additionally, those who were dismissively called 'anti-vaxxers' or 'vaccine refusers' were, in many cases, vaccine skeptics. They had concerns about the COVID-19 vaccine safety, resulting from the short duration of the clinical trials or the new technology used.

[6] The number of incidents where interviews were not available for viewing after airing is a topic for research of its own.

[7] I leave others to discuss the crucial roles social media platforms played in the COVID-19 Infodemic and their effects on trust relations and decisions on whether to get vaccinated or not. See, e.g. Abul-Fottouh et al. 2020; Gruzd et al. 2023; Pickup et al. 2022; Ghaddar et al. 2022; Focosi et al. 2021; Schillinger et al. 2020; Cinelli et al. 2020.

[8] I thank a reviewer for pointing out to analysis of social media censorship on Chinese censorship programs (King et al. 2019), which are, of course, different in practice, scope, and intentions.

Is it possible to completely separate social aspects of mistrust – e.g. how pharmaceuticals and regulators acted in the past, or mistrust in the Israeli government - from trust that the vaccine is safe and effective? Probably not. Is it possible to completely distinguish between trust in science and trust in new technology when it comes to vaccines? Again – probably not. As an object of research, the vaccine is not neutral from its social perspective. The way it is discussed in mainstream media had ramifications over the public's attitudes of trust towards it. Therefore, when it comes to tackling vaccine hesitancy, trust relations must be considered.

Trust-Based Approach for Vaccine Hesitancy

Decisions to get vaccinated are sometimes quite complex, affected by various socio-cultural factors and the individual's perception of the vaccine (MacDonald 2015). There are many ways to motivate vaccination, among them monetary lottery incentives (Taber et al. 2021), taxation of the unvaccinated (Dyer 2022) and placing unvaccinated workers on administrative leave without pay (Government of Canada 2021). Leaving the important debates about whether or not to demand a fair distribution of the burden to have herd immunity and pose restrictions and enforce compulsory or involuntary COVID-19 vaccination mandate (Cheng 2022; c.f. Hurford 2022), I focus on motivating vaccination through changing one's perception about vaccine safety and efficiency. Additionally, I assume that facts, knowledge, and information alone cannot change someone's perception of the vaccine. In light of these assumptions, a trust-based approach to vaccine hesitancy maintains that a campaign should not only aim to deliver knowledge but also to build trust.

In what follows, the trust-based approach is advocated. Building trust with vaccine-hesitant people, by engaging with them and with their concerns, is much more democratic than censorship and dismissal. Additionally, and despite the assumption that knowledge is not enough to change one's mind, one epistemic consequence of forming trust with vaccine skeptics is the increased ability to communicate knowledge to them.

Engaging, Rather than Ignoring or Suppressing

Shir-Raz et al. (2022) describe how doctors and research scientists from different countries, Israel included, were suppressed and censored following raising concerns that challenged the official views. The tactics employed to suppress and censor dissenting views include derogatory labelling (e.g. 'anti-vaxxers'), hostile media (both social and mainstream) attention, dismissal by employers, revocations of medical licenses, lawsuits, and more. A different approach to dissenting views could be engagement:

> If we want to take suspicion towards vaccination seriously (as a crucial public health problem that needs to be addressed), we also must start treating people's concerns seriously. This requires paying attention to what people say when

> they express vaccination hesitancy or regret and learning about the trajectories that lead them to these positions. (Drążkiewicz 2021)

It is much more democratic to have a discourse that includes a variety of views rather than dismissing or censoring them. By taking a cue from the scholarly debate about conspiracy theories, I argue that dissenting views are sometimes even correct; they pose an important alternative to dogmatism; and even when the concerns are based on false information and lack of knowledge - addressing them can be educational and informative for all sides: conversations about truth - even when they involve conspiracy theories, have the potential to improve the accuracy of truth rather than diminish it (Akrich and Cochoy 2023). When it comes to building social trust between vaccine skeptics and social entities, a discourse is much more likely to be fruitful than dismissal and censorship.

Taking a Cue from Conspiracy Theory Theorists

The coronavirus pandemic brought an epidemic of false news, which was termed an 'Infodemic'. In early February 2020, the World Health Organization published a report arguing that "The 2019-nCoV outbreak and response has been accompanied by a massive 'infodemic' - an over-abundance of information – some accurate and some not – that makes it hard for people to find trustworthy sources and reliable guidance when they need it" (World Health Organization 2020b: 2).

On behalf of the accountability to protect public health, democratic governments, including that of Israel, have taken extreme measures. These measures, which for many were unimaginable before the pandemic, included shutting down economies, placing citizens under surveillance, imposing radical restrictions on the free press, on freedoms of movement, assembly, and demonstration, and included justifying excessive use of force and arrests by the police – to mention just a few (Freedom House 2020). Even if these measures were intended to be temporal, they amplified pre-existing challenges and potentially posed a danger to democracy, as they also affected democratic elections in many places (ibid; Landman and Splendore 2020).

As part of the efforts to minimize disinformation and misinformation, governments restricted the freedom of expression (Caduf 2020; Noorlander 2020; see "Mistrust and Silencing Concerns" for anecdotical examples from Israel). This freedom is one of the foundations of democracy, as it prohibits governments and the majority from enshrining their favourable positions (Sunstein 1995: xi). Nevertheless, in many cases, this freedom conflicts with other rights or has to be limited due to harm. The WHO Director-General, Tedros Adhanom Ghebreyesus, stated as early as March 11, 2020, that "All countries must strike a fine balance between protecting health, preventing economic and social disruption, and respecting human rights" (World Health Organization 2020a).

Among this abundance of information, conspiracy theories flourished (Harambam 2020b). In the scholarly debates about conspiracy theories, three main

approaches are identified[9]: the first, advocated primarily by psychologists (Douglas 2021), recognizes a conspiracy theory as an epistemic, existential, and social pathology. In contrast, the second approach, mainly advocated by social epistemologists (Dentith 2018a), recognizes a conspiracy theory merely as a kind of theory that involves a conspiracy. Thirdly, sociologists and anthropologists explore the meanings conspiracy theories have for the people involved (Drążkiewicz and Harambam 2021a).

According to the first approach, conspiracy theories are perceived as a set of false and sometimes even dangerous beliefs. A belief that a conspiracy theory is true is considered to hold a wrong worldview, and those who believe in it are considered paranoid, delusional, ignorant, or irrational. In this case, "public debate about conspiracy theories assumes that conspiracy theories are fictions that undermine the trust required for the spread of knowledge in our societies, and that belief in such theories is inappropriate" (Napolitano 2021: 82).

According to the second approach, conspiracy theories cannot be dismissed merely because a conspiracy is involved. Instead, some conspiracies are true, and each conspiracy theory should be evaluated according to its own merits. This view is called 'the particularist view' of conspiracy theories (Buenting & Taylor 2010). It contrasts with the generalist view, which generalizes the class of explanations called 'conspiracy theories' and justifies the pejorative labelling 'conspiracy theory' dominant by those who take the first approach. These different approaches are referred to as "cross-disciplinary disagreement" (Freiman 2019).

Dismissing conspiracy theories, *prima facia*, and condemning those who believe in them only because a conspiracy is involved, is dangerous. In a public climate where disseminators of conspiracy theories are silenced, real corruption cases cannot be taken seriously, as whistleblowers can be derogatorily labelled as "conspiracy theorists" and be excluded from public discourse (Freiman 2020; Dentith 2014; Brown 2020).

Vaccine hesitancy is not synonymous with support for conspiracy theories, and I do not advocate that the value of freedom of expression outweighs any other considerations. However, the logic from the scholarly discourse on conspiracy theories can be extrapolated from the concerns of vaccine skeptics. First, pluralism and disagreement are vital as an alternative to dogmatism. Second, addressing concerns about the virus, the vaccine, and the policies, can be a fruitful opportunity for building mechanisms of trust in the institutions of science and democracy.

Addressing Virus, Vaccine, and Policy Concerns

During the pandemic, questions about facts that once were unknown became trivial knowledge, and questions that were not legitimate to raise became mainstream talk. For example, does the coronavirus even exist? If it exists, is it just flu? Are face

[9] Compare with Harambam's (2020a) sociological approach, which distinguishes and critically engages with two ideal types of academic literature: one that pathologizes and stigmatizes conspiracy theories, and other that engages with them more neutrally and explores their meanings.

masks dangerous? What are the long-term effects of this new type (mRNA) of the vaccine? How does COVID-19 interact with children? Are kids more likely than adults to spread COVID-19? Why do people respond so differently to the virus? Why do people respond so differently to the vaccine? What is a sufficient level of immunity? Why do we need a second dose? Is the 'booster' different than the two shots? Should we get a fourth shot? What do we know about mixing different kinds of COVID-19 vaccines? How long is the vaccine effective? Does the COVID-19 vaccine increase the menstrual cycle length? Could the COVID-19 vaccine cause infertility? How common are serious side effects? Is the vaccine effective against new variants? How come people who were vaccinated became ill anyway? Where did SARS-CoV-2 come from? With regard to answers to some of these questions, Podcaster Joe Rogan (2022) pointed out that "many of the things that we thought of as misinformation just a short while ago are now accepted as fact".

On a personal level, many who have already been vaccinated know a family member, neighbour, or co-worker - who is not interested in getting vaccinated. In such cases, the question of whether to get vaccinated or not turns from a pure health issue to a social issue. Vaccines were turned from a scientific topic to a personal issue, often charged with negative feelings and accusations (Freiman 2021a). However, questions and concerns raised by vaccine skeptics can be utilized by various institutions for educational and informational purposes. When experts openly address the questions of vaccine skeptics, the public can learn how to deal with various arguments on a personal level.

On the public level, vaccine hesitation should not be ignored, ridiculed or mocked. Conspiracy theory scholars suggest that conspiracy theories and theorists should not be 'debunked', but rather addressed. The first step is avoiding the term 'debunking', which assumes the object of debunking is, a priori, wrong (Dentith 2018b; Drążkiewicz and Harambam 2021a, 2021b). As an alternative, they suggest, social mechanisms must be thought of and built to address the concerns.

For example, Harambam (2021) argues against common claims that tackling conspiracy theories is impossible, unprofessional, and non-productive. Instead, he suggests the formation of deliberative citizen knowledge platforms as an alternative to elite expert groups assessing the quality of public information. Similarly, Dentith (2021) suggests the formation of communities of inquiry that allow the investigation of conspiracy theories without prejudice. The prejudice Dentith refers to is not whether or not a theory is considered a conspiracy – but about the ability to inquire about them. While these suggestions remain abstract, their general approach could be applied to the concerns raised by vaccine skeptics.

More Communication is More Knowledge

In addition to forming a more democratic and inclusive discourse, a second reason to emphasize building trust in a vaccination campaign is the communication of knowledge. Trust and knowledge are tied: the formation of trust increases the

ability to communicate information.[10] People are less likely to interact with socially untrustworthy sources of information. At the same time, people are "more willing or likely either to speak to or to listen to socially trustworthy ones" (Mcdowell 2002: 55). People are more open to hearing and believing knowledge from those they trust, regardless of their social sphere (Harambam 2023), whether they are opponents or supporters of governmental COVID-19 measures (á Rogvi & Hoeyer 2023), or under which 'truth regime' (Fischer 2019) or echo chamber (Levi 2021) they are.

Furthermore, people also infer from the moral character of others the likelihood of being truth tellers: people (or institutions) who are perceived as immoral are more likely to be judged as liars. In contrast, moral ones are more likely to be judged as truth tellers (ibid: 57). In both cases, social trust is rendered as a facilitator of conditions for the communication of knowledge and the promoters of epistemic trust, i.e. trust that what was said is true.

Despite the assumption that knowledge is not enough to change one's mind, the epistemic consequence of forming trust increases the ability to communicate knowledge. Unlike knowledge disseminated from untrusted sources, the knowledge disseminated from socially trustworthy institutions would likely be consumed more and perceived as more reliable.

In sum, under the assumption that large-scale censorship and dismissal of ideas are not democratic, the trust-based approach is a more democratic approach to forming trust with vaccine skeptics. Moreover, discourse with vaccine skeptics is likely to result in both social trust and epistemic trust. These trust relations are expected to increase the amount of communication and the reliability of the knowledge that is disseminated. The combination of democratic discourse, trust, and knowledge can change the mind of vaccine skeptics.

Conclusion

Trust that the vaccine is safe and effective can be described by many different trust relations. Through the case study of the Israeli vaccination campaign, different trust relations were illustrated. Among them were the public trust in the Israeli government and health institutions, interpersonal trust in healthcare professionals, experts, science, pharmaceutical companies who make the vaccines, the US FDA, the vaccine itself, and the new vaccine technology. Examples of silencing dissenting experts and the public who hesitate to take the COVID-19 vaccine were given. Despite the relative success of the Israeli vaccination campaign (with more than 70% of the population has received at least one dose, Our World in Data 2023) these practices did not contribute to the formation of trust between vaccine skeptics and official authorities. I argued that it is impossible to completely separate the social aspects of trust from the belief that the vaccine is safe and effective. Therefore, when

[10] Hardwig (1991) assesses the role of trust in scientific knowledge creation, linking the concept of trust to that of testimony.

it comes to vaccination campaigns that address vaccine skepticism, trust should be an essential aspect to consider.

The elusive concept of trust (Simon 2013) is manifested in various trust relations. People tend to believe the say-so of trustworthy sources (McDowell 2002) - trusting that the knowledge that was communicated is true (i.e. epistemic trust), and that the trustworthy source has their interest in mind (i.e. social trust). In this sense, the epistemic labour of knowledge production (Miller & Freiman 2021a, b) is trust production. By unpacking the various meanings of the concept of trust, it is clear that trust takes many forms however, also is an integral part of our daily lives. When 'trust' is re-packed, one of its attributes is to simplify complex decisions that may otherwise be complicated, including the individual's decisions relating to vaccination (Larson et al. 2018).

Cautiously inferring from the example of Israel to other vaccination campaigns, and in light of these conclusions: governments who wish to tackle vaccine hesitancy can adopt a trust-based approach, acknowledging that knowledge alone is not enough, and the formation of trust must be considered, too. Having a discourse with vaccine skeptics has two main advantages: first, trust is a vehicle to deliver more knowledge that is prone to be perceived as more reliable, unlike knowledge from untrustworthy sources. Combined with knowledge, vaccination campaigns that take the trust-based approach can potentially change vaccine skeptics' minds to decide to take the plunge and get vaccinated. Second, from the democratic aspect, a discourse is much more favourable than censorship and dismissal, and it can strengthen trust relations. Ultimately, a trust-based approach to vaccine hesitancy can strengthen trust in scientific and democratic institutions.

Acknowledgments I thank the participants of the October 2021 4S virtual session *Corona Truth Wars: Testing and Contesting Knowledge in a Hyper-Mobile Pandemic*, Jaron Harambam, Ehler Voss, and two anonymous reviewers for their critical comments and suggestions.

Funding The author reported that there is no funding associated with the work featured in this article.

Declarations

Conflict of interest The author has no conflicts of interest to declare.

References

á Rogvi, Sofie, and Klaus Hoeyer. 2023. A Data-Political Spectacle: How COVID-19 Became A Source of Societal Division in Denmark. *Minerva*. https://doi.org/10.1007/s11024-022-09486-5

Abul-Fottouh, Deena, Melodie Yunju Song, and Anatoliy Gruzd. 2020. Examining algorithmic biases in YouTube's recommendations of vaccine videos. *International Journal of Medical Informatics*. https://doi.org/10.1016/j.ijmedinf.2020.104175.

Akrich, Madeleine, and Franck Cochoy. 2023. A Masked Truth? Public Discussions about Face Masks on a French Health Forum. *Minerva*. https://doi.org/10.1007/s11024-023-09493-0.

Beit-Or, Meital Yasur. 2020. The Medical Doctors Protest: 'We are not Guinea Pigs'. *Israel Ha'yom*, December 7, 2020. [Hebrew] https://www.israelhayom.co.il/article/827145. Accessed 10 February 2022.

Boulware, L. Ebony., Lisa A. Cooper, Lloyd E. Ratner, Thomas A. LaVeist, and Neil R. Powe. 2003. Race and Trust in the Health Care System. *Public Health Reports*. https://doi.org/10.1093/phr/118.4.358.

Boyd, Kenneth. 2019. Epistemically Pernicious Groups and the Groupstrapping Problem. *Social Epistemology*. https://doi.org/10.1080/02691728.2018.1551436.

Boyd, Kenneth. 2021. Beyond politics: additional factors underlying skepticism of a COVID-19 vaccine. *History and Philosophy of the Life Sciences*. https://doi.org/10.1007/s40656-021-00369-8.

Brown, A. J. 2020. Protection of whistleblowers vital during COVID-19. Transparency International Australia June 22, 2020. https://www.transparency.org/en/blog/protection-of-whistleblowers-vital-during-covid-19. Accessed 10 February 2022.

Branch, T. Y., Gloria Origgi, and Tiffany Morisseau. 2022. Why trust Raoult? How social indicators inform the reputations of experts. *Social Epistemology*. https://doi.org/10.1080/02691728.2022.2042421

Buenting, Joel, and Jason Taylor. 2010. Conspiracy Theories and Fortuitous Data. *Philosophy of the Social Sciences*. https://doi.org/10.1177/0048393109350750.

Caduff, Carlo. 2020. What went wrong: Corona and the world after the full stop. *Medical Anthropology Quarterly*. https://doi.org/10.1111/maq.12599.

Chan, Aileen Lai-yam, CC Leung, TH Lam, and KK Cheng. 2020. To wear or not to wear: WHO's confusing guidance on masks in the covid-19 pandemic. *BMJ Opinion,* March 11, 2020. https://blogs.bmj.com/bmj/2020/03/11/whos-confusing-guidance-masks-covid-19-epidemic/

Cheng, F.K. 2022. Debate on Mandatory COVID-19 Vaccination. *Ethics, Medicine and Public Health.* https://doi.org/10.1016/j.jemep.2022.100761.

Christie, Chris, Charlie Baker, Roy Cooper, Patrick J. Kennedy, Bertha Madras, and Pam Bondi. 2017. The President's Commission on combating drug addiction and the opioid crisis. https://www.doh.wa.gov/Portals/1/Documents/2300/2017/PresidentsCommissionOnCombatingDrugAddictionOpioidCrisis.pdf. Accessed 10 February 2022.

Cinelli, Matteo, et al. 2020. The COVID-19 Social Media Infodemic. *Scientific Reports*. https://doi.org/10.1038/s41598-020-73510-5.

Collins, Harry M., and Robert Evans. 2002. The third wave of science studies: Studies of expertise and experience. *Social Studies of Science*. https://doi.org/10.1177/0306312702032002003.

Collins, Harry M., and Robert Evans. 2007. *Rethinking Expertise*. Chicago: University of Chicago Press.

David, Gurwitz. 2021. COVID-19 Vaccine Hesitancy: Lessons from Israel. *Vaccine*. https://doi.org/10.1016/j.vaccine.2021.05.085.

Dentith, M.R.X. 2014. *The Philosophy of Conspiracy Theories*. Springer.

Dentith, M.R.X. 2018a. Expertise and conspiracy theories. *Social Epistemology*. https://doi.org/10.1080/02691728.2018.1440021.

Dentith, M R. X. 2018b. Taking conspiracy theories seriously and investigating them. In *Taking Conspiracy Theories Seriously,* Dentith, M. R. X., 217-225. London: Rowman and Littlefield.

Dentith, M.R.X. 2021. Debunking Conspiracy Theories. *Synthese*. https://doi.org/10.1007/s11229-020-02694-0.

Domenicucci, Jacopo, and Richard Holton. 2017. Trust as a two-place relation. In *The Philosophy of Trust*, eds. Paul Faulkner and Thomas Simpson, 149–160. Oxford: Oxford University Press.

Doron, Alex. 2022. The side effects of the epidemic in Israel. *DoctorsOnly*, March 31, 2022. https://publichealth.doctorsonly.co.il/2022/04/257010. Accessed 30 April 2023.

Douglas, Karen M. 2021. COVID-19 Conspiracy Theories. *Group Processes and Intergroup Relations*. https://doi.org/10.1177/1368430220982068.

Drążkiewicz, Grodzicka, Elżbieta. 2021. Taking vaccine regret and hesitancy seriously. The role of truth, conspiracy theories, gender relations and trust in the HPV immunisation programmes in Ireland. *Journal for Cultural Research*. https://doi.org/10.1080/14797585.2021.1886422.

Drążkiewicz, Grodzicka, Elżbieta, and Jaron Harambam. 2021a. Introduction. *Journal for Cultural Research 25(1)*. https://doi.org/10.1080/14797585.2021.1886420

Drążkiewicz, Grodzicka, Elżbieta, and Jaron Harambam (eds.). 2021b. Special Issue: What should academics do about conspiracy theories? Moving beyond debunking to better deal with conspiratorial movements, misinformation and post-truth. *Journal for Cultural Research 25(1)*. https://www.tandfonline.com/toc/rcuv20/25/1

Dubé, Eve, Maryline Vivion, and Noni E. MacDonald. 2015. Vaccine hesitancy, vaccine refusal and the anti-vaccine movement: influence, impact and implications. *Expert Review of Vaccines*. https://doi.org/10.1586/14760584.2015.964212.

Dyer, Owen. 2022. Covid-19: Quebec to tax the unvaccinated as vaccine mandates spread in Europe. *British Medical Journal*. https://doi.org/10.1136/bmj.o112.

Efrati, Ido. 2020. First Coronavirus Case in Israel, Cruise Ship Passenger Tests Positive. *Haaretz*, February 21, 2020. https://www.haaretz.com/israel-news/.premium-first-coronavirus-case-in-israel-cruise-ship-passenger-tests-positive-1.8563011. Accessed 10 February 2022.

Efrati, Ido and Reuters. 2021. Israel Begins Coronavirus Vaccination Campaign for 12-15 Year-olds. *Haaretz*, June 6, 2021. [Hebrew] https://www.haaretz.com/israel-news/israel-begins-coronavirus-vaccination-campaign-for-12-15-year-olds-1.9878193. Accessed 10 February 2022.

Eliaz, Or. 2020. The meme madness about the professor who opposes the Corona madness. *MAKO Nexter*, April 22, 2020. [Hebrew] https://www.mako.co.il/nexter-internet/viral/Article-b5871750dd1a171027.htm. Accessed 10 February 2022.

Ericsson, K. Anders, Robert R. Hoffman, Aaron Kozbelt, and A. Mark Williams (eds). 2006. *The Cambridge Handbook of Expertise and Expert Performance*. Cambridge: Cambridge University Press.

Eyal, Gil, and Thomas Medvetz (eds.). 2023. *The Oxford Handbook of Expertise and Democratic Politics*. Oxford University Press.

Faulkner, Paul R. 2018. Collective Testimony and Collective Knowledge. *Ergo*. https://doi.org/10.3998/ergo.12405314.0005.004.

Feyerabend, Paul K. 1970. Against Method: Outline of an Anarchistic Theory of Knowledge. *Analyses of theories and methods of physics and psychology* 4:17-130. https://hdl.handle.net/11299/184649.

Fischer, Frank. 2019. Knowledge politics and post-truth in climate denial: On the social construction of alternative facts. *Critical Policy Studies*. https://doi.org/10.1080/19460171.2019.1602067

Focosi, Daniele, David Navarro, Fabrizio Maggi, Roilides Emmanuel, and Guido Antonelli. 2021. COVID-19 infodemics: the role of mainstream and social media. *Clinical Microbiology and Infection*. https://doi.org/10.1016/j.cmi.2021.08.003.

Freedom House. 2020. Democracy under Lockdown, Special Report 2020. https://freedomhouse.org/report/special-report/2020/democracy-under-lockdown. Accessed 10 February 2022.

Freiman, Ori. 2019. The Philosophy of Taking Conspiracy Theories Seriously. *Social Epistemology Review and Reply Collective* 8 (9): 51–61.

Freiman, Ori. 2020. The Truth Behind the Conspiracy. Haai'n Hashviit [The 7th Eye], 23 April 2020. [Hebrew] https://www.the7eye.org.il/370149. Accessed 10 February 2022.

Freiman, Ori. 2021a. Immunity from the Herd. Haai'n Hashviit [The 7th Eye], 9 February 2021a. [Hebrew] https://www.the7eye.org.il/405424. Accessed 10 February 2022.

Freiman, Ori. 2021b. *The Role of Knowledge in the Formation of Trust in Technologies: The Testimony of Artificial Speakers and the Social Shaping of Blockchains*. Doctoral Dissertation, Bar-Ilan University.

Fricker, Miranda. 2012. Group Testimony? The Making of a Collective Good Informant. *Philosophy and Phenomenological Research* https://doi.org/10.1111/j.1933-1592.2011.00565.x

Fuller, Steve. 2002. *Social Epistemology*. Indiana University Press.

Funk, Cary, Brian Kennedy and Courtney Johnson. 2020. Trust in Medical Scientists Has Grown in U.S., but Mainly Among Democrats. Pew Research Center. https://www.pewresearch.org/science/2020/05/21/trust-in-medical-scientists-has-grown-in-u-s-but-mainly-among-democrats. Accessed 10 February 2022.

Galula, Natan. 2020. Lockdown policy 'madness:' Israeli scientist tells i24NEWS. *I24News,* December 31, 2020. [Hebrew]. https://www.i24news.tv/en/news/coronavirus/1609424065-lockdown-policy-madness-israeli-scientist-tells-i24news. Accessed 10 February 2022.

Gelfert, Axel. 2011. Expertise, Argumentation, and the End of Inquiry. *Argumentation*. https://doi.org/10.1007/s10503-011-9218-7.

Gesser-Edelsburg, Anat, Mina Zemach, and Rana Hijazi. 2021. Who are the 'real' experts? The debate surrounding COVID-19 health risk management: an Israeli Case Study. *Risk Management and Healthcare Policy*. https://doi.org/10.2147/rmhp.s311334.

Gewirtz-Meydan, Ateret, Kim Mitchell, Yaniv Shlomo, Oren Heller, and Michal Grinstein-Weiss. 2021. COVID-19 among youth in Israel: Correlates of decisions to vaccinate and reasons for refusal. *Journal of Adolescent Health*. https://doi.org/10.1016/j.jadohealth.2021.11.016.

Ghaddar, Ali, Sanaa Khandaqji, Zeinab Awad, and Rawad Kansoun. 2022. Conspiracy beliefs and vaccination intent for COVID-19 in an infodemic. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0261559.

Goldman, Alvin I. 1999. *Knowledge in a Social World*. New York: Oxford University Press.

Goldman, Alvin I. 2001. Experts: Which ones should you trust? *Philosophy and Phenomenological Research*. https://doi.org/10.2307/3071090.

Government of Canada. 2021. Policy on COVID-19 Vaccination for the Core Public Administration Including the Royal Canadian Mounted Police. https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32694. Accessed 10 February 2022.

Gross, Liza. 2009. A broken trust: lessons from the vaccine–autism wars. *PLoS BiolOgy*. https://doi.org/10.1371/journal.pbio.1000114.

Gruzd, Anatoliy, Deena Abul-Fottouh, Melodie YunJu. Song, and Alyssa Saiphoo. 2023. From Facebook to YouTube: The Potential Exposure to COVID-19 Anti-Vaccine Videos on Social Media. *Social Media and Society*. https://doi.org/10.1177/20563051221150403.

Hall, Mark A., Elizabeth Dugan, Beiyao Zheng, and Aneil K. Mishra. 2001. Trust in Physicians and Medical Institutions: What Is It, Can It Be Measured, and Does It Matter? *The Milbank Quarterly*. https://doi.org/10.1111/1468-0009.00223.

Harambam, Jaron. 2020a. *Contemporary Conspiracy Culture: Truth and Knowledge in an Era of Epistemic Instability*. Routledge.

Harambam, Jaron. 2020b. The Corona Truth Wars: Where Have All the STS'ers Gone When We Need Them Most? *Science & Technology Studies*. https://doi.org/10.23987/sts.99550.

Harambam, Jaron. 2021. Against modernist illusions: why we need more democratic and constructivist alternatives to debunking conspiracy theories. *Journal for Cultural Research*. https://doi.org/10.1080/14797585.2021.1886424.

Harambam, Jaron. 2023. Distrusting Consensus: How a Uniform Corona Pandemic Narrative Fostered Suspicion and Conspiracy Theories. *Journal of Digital Social Research* 5: 2.

Harari, Yuval Noah. 2021. On the Tension between Democracy and Science. Academic Israel YouTube Channel, 8 February 2021. [Hebrew]. https://youtu.be/hbp6NSChvaM?t=1559. Accessed 10 February 2022.

Hardwig, John. 1985. Epistemic Dependence. *The Journal of Philosophy*. https://doi.org/10.2307/2026523.

Hardwig, John. 1991. The Role of Trust in Knowledge. *The Journal of Philosophy*. https://doi.org/10.2307/2027007.

Hermann, Tamar, Anabi, Or, Rubabshi-Shitrit, Ayelet, Ritov, Avraham (Rami), and Ella Heller. 2020. The Israeli Democracy Index 2020. The Israeli Democracy Institute. https://en.idi.org.il/media/15562/the-israeli-democracy-index-2020-en.pdf. Accessed 10 February 2022.

Horsburgh, H.J.N. 1960. The Ethics of Trust. *Philosophical Quarterly*. https://doi.org/10.2307/2216409.

Hurford, James E. 2022. COVID-19 and compulsory vaccination: An acceptable form of coercion? *The New Bioethics*. https://doi.org/10.1080/20502877.2021.2010441.

Ice. 2021. DemocraTV under attack: 'erasing the interview with Lass is dangourase. Ice, September 15, 2021. [Hebrew]. https://www.ice.co.il/media/news/article/830709. Accessed 10 February 2022.

Isaeva, Neve, Reinhard Bachmann, Alexandra Bristow, and Mark N. K. Saunders. 2015. Why the Epistemologies of Trust Researchers Matter. *Journal of Trust Research*. https://doi.org/10.1080/21515581.2015.1074585.

Jaffe-Hoffman, Maayan, and Hannah Brown. 2020. Israel's vaccine candidate set to launch Phase II clinical trial. *The Jerusalem Post*, 15 December 2020. https://www.jpost.com/health-science/israels-vaccine-candidate-set-to-launch-phase-ii-clinical-trial-652110. Accessed 10 February 2022.

Jalali, Mohammad S. Michael Botticelli, Rachael C. Hwang, Howard K. Koh, and Kathryn R. McHugh. 2020. The Opioid Crisis: A Contextual, Social-Ecological Framework. *Health Research Policy and Systems*. https://doi.org/10.1186/s12961-020-00596-8.

John, Stephen. 2018. Epistemic Trust and the Ethics of Science Communication: Against Transparency, Openness, Sincerity and Honesty. *Social Epistemology*. https://doi.org/10.1080/02691728.2017.1410864.

Kallestrup, Jesper. 2019. The Epistemology of Testimonial Trust. *Philosophy and Phenomenological Research*. https://doi.org/10.1111/phpr.12584.

King, Gary, Jennifer Pan, and Margaret E Roberts. 2013. How censorship in China allows government criticism but silences collective expression. *American Political Science Review*. https://doi.org/10.1017/S0003055413000014

Kitcher, Philip. 1991. Socializing Knowledge. *The Journal of Philosophy*. https://doi.org/10.5840/jphil1991881115.
Kolodny, Andrew. 2020. How FDA failures contributed to the opioid crisis. *AMA Journal of Ethics*. https://doi.org/10.1001/amajethics.2020.743.
Kopepper, Ruta. 2021. "We wanted to present the crimes of the Sackler family". *Calcalist*, October 27, 2021. [Hebrew]. https://www.calcalist.co.il/style/article/h1511ybif. Accessed 10 February 2022.
Kusch, Martin. 2002. *Knowledge by Agreement: The Programme of Communitarian Epistemology*. Oxford: Oxford University Press.
Lackey, Jennifer. 2014. A Deflationary Account of Group Testimony. In *Essays in Collective Epistemology*. ed. Jennifer Lackey, pp. 64–94. Oxford University Press.
Landman, Todd, and Luca Di Gennaro Splendore. 2020. Pandemic democracy: elections and COVID-19. *Journal of Risk Research*. https://doi.org/10.1080/13669877.2020.1765003.
Larson, Heidi. J., Richard M Clarke, Caitlin Jarrett, Elisabeth Eckersberger, Zachary Levine, Will S Schulz, Pauline Paterson. 2018. Measuring Trust in Vaccination: A Systematic Review. *Human Vaccines & Immunotherapeutics* https://doi.org/10.1080/21645515.2018.1459252
Lass, Yoram. 2020. Twitter, November 14, 2020, 11:54am. [Hebrew] https://twitter.com/LassYoram/status/1327656076964208641?s=19. Accessed 10 February 2022.
Latkin, Carl A., Lauren Dayton, Grace Yi, Arianna Konstantopoulos, and Basmattee Boodram. 2021. Trust in a COVID-19 vaccine in the US: A social-ecological perspective. *Social Science & Medicine*. https://doi.org/10.1016/j.socscimed.2021.113684.
Levy, Neil. 2021. Echoes of Covid Misinformation. *Philosophical Psychology*. https://doi.org/10.1080/09515089.2021.2009452.
Levy, Neil. 2022. *Bad Beliefs: Why They Happen to Good People*. Oxford University Press. https://library.oapen.org/bitstream/handle/20.500.12657/52638/9780192895325.pdf
Liptak, Kevin, and Collins Kaitlan. 2020. Trump puts pressure on FDA for coronavirus silver bullet ahead of Election Day. *CNN*, September 3, 2020. https://www.cnn.com/2020/09/03/politics/white-house-fda-coronavirus-vaccine/index.html. Accessed 10 February 2022.
Longino, Helen E. 2002. *The Fate of Knowledge*. Princeton: Princeton University Press.
Longino, Helen E. 2019 [2002]. The Social Dimensions of Scientific Knowledge. In *The Stanford Encyclopedia of Philosophy,* ed. Edward N. Zalta. https://plato.stanford.edu/archives/sum2019/entries/scientific-knowledge-social. Accessed 10 February 2022.
MacDonald, Noni E. 2015. Vaccine hesitancy: Definition, scope and determinants. *Vaccine*. https://doi.org/10.1016/j.vaccine.2015.04.036.
Mallapaty, Smriti. 2021. Vaccines are curbing COVID: Data from Israel show drop in infections. *Nature*. https://doi.org/10.1038/d41586-021-00316-4.
Marks, Jonathan H. 2020. Lessons from corporate influence in the opioid epidemic: toward a norm of separation. *Journal of Bioethical Inquiry*. https://doi.org/10.1007/s11673-020-09982-x.
McCarthy, Justin. 2019. Big Pharma Sinks to the Bottom of U.S. Industry Rankings. Gallup, September 3, 2019. https://news.gallup.com/poll/266060/big-pharma-sinks-bottom-industry-rankings.aspx. Accessed 10 February 2022.
Mcdowell, Ashley. 2002. Trust and Information: The Role of Trust in the Social Epistemology of Information Science. *Social Epistemology*. https://doi.org/10.1080/210132798.
McKee, Martin, and Selina Rajan. 2021. What can we learn from Israel's rapid roll out of COVID 19 vaccination? *Israel Journal of Health Policy Research*. https://doi.org/10.1186/s13584-021-00441-5.
McLeod, Carolyn. 2021 [2006]. Trust. In *The Stanford Encyclopedia of Philosophy,* ed. Edward N. Zalta. https://plato.stanford.edu/archives/fall2021/entries/trust. Accessed 10 February 2022.
Meyer, Samantha, Paul Ward, John Coveney, and Wendy Rogers. 2008. Trust in the Health System: an Analysis and Extension of the Social Theories of Giddens and Luhmann. *Health Sociology Review*. https://doi.org/10.5172/hesr.451.17.2.177.
Mill, John Stuart. 1978 [1859]. *On Liberty*. Elizabeth Rapaport (ed.). Indianapolis: Hackett Publishing Company.
Miller, Boaz. 2011. *A Social Theory of Knowledge*. Doctoral Dissertation, University of Toronto.
Miller, Boaz. 2013. When Is Consensus Knowledge Based? Distinguishing Shared Knowledge from Mere Agreement. *Synthese*. https://doi.org/10.1007/s11229-012-0225-5.
Miller, Boaz. 2019. "The Social Epistemology of Consensus and Dissent." In *The Routledge Handbook of Social Epistemology*, eds. David Henderson, Peter Graham, Miranda Fricker, and Nikolaj J.L.L. Pedersen, 230–239. New York: Routledge.

Miller, Boaz, and Ori Freiman. 2020. Trust and Distributed Epistemic Labor. In *The Routledge Handbook of Trust and Philosophy*, ed. Judith Simon, 341–353. New York: Routledge.

Ministry of Health of Israel & Pfizer. 2021. Real-World Epidemiological Evidence Collaboration Agreement. https://govextra.gov.il/media/30806/11221-moh-pfizer-collaboration-agreement-redacted.pdf. Accessed 10 February 2022.

Ministry of Health of Israel. (2021). https://www.facebook.com/Health.gov.il/posts/4174515529326993. Accessed 10 February 2022.

Moore, Alfred, and Michael K. MacKenzie. 2020. Policy making during crises: how diversity and disagreement can help manage the politics of expert advice. *BMJ*. https://doi.org/10.1136/bmj.m4039.

Muhsen, Khitam, Reem Abed El-Hai, Anat Amit-Aharon, Haim Nehama, Mervat Gondia, Nadav Davidovitch, Sophy Goren, and Dani Cohen. 2012. Risk factors of underutilization of childhood immunizations in ultraorthodox Jewish communities in Israel despite high access to health care services. *Vaccine*. https://doi.org/10.1016/j.vaccine.2012.01.044.

Murphy, Jamie, et al. 2021. Psychological characteristics associated with COVID-19 vaccine hesitancy and resistance in Ireland and the United Kingdom. *Nature Communications*. https://doi.org/10.1038/s41467-020-20226-9.

Napolitano, Giulia M. 2021. Conspiracy theories and evidential self-insulation. In *The Epistemology of Fake News,* eds. Sven Bernecker, Amy K. Flowerree, and Thomas Grundmann. Oxford: Oxford University Press.

Nickel, Philip. J. 2013. Trust in Technological Systems. In *Norms in Technology*. eds. M. J. De Vries, S.O. Hansson, and A.W. Meijers, pp. 223–237. Springer. https://doi.org/10.1007/978-94-007-5243-6_14

Nickel, Philip J. and Lily Frank. 2020. Trust in Medicine. In *The Routledge Handbook of Trust and Philosophy*, Judith Simon (ed.). New York: Routledge.

Noorlander, Peter. 2020. COVID and Free Speech: The impact of COVID-19 and ensuing measures on freedom of expression in Council of Europe member states. Council of Europe, Conference of Ministers responsible for Media & Information Society, Nicosia 2020. https://rm.coe.int/covid-and-free-speech-en/1680a03f3a. Accessed 10 February 2022.

Oreskes, Naomi. 2019. *Why Trust Science?* Princeton University Press.

Our World in Data. 2021. COVID-19 Vaccine doses administered per 100 people. https://ourworldindata.org/explorers/coronavirus-data-explorer?zoomToSelection=true&time=2020-12-20..latest&facet=none&pickerSort=desc&pickerMetric=total_vaccinations_per_hundred&Metric=Vaccine+doses&Interval=Cumulative&Relative+to+Population=true&Align+outbreaks=false&country=USA~GBR~ISR~DEU~ARE~ARG~FRA~JPN~IND. Accessed 10 February 2022.

Our World in Data. 2022. Policy Responses to the Coronavirus Pandemic. https://ourworldindata.org/policy-responses-covid. Accessed 30 April 2023.

Our World in Data. 2023. Israel: What share of the population has received at least one dose of the COVID-19 vaccine? https://ourworldindata.org/coronavirus/country/israel#what-share-of-the-population-has-received-at-least-one-dose-of-the-covid-19-vaccine. Accessed 30 April 2023.

Ozawa, Sachiko, Ligia Paina, and Mary Qiu. 2016. Exploring pathways for building trust in vaccination and strengthening health system resilience. *BMC Health Services Research*. https://doi.org/10.1186/s12913-016-1867-7.

Pickup, Mark, Dominik Stecuła, and Clifton van der Linden. 2022. Who Shares Conspiracy Theories and Other Misinformation about Covid-19 Online: Survey Evidence from Five Countries. *Journal of Quantitative Description: Digital Media*. https://doi.org/10.51685/jqd.2022.024.

Pritchard, Duncan. 2018. *What is This Thing Called Knowledge?* London: Routledge.

Pushparajah, Deborah, Salma Jimenez, Shirley Wong, Hibah Alattas, Nafiseh Nafissi, and Roderick A. Slavcev. 2021. Advances in gene-based vaccine platforms to address the COVID-19 pandemic. *Advanced Drug Delivery Reviews*. https://doi.org/10.1016/j.addr.2021.01.003.

Quast, Christian, and Markus Seidel. 2018. Introduction: The Philosophy of Expertise—What is Expertise? *Topoi*. https://doi.org/10.1007/s11245-017-9526-0.

Reznik, Ran. 2021. Health Ministry calls to keep unvaccinated doctors away from high-risk patients. *Israel Ha'yom*, February 19, 2021. [Hebrew]. https://www.israelhayom.com/2021/02/19/health-ministry-calls-to-keep-unvaccinated-doctors-away-from-high-risk-patients. Accessed 10 February 2022.

Rogan, Joe. 2022. My thoughts on the latest controversy with @spotify. Instagram, January 31, 2022. https://www.instagram.com/p/CZYQ_nDJi6G. Accessed 10 February 2022.

Rolin, Kristina. 2020. Trust in science. In *The Routledge Handbook of Trust and Philosophy*, ed. Judith Simon, 354–366. New York: Routledge.

Rosen, Bruce, Ruth Waitzberg, Avi Israeli, Michael Hartal, and Nadav Davidovitch. 2021. Addressing vaccine hesitancy and access barriers to achieve persistent progress in Israel's COVID-19 vaccination program. *Israel Journal of Health Policy Research*. https://doi.org/10.1186/s13584-021-00481-x.

Sage Working Group on Vaccine Hesitancy. 2014. Report of the Sage Working Group on Vaccine Hesitancy. https://www.who.int/immunization/sage/meetings/2014/october/1_Report_WORKING_GROUP_vaccine_hesitancy_final.pdf. Accessed 10 February 2022.

Schillinger, Dean, Deepti Chittamuru, and Susana A. Ramírez. 2020. From "infodemics" to health promotion: a novel framework for the role of social media in public health. *American Journal of Public Health*. https://doi.org/10.2105/AJPH.2020.305746.

Shahbari, Nour Abed Elhadi, Anat Gesser-Edelsburg, and Gustavo S. Mesch. 2020. Perceived trust in the health system among mothers and nurses and its relationship to the issue of vaccinations among the Arab population of Israel: A qualitative research study. *Vaccine*. https://doi.org/10.1016/j.vaccine.2019.10.002.

Shapin, Steven. 1995. *A Social History of Truth: Civility and Science in Seventeenth-Century England*. University of Chicago Press.

Shilo, Smadar, Hagai Rossman, and Eran Segal. 2021. Signals of hope: gauging the impact of a rapid national vaccination campaign. *Nature Review Immunology*. https://doi.org/10.1038/s41577-021-00531-0.

Shir-Raz, Yaffa, Ety Elisha, Brian Martin, Natti Ronel, and Josh Guetzkow. 2022. Censorship and Suppression of Covid-19 Heterodoxy: Tactics and Counter-Tactics. *Minerva*. https://doi.org/10.1007/s11024-022-09479-4.

Shmueli, Asaf. 2021. The Ministry of Health Published a Post about Corona Vaccine Side Effects – It Did not Foresee this Storm Coming. *Haaretz*, October 02, 2021. [Hebrew] https://www.haaretz.co.il/tmr/BLOG-1.10260147. Accessed 10 February 2022.

Simon, Judith. 2013. Trust. In *Oxford Bibliographies in Philosophy*, ed. Duncan Pritchard. Oxford University Press.

Simpson, Thomas W. 2012. What is Trust? *Pacific Philosophical Quarterly*. https://doi.org/10.1111/j.1468-0114.2012.01438.x.

Söllner, Matthias, Axel Hoffmann, and Jan Marco Leimeister. 2016. Why different trust relationships matter for information systems users. *European Journal of Information Systems*. https://doi.org/10.1057/ejis.2015.17.

Star, Susan Leigh. 1999. The Ethnography of Infrastructure. *American Behavioral Scientist*. https://doi.org/10.1177/00027649921955326.

Star, Susan Leigh, and Karen Ruhleder. 1996. Steps toward an ecology of infrastructure: Design and access for large information spaces. *Information Systems Research*. https://doi.org/10.1287/isre.7.1.111.

Star, Susan Leigh, and Anselm Strauss. 1999. Layers of silence, arenas of voice: the ecology of visible and invisible work. *Computer Supported Cooperative Work*. https://doi.org/10.1023/A:1008651105359.

Sunstein, Cass. 1995. *Democracy and the Problem of Free Speech*. Free Press.

Taber, Jennifer M., Clarissa A. Thompson, Pooja Gupta, Sidney Abigail O'Brien, John Updegraff. 2021. Experimental Tests of How Hypothetical Monetary Lottery Incentives Influence Vaccine-Hesitant U.S. Adults' Intentions to Vaccinate. https://doi.org/10.31234/osf.io/ux73h.

Times of Israel. 2020. Israel kicks off mass coronavirus vaccine drive to stamp out COVID-19 pandemic. *Times of Israel*, 20 December, 2020. [Hebrew]. https://www.timesofisrael.com/israel-kicks-off-vaccine-drive-to-stamp-out-covid-19-pandemic. Accessed 10 February 2022.

Tollefsen, Deborah. P. 2007. Group Testimony. *Social Epistemology*. https://doi.org/10.1080/02691720701674163

Tollefsen, Deborah. P. 2009. Wikipedia and the Epistemology of Testimony. *Episteme.* https://doi.org/10.3366/E1742360008000518

Vigoda-Gadot, Eran, Miller-Mor Attias, Rotem, Nissim (Nessi) Cohen, and Shlomo Mizrahi. 2016. Public trust, civil participation and performance evaluation – Comparative examination of health services and medical funds in Israel: civilian positions Analysis. Haifa: The Division of Public Administration and Policy, School of Political Science, University of Haifa.

Wallace, Megan, et al. 2021. The advisory Committee on Immunization Practices' Interim recommendation for Use of Pfizer-BioNTech COVID-19 vaccine in adolescents aged 12–15 Years—United

States, May 2021. *Morbidity and Mortality Weekly Report*. https://doi.org/10.15585/mmwr.mm7020e1.

Wellcome Trust. 2021. Wellcome Global Monitor: How Covid-19 affected people's lives and their views about science. https://cms.wellcome.org/sites/default/files/2021-11/Wellcome-Global-Monitor-Covid.pdf. Accessed 10 February 2022.

World Health Organization. 2020a. WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020a. https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020a. Accessed 10 February 2022.

World Health Organization. 2020b. Novel Coronavirus (2019-nCoV): situation report, 13. https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200202-sitrep-13-ncov-v3.pdf. Accessed 10 February 2022.

Yamin, Dan, Arieh Gavious, Nadav Davidovitch, and Joseph S. Pliskin. 2014. Role of Intervention Programs to Increase Influenza Vaccination in Israel. *Israel Journal of Health Policy Research*. https://doi.org/10.1186/2045-4015-3-13.

Zulat Institute and Physicians for Human Rights. 2021. The Right to Vaccine (B): Dealing with Vaccine Hesitancy, Policy Paper 7B, April 2021. https://en.zulat.org.il/wp-content/uploads/2021/08/THE-RIGHT-TO-VACCINE-Dealing-with-Vaccine-Hesitancy-April-2021.pdf. Accessed 10 February 2022.