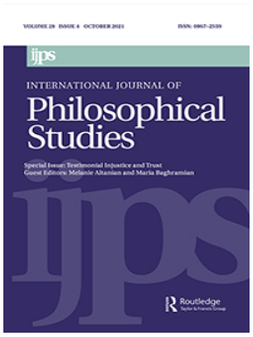

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Our Epistemic Duties in Scenarios of Vaccine Mistrust

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ABSTRACT

What, if anything, should we do when someone says they don't believe in anthropogenic climate change? Or that they worry that a COVID-19 vaccine might be dangerous? We argue that in general, we face an epistemic duty to object to such assertions, *qua* instances of science denial and science sceptical discourse, respectively. Our argument builds on recent discussions in social epistemology, specifically surrounding the idea that we ought to speak up against (epistemically) problematic assertions so as to fulfil an important epistemic obligation – namely, preventing epistemic harms in others. We show that both science denial (SD) and vaccine hesitant (VH) discourses are harmful in a distinctively epistemic sense, and as such generate an especially strong duty to voice our disagreement. As we also argue, this obligation is nonetheless defeasible: depending on the situational features of those involved, voicing an objection to VH discourse may actually end up doing more harm than good. We conclude by tracing what seems like a promising path towards restoring well-placed public trust in scientific testifiers. Doing so is key in order to guarantee equitable access to warranted beliefs about important subject matters, such as the safety of vaccines, to all segments of society.

KEYWORDS epistemic justice; trust in science; vaccine hesitancy; science denial; positive epistemic duties

1 Introduction

Casey Johnson (2018) and Jennifer Lackey (2020) have recently argued, compellingly in our view, that we have a distinctively epistemic duty 'to object to things that people say' (Lackey 2020, 35). According to both Johnson and Lackey, our duty to object is *prima* vs. *ultima facie* (typically, at least), and so defeasible (again, typically). Whether this obligation may in fact be overridden in a given instance, and on what grounds, may depend on the situational features of those participating in the conversation, on what others in that context do, and on the content of the objectionable belief (subject matter).

For instance,

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> [. . .] imagine that Carla, a historian of ancient art, is giving a presentation to her research group. She is a well-respected, emeritus scholar, speaking to other well-respected emerita faculty. As a small aside of her presentation she makes the claim that Babylonian architecture influenced Assyrian ceramic art. Carla's colleague, Theresa, disagrees. Theresa believes that Babylonian architecture did not influence Assyrian ceramic art. (Johnson 2018, 122)

Johnson's set-up of this scenario is such that there are no overriding reasons – e.g. lack of time, low confidence in her beliefs, professional insecurity, etc. – that could motivate Theresa's decision to remain silent. On the contrary, Johnson argues, by failing to object Theresa would be 'failing to behave as [she] epistemically ought' (119): Theresa has an epistemic obligation to testify to her disagreement with Carla's claim. This obligation stems on the one hand from the fact that Theresa believes Carla's claim to be incorrect, and has high confidence in this belief. On the other hand, Johnson maintains, Theresa's duty plausibly derives from the fact that, insofar as she and Carla 'are jointly committed to art history, they are also [. . .] committed to mutually supporting one another in the aims of that activity. [This commitment] generates an obligation for Theresa: she must point out (what she takes to be) Carla's error as part of supporting Carla in her efforts to discover art-historical truths' (135–6).[1]

As Johnson notes, this is a scenario in which no obvious moral or prudential stakes are in play. This makes it possible to see that there can be obligations to object that are primarily if not solely epistemic. However, Lackey and Johnson also agreee – correctly, in our view – that we can still talk of distinctively epistemic duties to object even in 'hybrid' cases, i.e. where moral or prudential stakes are also involved. This is important for us since the cases we'll be interested in are ones in which epistemic and non-epistemic (practical, prudential) considerations are typically intertwined.

For instance, 'if a tenured, white, male professor hears a fellow colleague make a clearly sexist remark,' then according to Lackey (2020) the professor faces a normative pressure (a duty) to object that stems from both moral *and* epistemic considerations. Regarding the latter, in particular, Lackey argues that our epistemic duty can be *first-order*, in the sense that 'the end [or ends] of the duty to object can be distinctively epistemic in nature'; and *interpersonal*, in the sense that it is a duty to promote such epistemic ends – e.g. truth, understanding, knowledge – in 'other agents, whether they are individuals or communities' (Lackey 2020, 38). Lackey's thesis about the other-directedness of our duty to object will also be important in what follows.

Johnson and Lackey also mount strong cases for thinking that this epistemic obligation may be shaped by a variety of contextual factors, most prominently social and identity factors such as race, gender, class, professional status, authority (real or perceived). Our duty to object to another's assertion may thus be alternately strengthened or weakened by

our respective situational features, as well as any concomitant normative pressures. Between them, the authors discuss examples of potential defeaters that range from considerations of politeness, to prudential concerns deriving from social or professional status, to the danger that voicing 'too many' objections may cause them to lose traction. In turn, these reflections underwrite the idea that our obligation to object may come in degrees: e.g. the white male professor faces a greater duty to speak up against a peer's sexist remarks than his junior colleague does. As Lackey argues, moreover, the strength of an individual's epistemic duty may vary depending on what other participants in the conversation do: in many cases, if someone else has already responded to the target proposition(s), and has done so appropriately, I may be relieved (partially or entirely) of my duty to voice my disagreement. This is because, Lackey also maintains, at its most general the duty to object is collective.

Against this backdrop, here we wish to bring attention to what we understand to be a further point of agreement between Lackey and Johnson, which is left under-developed in both texts.[2] This is the idea that the *subject matter* of the target assertion may also contribute to shaping our duty to speak up in a given conversational context: specifically, our obligation may be heightened if the target belief is known to be particularly resistant to counter-evidence. Lackey identifies racist beliefs as belonging to this category: 'If [. . .] my colleague had [. . .] expressed a racist belief [. . .], almost certainly every one of us should have objected because such a belief is standardly very counterevidence-resistant' (Lackey 2020, 56). We take Johnson to be alluding to something similar when she writes that 'At a dinner party hosted by my spouse's boss, practical and conversational considerations will probably outweigh many of my obligations to voice my disagreements. If, however, [. . .] the subject of disagreement is particularly important, my obligation may be mitigated but not outweighed' (Johnson 2018, 121).

Here, we wish to pick up where Lackey and Johnson left off. Our first suggestion is that *science denial* (SD) discourse meets both of the above criteria (resistance to counter-evidence, importance of subject matter), and as such generates a heightened, epistemic obligation to voice disagreement in those who witness its assertion. By way of brief preamble, we follow standard convention in using the label 'science denial' to designate discourse that expresses a systematic and outright denial of the scientific consensus, either on a particular subject matter (e.g. anthropogenic global warming) or *tout court* (Diethelm and Martin 2009). SD discourse may be more or less radical (e.g. 'climate change is not happening' vs. 'there is a conspiracy . . . '), more or less durable over time, its uptake may covary with e.g. political or religious affiliations, etc. Over and above possible variations in form and content, at its core SD discourse expresses

a rejection of propositions on which there is widespread or total agreement within the scientific community (we'll sometimes use the shorthand 'established scientific claims' to refer to the latter).

Importantly, SD beliefs about a topic T on which there is scientific consensus are (typically) unwarranted beliefs (about T).[3] In turn, holding such beliefs, or at least rejecting warranted beliefs about T, arguably stands in the way of acquiring knowledge or understanding about T. Since it is generally agreed that having scientific knowledge or understanding is not only desirable, but also important – practically *and* epistemically – we can safely conclude that SD is an important subject of disagreement, as per Johnson's criterion.

Moreover, the fact that SD discourse is typically predicated on, and formulated as, a rejection of established scientific claims indicates that at some point, some evidence (e.g. expert scientific testimony on the claims in question) has been considered – and discarded (De Cruz 2020; Hornsey 2020; Kovaka 2019). Thus SD beliefs are also peculiarly insensitive or resistant to (counter-) evidence, as per Lackey's criterion. Notice that both criteria apply just as much to 'traditional' forms of SD (e.g. concerning climate change, evolution, HIV/AIDS) as to 'novel' instances: the rapid emergence of denialist discourse concerning the SARS-CoV-2 pandemic is just the latest reminder of the resilience of SD attitudes.[4] Indeed, the ease and rapidity with which novel SD discourse crops up, as well as the durability of its more 'traditional' instantiations, further compounds the significance of this phenomenon and the urgency of addressing it.

These considerations lend initial support to our claim that SD discourse, *qua* evidence-resistant discourse about an important subject matter, generates a strong obligation, in those who witness its assertion, to voice their disagreement. In the next section we present an additional argument in support of this thesis. We will begin by arguing that SD discourse is potentially harmful not just practically but also in a distinctively epistemic sense. This is because the lay public crucially and utterly depends on expert scientific testimony in order to access warranted, true beliefs about important subject matters. However, the unconstrained circulation of SD discourse generates confusion over who the experts are and what they're saying (Oreskes and Conway 2011). As a result, public access to important epistemic goods is compromised and obstructed – something which qualifies as a distinctively epistemic harm. In turn, our argument concerning the epistemic harms produced by SD will allow us to further sharpen and bolster our claim that we face a strong (though defeasible) duty to object to SD discourse.

2 The Epistemic Harms of Science Denial

Earlier we gave a fairly general characterisation of SD as discourse that systematically and – what is more important – baselessly contradicts one or more claims on which there is a robust consensus within the scientific community. We now present two illustrations of SD discourse, that will serve as a springboard for our argument to the effect that we face a heightened obligation to speak up against such assertions.

> SCENARIO A. On 23 April 2020, during a White House press conference, then-President Trump intimated that injecting or ingesting disinfectant might be a course of action worth considering in order to cure SARS-CoV-2 infections: "And then I see the disinfectant, where it knocks it [the virus] out in a minute. One minute! And is there a way we can do something like that, by injection inside or almost a cleaning. Because you see it gets in the lungs and it does a tremendous number on the lungs. So it would be interesting to check that."[5] Of those present, Dr. Deborah Birx was the only representative of the scientific community. When Trump publicly suggested that injecting and/or ingesting disinfectant could be an effective treatment route for COVID-19, Dr. Birx remained silent. Indeed, neither she nor anyone else said or did anything, by way of response to Trump's comments, during the remainder of the press conference.

> SCENARIO B. "Increasingly, the use of chloroquine appears to be effective [in the treatment of coronavirus infections]."[6] "Masks are not effective [for the prevention of COVID-19]."[7] "Nothing has been scientifically proven about [the Coronavac vaccine]."[8] On multiple occasions, during official as well as informal public appearances, Brazilian president Jair Bolsonaro uttered statements and displayed behaviour that explicitly contradicted evidence-based claims and public health recommendations issued by the scientific community regarding the severity of COVID-19 and the adoption of prevention measures such as mask-wearing and social distancing. Bolsonaro notoriously and repeatedly described the virus as 'just a little flu'; ridiculed mask-wearing and social distancing measures as unnecessary, and dismissed them as appropriate for 'weaklings' and 'fairies', among other derogatory terms; promoted chloroquine as a safe and effective treatment. He rarely wore a mask himself, including on the frequent occasions in which he met crowds of adoring fans whom he hugged, kissed and took selfies with. He also respectively sacked and forced the resignation of two successive health ministers for pronouncing themselves in favour of public health policies, such as social distancing, long known to be effective at halting the spread of viral infections.

Scenarios A and B are illustrations of SD discourse.[9] In both cases, a speaker asserts – testifies to their belief in – one or more scientific falsehoods: that injecting disinfectant could help treat SARS-CoV-2 infections, that face masks have dangerous side effects, that a vaccine approved by health authorities may not be safe, and so on. Each of these assertions directly or indirectly contradicts one or more claims on which there is substantial agreement within the scientific community.

The two scenarios share further salient traits: the speaker or testifier is a political authority – indeed, the top-most authority in the respective countries; the assertions are made publicly, and from far-reaching platforms; the speaker is an elected authority, something which carries an assumption and heightened expectation of benevolence and competence on the testifier's part. Each of these factors adds weight to the respective assertions: the identity of the testifiers and the publicity of their assertions pragmatically endow these with a credibility head-start, and conspires in favour of widespread, uncritical uptake of their content by the public. Indeed, ensuing events tragically witnessed as much: a number of US citizens ended up in hospital after ingesting bleach, and social distancing and mask-wearing guidelines were repeatedly flaunted in Brazil, leading to spikes in infection rates and subsequent deaths.

In light of the foregoing, we take it to be uncontroversial that Trump's and Bolsonaro's assertions, *qua* SD assertions, generate a duty to object on practical and/or moral grounds. We will now argue that in these cases and more generally, SD assertions also generate a distinctively epistemic obligation to object, i.e. an obligation to object on epistemic grounds.[10]

What grounds are these? We answer: preventing the distinctively epistemic harms produced by SD discourse. First, SD discourse is epistemically harmful simply insofar as it consists of false, unwarranted claims that are introduced into the public sphere by presumptive epistemic authorities. In this sense, SD assertions are bad to the same extent that any assertion of an unwarranted falsehood (by a presumptive epistemic authority) is bad. Take Johnson's art history example. Carla's false claim that Assyrian ceramic art was influenced by Babylonian architecture is problematic first and foremost because her audience – none of whom know much about Assyrian art, with the exception of Theresa, and all of whom regard Carla as an epistemic authority on the subject – will likely form one or more false beliefs on the basis of Carla's testimony. This is an epistemically harmful consequence produced by the (unchallenged) assertion of false beliefs in a conversational context. Recognition of these consequences as epistemically harmful provides a motivation for voicing our disagreement with false unwarranted beliefs: to prevent others from acquiring such beliefs via testimonial exchange. Indeed, this dovetails with Lackey's claim about the other-directedness of the duty to object.[11]

At its most basic, then, SD discourse is epistemically harmful in the sense just described. In fact, we think that SD discourse is significantly more damaging than this. Most fundamentally, this is due to the special socio-epistemic features of testimony in general, and scientific testimony in particular.

Testimonial exchange is an important channel through which an agent may form beliefs (acquire new beliefs, strengthen or revise previously held ones) about some subject matter or topic T. Crucially, forming beliefs via

testimony requires that the recipient be able (and willing) to recognise the testifier as *trustworthy*. In turn, assessments of trustworthiness typically involve recognition of the testifier as honest (or benevolent) and competent. When such assessments are well founded, they provide *reasons* for an agent (at the receiving end of a testimonial exchange) to update their belief set accordingly. These conditions highlight what is often described as the vulnerable or fragile nature of testimonial exchanges: an agent who forms a belief *b* about T via testimonial trust (i.e. as a result of placing their epistemic trust in an interlocutor whom they recognise as an epistemic authority on T) typically forgoes direct investigation of T-related evidence for *b*, instead taking the proffered testimony as proxy for such evidence. Thus, agents typically *depend* on the testifier's trustworthiness for ensuring that *b* satisfies appropriate epistemic standards (Hardwig 1985).[12]

This dependence on others, and the vulnerability that comes with it, is further heightened and even inevitable when direct investigation of the evidence for *b* is not an option for the recipient – for instance because doing so would require a substantial amount of prior knowledge about T. Beliefs about scientific subject matters, acquired by laypersons via the testimony of scientists and/or intermediaries (e.g. media outlets, science communicators, policy advisors and also political authorities) fall exactly under this description. Notice that, precisely because first-order or direct investigation of the evidence is only a realistic option for experts about T, this means that non-experts (laypersons, but also scientists who are not T-experts) also depend on (the trustworthiness of) a relatively small group of testifiers in order to satisfy their T-related epistemic goals. We thus crucially and utterly depend on being able to (i) correctly *identify* scientific testifiers and (ii) *trust* scientific testifiers[13]: doing so is our *only* option in order to overcome an otherwise insurmountable epistemic gap, and form mostly warranted beliefs about important subject matters.[14] In light of the especially vulnerable nature of scientific testimonial trust, and the epistemic and practical importance of the beliefs involved, the scientific expert community, as well as their testimonial intermediaries (e.g. the media, political authorities) face an elevated responsibility to prove themselves to be trustworthy. This is all the more important given that, as is known, breaches of trust are especially difficult to recover from (more on this in Sections 4–5).

As is also known, however, SD discourse threatens the stability of scientific testimonial trust chains. By injecting unwarranted scientific falsehoods into the public discourse, often cleverly disguised as respectable assertions; by piggy-backing on cognitive biases (such as motivated reasoning and confirmation biases, *inter alia*) as well as socio-epistemic dynamics such as echo chambers; and owing to the politicisation of certain scientific issues (e.g. climate change), SD discourse (i) generates confusion over the identity of trustworthy scientific testifiers and (ii) fosters mistrust in the same as

a result. This erosion of public trust in scientific testifiers amounts to a *second harmful epistemic consequence of SD*.[15] Given the distinctive vulnerability of scientific testimonial trust, it is also an epistemic harm that runs much deeper than the 'mere' assertion of an unwarranted falsehood: by breeding mistrust in scientific experts, SD stands to compromise the testimonial trust chain which, for the vast majority of the public, is the only option in order to fill crucial epistemic gaps. Recognition of this further potentially dramatic consequence of SD definitively compounds the importance of objecting to such discourse: objecting is something we can and should do in order to prevent the multiple, lasting epistemic damage produced by SD.[16]

In fact, we maintain that much of the foregoing also holds of discourse that falls short of outright denialism: namely, discourse expressing 'merely' *sceptical* beliefs towards the testimony of scientific experts. We will argue for this in the next section by focusing on vaccine hesitancy (VH) as our main illustration.

The WHO Strategic Advisory Group of Experts (SAGE) defines VH as 'the delay in acceptance or refusal of vaccines despite availability of vaccine services' (MacDonald 2015, 4613). Given that beliefs are reliable predictors of action, it is not a stretch to interpret this as a characterisation of a doxastic state (of scepticism towards vaccine-related assertions, e.g. that the MMR vaccine is safe) as well as the actions motivated by it. Indeed, the definition of vaccine confidence, with which VH is standardly coupled and contrasted, is more explicit in this regard: vaccine confidence is defined as the 'degree of trust in the effectiveness and safety of the vaccine, in the system that delivers the vaccine, and in the motivations of those who make the decisions to achieve effective access to the vaccines' (González-Block et al. 2020, 2). We will use the label VH to refer to both the doxastic attitude and the actions motivated by it, although our focus will be mainly on the epistemic dimension of VH.[17]

One reason for restricting our focus to VH is that it is a globally pervasive (epistemic) phenomenon.[18] It is also of particularly acute practical concern at present, given the crucial importance of ensuring that as many people as possible receive at least one dose of a SARS-CoV-2 vaccine.[19] Mass vaccination is critical – in this case and in general – in order to drastically reduce the number of high-risk infections and deaths, relieve the pressure experienced by medical facilities and practitioners, and in order for herd immunity to be reached. To this end, it is key that VH is acknowledged as an epistemic and practical threat and seriously addressed as such. Thus, focused reflection on its drivers, and on the strategies that could help foster vaccine confidence, is more than well motivated and indeed urgent.

Insofar as VH attitudes are sceptical attitudes, it is natural to think of them as 'weakened' forms of SD. This may suggest that the former are less problematic than the latter. This intuition should be resisted, however.

First, sceptical and denialist attitudes often converge with respect to the actions they motivate (since many vaccine sceptics delay or forgo vaccination); so sceptical attitudes need to be addressed *qua* motivators of practically and/or morally harmful actions. Second, sceptical attitudes such as VH are epistemically problematic in their own right: as we will argue in Section 3, their expression stands to produce similar harms to those associated with SD, most prominent among which is the interference with the public's access to important (warranted) beliefs via testimonial trust.

In the next section we argue that, just as we face an epistemic duty to speak up against expressions of SD, so we do with VH. We then further qualify this conclusion in Section 4, where we show that in some cases, this same epistemic duty may be overridden by a competing normative pressure – to avoid producing new testimonial injustices.

3 The Case of Vaccine Hesitancy

> SCENARIO C. X and Y meet for a socially distanced picnic, shortly after having watched a national news report on the imminent launch of the COVID-19 vaccination campaign. X expresses enthusiasm for the turn of events: "Did you hear the great news? The vaccine roll-out is about to begin! I'm in such awe of the fact they developed these vaccines so quickly . . . I can't wait to sign up to receive my first dose." Y's response is very different: "Oh, I don't know. How is it possible that vaccines normally take years to make, and now they're rolling out several of them after just a few months!? It seems to be happening too quickly — I'm just not sure it's safe. I don't think I'll sign up for a jab."[20]

X and Y's comments are immediately recognisable as expressions of vaccine confidence and hesitancy, respectively. What seems to ground these attitudes? As others before us have noted, a prominent factor is an underlying attitude of (respectively) positive and negative trust towards (at least) the scientific community and (so) the content of their expert testimonies.[21]

Indeed, Y's comments are (implicitly) strongly suggestive of such an underlying attitude; put differently, it seems difficult to reconcile Y's comments with an assumption of trust towards the scientific authorities, at least with respect to the latter's vaccine-related assertions. A more natural interpretation is that Y implicitly or explicitly judges those authorities to have failed on either the competence or the sincerity condition, or both: for instance, Y may suspect that not all testing stages were conducted adequately, or they may think that public messaging about the safety of the vaccine has been insincere.

There are different ways in which Y could have ended up in this doxastic state. For instance, Y may have autonomously reflected on the fact that previous vaccines took several years to be developed and approved, and concluded on this basis that the much publicised 'record

speed' at which the COVID-19 vaccines were developed was suspicious. Or they might have formed this belief on the basis of a peer's testimony. Or they may have come across a presumptive expert voicing these sceptical worries.

In each of these cases, Y formed the belief that the vaccine was developed 'too quickly' (to be safe) for *bad reasons*, where these reasons have to do with Y's judgments about which sources qualify as epistemically trustworthy.[22] In the first case, they undeservedly self-identified as an epistemic authority on the subject of vaccine safety (e.g. as a result of overconfidence, or laziness) instead of deferring to an appropriate expert authority.[23] In the second case, they ascribed a similarly undeserved authority to a peer, either in *lieu* of seeking expert testimony or as the result of an improper distribution of credibility (i.e. by assigning a credibility excess to peer testimony and a credibility deficit to expert testimony). In both these cases, Y may also be epistemically culpable (Brown 2020).

By contrast, if Y did seek expert testimony and – perhaps as a result of bad luck, or for lack of time or resources – erroneously placed their epistemic trust in a so-called fake expert, or in a vaccine hesitant authority (e.g. a personal physician), they may be blameless for holding an unwarranted vaccine-related belief. Even if Y has an excuse for believing as they do, however, Y lacks good reasons for harbouring low vaccine confidence, insofar as they *lack good reasons for mistrusting expert scientific testifiers*, instead placing their epistemic trust in testimonial sources that fail to meet the competence condition (at least). Thus: Y's mistrust of the scientific authorities is *ill-placed*, since Y's judgments concerning which sources are epistemically trustworthy, and which ones are not, are poorly motivated; since Y's VH attitude is a byproduct of Y's underlying mistrust of scientific testifiers, the former attitude is itself poorly motivated, as a result.[24]

Importantly, Y's sceptical attitude is not only problematic in the sense just described; it is also epistemically harmful in the same sense that SD discourse is (Section 2). The potential epistemic harms in this scenario are (probably) quantitatively more limited compared to Scenarios A and B: typically, laypersons' platforms are less far-reaching, and their testimonies less impactful, compared to e.g. political authorities. The harms produced by Y's VH attitude are nonetheless qualitatively significant, even if they are limited to Y alone – given that believing falsehoods is harmful in general, and given that Y's access to vaccine-related epistemic goods will be compromised as a result of their ill-founded mistrust of expert scientific testifiers. In addition, Y's localised mistrust may conceivably spill over to other domains: under the 'right' circumstances, Y may reason that, if the scientists are not to be trusted over the COVID-19 vaccine, perhaps they shouldn't be trusted on other preventative measures such as mask-wearing, or on other vaccines, etc.

In light of the foregoing, it seems clear that in Scenario C, X faces a duty to object to Y's assertions – insofar as these express unwarranted evidence-resistant beliefs, concern an important subject matter, and stand to produce epistemically harmful consequences.[25] As before, X's duty qualifies as an inter-personal obligation to prevent epistemic harm in others (at a minimum, Y).[26] In other words, conclusions similar to those drawn in Section 2 concerning SD apply to scenarios of VH. We will now qualify this conclusion by examining three more scenarios featuring expressions of VH in which, we will argue, our duty to object can meet with an additional category of defeaters.

4 Vaccine Hesitancy and Epistemic Injustice

> SCENARIO D. As an emergency medicine physician with regular exposure to Covid-19 patients, I knew I would be prioritised for vaccination. However, for many months, I was decidedly and definitely against being among the first to get the shot. Instead, I planned to wait and see how others did with the vaccine. I suppose I am wary of the very system to which I have dedicated nearly two decades of my career. [. . .] I had serious doubts about the speed of the Covid-19 vaccine development process, which seemed to me to be a political tool then-President Donald Trump was trying to use to win re-election. How could a vaccine developed under a president who displayed repeated acts of racism and who actively enabled white supremacist groups be trusted?[27]

> SCENARIO E. But that is why [I don't trust the flu vaccine] — it is because of the history of the medical industry and its distrust on how they treated African Americans. And like I said, at that time they didn't even view us as human beings so they felt that they could do whatever they wanted to do. But I just, I haven't seen where they have tried to build the trust. It's like, "Okay that happened 100 years ago. Don't worry about it." But I think there are probably more instances. We just don't know about them and they hide them. So, I don't want to end up with this, this will come out, "10 years ago, guess what, when you had this vaccine back in 2004 guess what was in it?" because that can happen. (Jamison, Quinn, and Freimuth 2019, 9)

Each of the speakers in Scenarios D–E expresses an attitude of hesitancy towards a vaccine, on the grounds of a stated mistrust towards the political and medical institutions, respectively. This attitude of mistrust prompts a specific concern for each of the speakers: that a vaccine has been developed too quickly for its safety to be guaranteed (Scenario D), and that a vaccine may in fact be a cover for an undisclosed, unethical experimental treatment (Scenario E).

At first blush, it may seem that considerations similar to those articulated in Section 3 would apply here: the beliefs expressed concern an important subject matter (whether a vaccine is safe; whether the authorities promoting vaccination are to be trusted), qualify as evidence-resistant, and breed

harmful epistemic as well as practical consequences. Thus, our earlier argument would seem to warrant a similar conclusion here: a hypothetical interlocutor witnessing either speaker's remarks would face an obligation to voice an objection. We will now argue that this is not a foregone conclusion, however: in these scenarios, our *ultima facie* obligations may in fact weigh against voicing our disagreement with a speaker's VH assertions.

Scenarios D–E are superficially similar to Scenario C in that in each, a speaker expresses sceptical concerns about a vaccine on the grounds of an implicit (Scenario C) or explicit (Scenarios D–E) mistrust of the political and/or medical authorities. The main salient difference between the first and latter two scenarios lies in the *reasons* behind this attitude of mistrust.

In Scenario C, we saw that the speaker's mistrust can be traced back to doxastic negligence, or at best bad luck. It is thus poorly motivated, as are the resulting vaccine-related sceptical concerns. By contrast, both sets of comments in Scenarios D–E explicitly describe such mistrust as motivated by *a prior display of untrustworthiness* on the part of the relevant authorities in their interactions with the social group to which the speakers both belong (the Black American community in the U.S.).

Notably, although the targets of mistrust are ostensibly different in D–E, they lead to the same result – namely, an attitude of hesitancy towards a vaccine that has been approved by national and/or international health agencies and that is available to the speakers. In fact, the attitudes of mistrust to which the speakers testify share a common root: systemic and chronic discrimination and marginalisation of Black Americans, across multiple domains of their lives, at the hands of the political (Scenario D) and medical institutions (Scenario E) and their representatives. With their comments, the speakers are picking out two specific manifestations of this institutional untrustworthiness: then-President Trump's openly sympathetic attitude towards racist discourse and actions during his time in office, and the U.S. medical establishment's involvement in dangerous experimental drug trials on Black communities in the past. Each points to a prior breach of trust – specifically, a major violation of the benevolence/sincerity condition – on the part of the mentioned authorities; moreover, as the second speaker points out, in neither case did those authorities try 'to build the trust' back.

Especially in the absence of any reparative attempts, then, it is hardly surprising that the speakers' pre-existing mistrust towards the institutions – what is often termed hierarchical or vertical mistrust – should in turn motivate scepticism towards a vaccine promoted by those institutions. In fact, this seems entirely reasonable: if e.g. the government has proved untrustworthy in the past, has done so repeatedly, systematically and unapologetically, then I not only have reasons to withhold my trust in the government today, but I may also plausibly harbour doubts about the authorities appointed and consulted by the government, and the policies

they promote. Vice versa, if I have reasons to mistrust a non-political (e.g. medical) institution on the basis of their track record of dishonesty or incompetence, and that institution is sanctioned by the legislative authorities, I may plausibly come to question the latter's motives with respect to at least some of the policies they endorse.[28]

Most importantly, attitudes of vertical mistrust, motivated by historic, repeated and unaddressed breaches of trust on the part of the relevant authorities towards particular social groups, are rational, or *well-placed*. As one group of authors puts it, 'Mistrust, which originates in systemic racism, is a rational coping response to centuries of oppression' (Bogart et al. 2021, 203).

Here, it should also be emphasised that evidence of institutional dishonesty (or lack of benevolence) and/or incompetence, while stemming from the same root – structural discrimination and marginalisation of a particular social group – may be invoked under different presentations: historical, and first-person. Scenarios D–E both fall in the former category; indeed, sociological and empirical studies examining attitudes of institutional mistrust mostly cite notorious episodes such as the Tuskegee syphilis experiment, the forced sterilization of Puerto Rican women and of the First Nations peoples of Canada, and the case of Henrietta Lacks as their main illustrations.[29] But 'not every Black American is aware of [historical] atrocities [such as the Tuskegee experiment] or would blame them for their distrust' (Bajaj and Stanford 2021, 1). Nonetheless, members of marginalised groups can often rely on first-person, everyday evidence of institutional untrustworthiness, including though certainly not only in medical contexts:

> Every day, Black Americans have their pain denied, their conditions misdiagnosed, and necessary treatment withheld by physicians. In these moments, those patients are probably not historicizing their frustration by recalling Tuskegee, but rather contemplating how an institution sworn to do no harm has failed them. (Bajaj and Stanford 2021, 1)

Alongside historical illustrations of structural discrimination, everyday experiences of institutional racism in medical contexts also warrant attitudes of mistrust towards the medical authorities on the part of marginalised individuals; such attitudes are thus well-placed, and in turn they unsurprisingly – indeed, reasonably – favour attitudes of VH such as those voiced in Scenarios D–E.[30]

To recap: at the beginning of the section, we claimed that the key difference between Scenario C and Scenarios D–E had to do with the reasons underwriting the speakers' respective expressions of VH. This claim has now been substantiated by the foregoing discussion. In Scenario C, Y lacked good reasons for harbouring low vaccine confidence, insofar as their mistrust of

the expert scientific testifiers was ill-placed. By contrast, the attitude of vertical mistrust voiced in the latter two scenarios was robustly motivated by a track record of institutional untrustworthiness.

The three scenarios do converge in one respect, insofar as VH attitudes are invariably harmful – practically *and* epistemically. As we argued in Section 3, this is owing above all to the fact that such attitudes are symptomatic of an underlying attitude of mistrust towards scientific expert testimony, and as such they stand to compromise an agent's ability to overcome the novice-expert gap. At best, only a single agent's strictly vaccine-related beliefs, concerning only a particular vaccine, will be severed from an appropriate justificatory basis as a result. But given our observations concerning the dynamics of trust, it is a more than reasonable expectation that the epistemic damage will extend beyond this narrow radius, for instance by predisposing an agent to adopt a sceptical stance towards a broader class of established scientific claims, withhold trust from scientific testifiers, and directly or indirectly encouraging others to do the same.

In fact, reflection on the harmful nature of VH leads us to identify a second major difference between Scenarios C and D–E. Owing to their mistrust of the authorities promoting a particular vaccine, the speakers in our three scenarios suffer the same *kinds* of epistemic harm (entertaining false unwarranted beliefs about a vaccine, withholding trust from expert scientific testifiers). In Scenarios D–E, however, this mistrust is well-placed, given those authorities' track record of untrustworthiness in their interactions with the Black American community. This means that the epistemic harms suffered by the speakers are themselves *a result of the institutional marginalisation* – witnessed by historical evidence and/or first-hand everyday experiences – of the community to which the speakers both belong. Owing to said marginalisation, that is, the speakers in Scenarios D–E are *harmed in their capacity as epistemic agents qua recipients of knowledge*: the attitude of VH expressed in Scenarios D–E is symptomatic of a chronic underlying epistemic injustice (Fricker 2007; Grasswick 2018).

Recently, Heidi Grasswick (2018) has defended a similar thesis, although our respective starting points differ.[31] In some ways, Grasswick's argument is more general than ours, in that it examines the conditions under which an agent is warranted in mistrusting scientific experts in a broad sense, whereas we focus more narrowly on cases of well-placed vaccine-related mistrust. In contrast, we are considering a broader range of routes by which an agent may come to mistrust scientific testifiers, e.g. as a result of harbouring a prior mistrust in the political institutions. Overall, it seems fair to say that our arguments complement one another nicely in this sense. Similarly, Grasswick's discussion of the 'indicators that could suggest a lack of trustworthiness on the part of a community of scientific experts from the perspective of a specifically situated lay person' (2018, 85) is more detailed than ours in that it teases apart three

types of historical markers of untrustworthiness; in turn, we have suggested that everyday experiences of discrimination may provide an equally robust motivation for an agent's mistrust of the scientific and/or political authorities. Here too, our discussions seem to be helpfully complementary. Taken together, Grasswick's analysis and ours further bolster the conclusion that,

> When the conditions are such that the available evidence points in the direction of distrust, making it difficult or impossible to responsibly trust in expert communities such that I could receive knowledge and understandings of the world through responsibly placed trust, there is a sense in which my epistemic agency is being thwarted. (Grasswick 2018, 84)

We now want to suggest that, for precisely these reasons, the duty to object will in many cases be defeated in scenarios such as D–E. More specifically: in cases where an agent voices an attitude of VH, on the grounds of a track record of untrustworthiness displayed by the vaccine-promoting authorities towards the social group to which the agent belongs, an interlocutor who is dominantly situated will often face a stronger obligation *not* to voice their disagreement with the former's expression of VH – since an objection under these circumstances could qualify as a new epistemic injustice.

To see this, consider the following hypothetical scenario:

> SCENARIO F. W harbours a well-placed mistrust towards the medical and/or political authorities who are currently coordinating and publicizing a vaccination campaign. W's mistrust is well-placed insofar as it is motivated by first-person and/or historical evidence of the relevant authorities' untrustworthiness towards the marginalised social group to which W belongs. Owing to their well-placed vertical mistrust, W has low confidence towards the vaccine in question; they voice a VH belief to Z, a dominantly situated layperson. For their part, Z regards the same authorities as trustworthy and *for this reason* has full confidence in the vaccine's safety; Z's belief that the vaccine is safe is (well) supported by a pre-existing attitude of institutional trust.[32] On these grounds, Z voices their disagreement with W's assertion(s).

First of all, what exactly is Z disagreeing with? Not the veracity of W's assertion, given our blanket assumption of doxastic transparency and speaker sincerity. Z doesn't question the fact that W is hesitant; instead, Z questions *W's reasons* for mistrusting the vaccine (i.e. the basis for W's beliefs concerning the vaccine). We can make this a little more precise by observing that Z's objection could be directed at one of two different targets, corresponding to the two (theoretically separable) parts of W's VH assertion.[33]

First, Z could be objecting to W's attitude of vertical mistrust towards the relevant authorities (which in turn grounds W's mistrust of the specific vaccine promoted by these authorities). Alternatively, Z's objection might be directed at W's specific mistrust of a particular vaccine. We'll discuss these possibilities in turn.

Suppose that Z's objection expresses the fact that they regard W's vertical mistrust as ill-founded. In other words, Z judges W's proffered reasons for mistrusting the institutions as weak, or lacking merit. However, in articulating these reasons – which explicitly cite a track record of institutional untrustworthiness originating in systemic racism – W is testifying to their direct or indirect experience of marginalisation, at the hands of the relevant institutions. In other words, W is testifying to a matter on which W, and not Z, is an epistemic authority. By discounting W's reasons as lacking merit, Z is thus failing or refusing to recognise W as an epistemic authority on the matter of W's own marginalisation. As a result, Z fails or refuses to acknowledge that W's testimony qualifies as evidence for Z's own beliefs: Z assigns diminished credibility to W.

Importantly, Z's motivation for assigning a credibility deficit to W, and therefore objecting to W's assertions, need not stem from a background identity-based prejudice against W (although this would certainly motivate Z to act in this way). Z might be a fair-minded, socially conscious individual, who abhors discrimination, etc. Even a socially conscious individual, however, may be at least partially insensitive to the implications of being dominantly situated. In particular, Z may simultaneously believe that racist attitudes abound in society, *and* that, since they personally have good reasons to regard e.g. the medical institutions as trustworthy, these reasons are also good reasons for everyone to regard those institutions as trustworthy: that is, Z may (perhaps unconsciously) *regard their own, personal reasons as transferable*, or universally applicable. But this assessment comes from Z's position of privilege with respect to W: it is grounded in Z's dominantly situated interpretation of institutional trustworthiness. Thus, Z's objection to W is a result of Z's failure to acknowledge their own position of privilege, which leads them to overlook existing social and epistemic inequities.[34]

Conversely, if Z did recognise W as an epistemic authority in the matter of W's marginalisation, and consequently recognised W's testimony as evidence, then this would 'show up' in Z's own belief set: for instance, Z would recognise that their personal reasons for trusting the medical authorities are not available to everyone. Above all, Z would also acquire reasons *not* to object to W's assertions. Thus, Z's objection to W's assertions under these (hypothetical) circumstances qualifies as a (new) testimonial injustice towards W.

Consider now a different way in which Scenario F might play out. Suppose that Z correctly recognises W as an authoritative testifier in connection with the latter's attitude of vertical mistrust, while also taking issue with W's mistrust of this particular vaccine. Z thus calls into

question W's move from an attitude of well-placed (broad-scope) mistrust to their present (narrow-scope) VH attitude.[35] And yet, as we saw in Section 2, *this is a rational move*: if W's only access route to expert scientific testimony has been corrupted by the relevant testifiers' display of untrustworthiness, then withholding trust – broad- *and* narrow-scope – is the rational thing to do.[36] Thus, by objecting to W's VH assertions, Z is downgrading W *qua* rational agent; once more, their objection qualifies as a testimonial injustice.

What lessons can be drawn from the discussion so far, with respect to our obligation to voice disagreement with expressions of VH? We've shown that VH discourse, much like SD discourse, generates a heightened duty to object, which stems from a more fundamental epistemic duty, of preventing epistemic harms in others. We've also shown that our duty to object to VH discourse can be defeated in cases where voicing our disagreement could lead us to violate a related obligation not to *produce* epistemic harms in others: namely, cases in which an objection voiced by a dominantly situated speaker could result in a testimonial injustice. Such scenarios thus feature a tension between our other-directed epistemic duties. Assessments of whether and when one duty partially or fully overrides the other will likely depend on the contextual details of each individual case (and certainly exceeds the scope of this paper). For now, this is enough to conclude that such considerations qualify as possible defeaters of our obligation to speak up against expressions of VH.

5 Looking Ahead: Correcting Injustices, Restoring Trust

In cases such as Scenario F, our positive epistemic duty to object to expressions of VH may be overridden by a negative duty to avoid subjecting a speaker to a testimonial injustice. This normative tension is a potential upshot of pre-existing inequalities, rooted in structures of oppression, that affect agents' situated trust relationships with the relevant epistemic authorities. Meeting our negative epistemic obligations in these cases is the least we should do to avoid piling additional injustices onto existing ones.

But we should also remain alert and worried about the fact that those same structural injustices, which motivate attitudes of well-placed vaccine mistrust, remain. Forgoing objection does nothing to repair or mitigate the epistemic harms suffered by marginalised individuals and communities, that leave the latter facing unfair obstacles when it comes to trusting scientific testifiers, and thus to acquiring warranted beliefs about

important subject matters. In such situations, then, is there something we can and ought to do, beyond meeting a negative obligation to avoid doing harm?

There is, we think: we may act not only in such a way as to avoid subjecting an interlocutor to a testimonial injustice, but also to actively take steps towards testimonial *justice*. Carel and Kidd provide a helpful description of what such steps might be:

> In testimonial justice the testimonies of [marginalised agents] are recognised, sought out, included within epistemic consideration, judged to be relevant and articulate (where they are) and [. . .] judged as epistemically authoritative. (2014, 532)

While our discussion so far has mostly emphasised the negative aspect of a hearer's epistemic duty in Scenarios D–F, this passage offers a springboard for thinking about what our *positive* epistemic obligations might look like in such contexts. In particular, the first – and sometimes only, as in Scenario F – thing a hearer can and ought to do is to recognise the speaker as an epistemic authority; at a minimum, this entails listening to the speaker's testimony *and* treating this testimony as evidence to be incorporated into the hearer's own belief set.[37]

In this spirit, let's 'listen' to two more testimonies speaking to the issue of trust in the medical authorities, in particular:

> TESTIMONY 1. Throughout my career I can recount multiple examples of black patients who preferred to work with me, an African American physician [. . .] In one example, a middle aged black male patient refused to see my colleagues while I was on maternity leave because I was the only doctor he "trusted". On our first meeting, the patient explained his lack of prior routine preventative care was due to his inability to find a doctor that "looked like him" and understood him culturally. (Wells and Gowda 2020)

> TESTIMONY 2. Latinos' trust in Western healthcare diminishes even more when doctors don't approach Latino patients in the way they expect. For many Latinos, a doctor-patient relationship needs to feel personal, welcoming, and concerned for the individual as a whole. This makes the American healthcare setting, in which doctors often rush visits and lack time to establish relationships with patients, seem untrustworthy. [. . .] Without visiting doctors, we are not accessing information that could change our daily health decisions or getting the preventative care we need.
>
> Healthcare workers can address these issues by offering their services on a sliding scale and translating health information into Spanish. But healthcare professionals also need to be aware of the cultural values that Latino patients find significant.[38]

Testimonies 1–2 point to considerations that may result in an erosion of trust within healthcare contexts. They also identify *positive* indicators of trustworthiness: specifically, expectations that patients from marginalised groups may have of their physicians in order to be able to establish a relationship of trust with them. Notably, these indicators of (un)trustworthiness echo the markers of epistemic (in)justice identified by Carel and Kidd (2014), also in healthcare contexts. The juxtaposition of these discussions thus brings to light the fact that implementing *just epistemic practices* (e.g. in healthcare settings) can be a crucial first step on the path to restoring *vertical trust* in scientific testifiers (e.g. personal physicians).

In Section 2, we remarked on the vulnerable nature of trust relationships; as is widely acknowledged, restoring trust once it has been lost is an uphill struggle. Moreover, certain trust relationships are harder to repair than others: vertical trust is a case in point. In the course of the paper, we have intimated more than once that this is with good reason, since vertical trust involves authorities (in the role of trustees) who are 'sworn to do no harm' to the members of the public: the trustee in these relationships faces an especially strong responsibility to fulfil the truster's expectations of competence and benevolence.

It is also worth recalling that breakdowns of vertical trust are often – unsurprisingly – accompanied by deteriorations of horizontal trust relationships (Eek and Rothstein 2005), themselves important determinants of citizens' (epistemic) well-being. This means that if these important horizontal relationships are also undermined, those unable to trust will face further severe limitations or impediments to their participation in epistemic projects. Marginalised individuals who find themselves in this situation are thus left with an even narrower range of options when it comes to placing their (epistemic) trust in others: namely, '*particularized* trust, where people have faith only in their in-group' (Rothstein and Uslaner 2005, 45).

Testimonies 1–2 are witnesses to this state of affairs, and more broadly to the fact that '[p]articularized trust reflects social strains' (Rothstein and Uslaner 2005, 45). In Testimony 1, the speaker recalls a former patient voicing their need to be treated by a physician belonging to their own in-group: someone who 'looked like him' and 'understood him culturally.' In turn, Testimony 2 emphasises the importance, for Latino patients, to have a relationship with their doctors that feels 'personal, welcoming, and concerned for the individual as a whole.' Here, both testimonies bring to light the importance of *benevolent authorities* (De Cruz 2020): expert testifiers and intermediaries who may belong to an individual's in-group (Testimony 1) but who may also be identified by attitude traits (Testimony 2). This suggests that, in order to promote vaccine confidence (and perhaps trust in scientific testifiers more generally) on a broad scale, a promising strategy is to concentrate efforts on those trust relationships that *are* available to members of

marginalised groups: namely, in-group and personal trust relationships with healthcare professionals – such as family doctors – who demonstrably qualify as benevolent authorities.

To this end, a critical step from a prescriptive, policy-making perspective should be to promote epistemic justice in healthcare by implementing the suggestions made by Carel and Kidd (2014) and Testimonies 1–2, *inter alia*. This may mean, for instance, reforming medical training so as to educate physicians to be receptive to diverse sets of concerns (e.g. worries that pharmacological treatments – such as vaccines – may not comply with religious codes). Situated concerns should also inform public health policies (e.g. to decide who should be first in line to receive a vaccine, given that such determinations may vary across cultural settings).[39] Reforming medical practice in this spirit could go a long way towards restoring vertical trust in the medical and scientific authorities, and correcting the deep-rooted epistemic injustices that stand in the way of equitable access to scientific knowledge and understanding.

Finally, Testimonies 1–2 highlight the fact that vertical trust relationships between doctors and their patients are essential in order for the latter to access important epistemic goods via testimonial exchange. These epistemic goods include 'information that could change [patients'] daily health decisions,' but they also include *responses to expressions of VH*. That is, medical authorities who prove themselves to be benevolent, and so trustworthy, via epistemic justice will also be in an optimal position to respond to a patient's expression of well-placed mistrust of a specific vaccine, since they can – on the strength of their expertise – appeal to evidence other than a personal relationship of vertical trust with the institutions promoting the vaccine. In contrast with Scenario F, that is, a family doctor (for instance) who meets the above-described standards of epistemic justice *can respond* to VH discourse by offering testimony that enables patients to overcome the novice-expert gap and access warranted beliefs about a particular vaccine.

Indeed, satisfaction of these same epistemic justice standards means that medical authorities ought to recognise that marginalised citizens often face additional obstacles, compared to dominantly situated individuals, when it comes to overcoming the novice-expert gap. In particular, as we've seen, the availability of trustworthy expert testifiers will often be much more limited for the former than for the latter. Recognition of such epistemic disparities or disadvantages thus generates a heightened obligation, for medical authorities such as personal physicians, to offer marginalised agents the opportunity to overcome these obstacles via testimonial exchange. In particular, this entails that when a patient voices concerns about a vaccine based on a well-placed mistrust of the vaccine-promoting institutions, a physician ought to

recognise the patient's epistemic authority in the matter of their vertical mistrust, *and they ought to speak up* against the patient's local mistrust of that particular vaccine.[40]

In closing, we think that the connection between markers of trust and epistemic justice identified earlier in this section offers a helpful – and thus far, surprisingly unexplored – perspective for thinking about our (situated) epistemic obligations in scenarios of vaccine mistrust. As such, it should be at the forefront of philosophical analyses of trust and epistemic justice – which have thus far remained largely separate – as well as public health and policy-oriented discussions of VH.

We can summarise our main findings as follows. First, attitudes of science scepticism and science denial are epistemically harmful, to ourselves and to others; as such, they generate epistemic obligations to speak up, object, respond, voice our disagreement when they are introduced into the public discourse. Second, these epistemic obligations may be strengthened or, conversely, overridden depending on the situational features of those participating in the conversational exchange. Voicing an objection to VH discourse when we should not, as in Scenario F, may lead us to commit a testimonial injustice towards the speaker. Conversely, failing to object when we can, as in Scenario C, may constitute a violation of our positive other-directed epistemic duties. Worse still, failure to speak up despite possessing the appropriate expertise to do so may compound existing structural epistemic injustices and contribute to the erosion of public trust in science.

Notes

1. More broadly, Johnson argues that our obligation(s) to voice disagreement may stem from different, non-mutually exclusive sources (Johnson 2018, Section 5).
2. This is not a criticism, to be clear – indeed it is perfectly understandable given that the authors' primary aim is to defend the claim that our duty to object is distinctively epistemic in nature, a thesis on which our own discussion builds.
3. In what follows we will assume both that agents have transparent access to their own beliefs, and that an agent's assertions always reflect that agent's beliefs, i.e. that they are sincere. In other words, we will disregard cases in which agents assert content that is not included in, or contradicts, their belief set. Given these assumptions, we will often use the terms 'discourse', 'beliefs', 'belief set', etc. interchangeably.
4. It also hardly needs saying, though we'll say it anyway, that expressions of SD are importantly distinct from expressions of scientific dissent or disagreement. An example of the former might be the claim that face masks are ineffective at preventing infection; an example of the latter might be that face masks are only

80% rather than 85% effective at preventing infection. The difference is not just one of degree, of course; indeed, it is widely acknowledged that scientific dissent is a mark of healthy science. See e.g. (Longino 1990).

5. From the official White House press conference transcript, found at https://www.c-span.org/video/?471458-1/president-trump-coronavirus-task-force-briefing. This and all following webpages were accessed in March 2021.
6. Tweet published by Bolsonaro on April 8th, 2020; our translation. From https://piaui.folha.uol.com.br/lupa/2020/12/30/informacoes-falsas-bolsonaro-covid-19/.
7. Jair Bolsonaro, during a meeting with supporters on November 27th, 2020; our translation. From https://piaui.folha.uol.com.br/lupa/2020/12/30/informacoes-falsas-bolsonaro-covid-19/.
8. Coronavac had already been approved as safe and effective by Anvisa, the Brazilian health agency. From https://www1.folha.uol.com.br/poder/2021/03/relembre-o-que-bolsonaro-ja-disse-sobre-a-pandemia-de-gripezinha-e-pais-de-maricas-a-frescura-e-mimimi.shtml.
9. The characterisation of SD we adopt is broad enough to capture also those cases – such as Scenario A – in which the scientific claims being rejected have not been explicitly asserted in the relevant conversational context.
10. Although we don't have space to discuss this in much detail, it is worth noting that Lackey's account allows for an even more fine-grained analysis of Scenarios A and B. For instance, Scenario A seems a straightforward case in which the duty to object applies, applies to one person specifically, and is indefeasible. As the only and therefore most qualified person to speak authoritatively on medical matters, Dr. Birx clearly faced a duty to object to Trump's comments, and to do so there and then. Moreover, few if any of the 'usual' defeaters (cf. also Section 1) applied here. This is due both to her unique position as a scientific authority (had other such figures been presented, and had they objected adequately, Dr Birx's own duty might have been defeated); and also due to the actual and potential harmful consequences of Trump's comments. These certainly include practical consequences, but they also include distinctively epistemic consequences, as we will next argue.
11. Here we also agree with Lackey that the burden of proof lies with 'those who espouse the [. . .] intra-personal [thesis] of epistemic duties to explain why we ought to promote epistemic ends with respect to only my own beliefs' (Lackey 2020, 38).
12. There is some debate over whether accepting someone's testimony as evidence for one's own beliefs necessarily commits one to refrain from seeking further, independent evidence for *b* (see e.g. Bailey 2018; Dormandy 2020).
13. Different authors seem to have slightly different conceptions of expertise in mind. For instance, it seems that some assume that expertise is built in to the notion of trustworthiness (e.g. Anderson 2011; Rolin 2020), whereas others treat trustworthiness and expertise as separable (e.g. Goldman 2001). See (Baghramian and Croce 2021) for an overview of different views on scientific expertise.

14. This is sometimes referred to as 'the novice-expert problem' (De Cruz 2020; Goldman 2001). See (Hardwig 1985; Zagzebski 2012; Keren 2020) for arguments to the effect that deferring to epistemic authorities, and *a fortiori* scientific experts, is also the rational thing to do, and so something we *ought* to do.
15. In fact, we believe that SD discourse is also epistemically harmful in a third and separate sense, insofar as it interferes with, or stymies, scientific progress. A separate paper making a preliminary case for this thesis is in preparation. For a discussion of the detrimental effects of manufactured dissent (vs. science denial) on scientific progress, see (Leuschner 2018).
16. It's worth repeating that contextual factors may affect the strength of this duty in a given situation. For instance, we can now better parse the urgency of the duty faced by Dr. Birx in Scenario A. In particular, we can observe that by failing to object, and given that silence is often a reliable indicator of assent (see Goldberg 2020, Chapter 8 and references therein for more in-depth discussion), Dr. Birx made herself complicit in Trump's epistemically harmful behaviour; she demonstrated herself to lack sincerity/benevolence. In so doing, she effectively undercut not only the trustworthiness of scientific expert testimony in general, but also her own trustworthiness as a representative of the scientific community.
17. By contrast, it is important to distinguish vaccine hesitancy or scepticism from the cognitive attitudes displayed by, and motivating the actions of, so-called anti-vaxxers. It is also important to note that vaccine sceptics and anti-vaxxers are distinguishable primarily, and often solely, on a doxastic level – since their vaccine-related actions (receiving/refusing vaccination) will often converge.
18. Even prior to the coronavirus pandemic, the WHO named vaccine hesitancy as one of the top ten threats to global health (https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019).
19. Although what we say applies to vaccine hesitancy in general, e.g. directed at MMR, HPV and influenza vaccines.
20. Drawn from personal exchange, edited for clarity and brevity. Importantly, the concerns expressed by Y in this scenario are anything but unique, as a quick online search will easily confirm. Notably, moreover, such concerns are not exclusive to the lay public: for instance, 'a survey by the Royal College of Nursing [in the UK] found the most common reasons cited by nurses for refusing the [coronavirus] vaccine [range from the] worry that it was unsafe, or had not been tested enough, to fears about side-effects.' Source: https://www.theguardian.com/commentisfree/2021/mar/02/healthcare-professionals-uk-moral-duty-covid-jab-vaccine.
21. Although the role of mistrust has been surprisingly under-emphasised in empirical research on VH, as Larson et al. (2018) note. For further discussions of the determinants of VH see e.g. (Guzman-Holst et al. 2020; Goldenberg 2016).
22. The worry about the vaccine being developed 'too quickly' is just one among several recurring expressions of VH. Other examples include e.g. worries that the vaccine contains the virus, that the vaccine acts by 'changing' a person's DNA, as well as conspiracy theories that frame the pandemic and/or the vaccination campaign as *façades* for secret ploys to control the world, exterminate seniors, etc.

23. Hardwig argues that an agent who refuses to defer to expert authority in the name of epistemic autonomy is irrational: 'if I were to pursue epistemic autonomy across the board, I would succeed only in holding relatively uninformed, unreliable, crude, untested, and therefore irrational beliefs. If I would be rational, I can never avoid some epistemic dependence on experts' (1985, 340).
24. Grasswick would describe Y's mistrust of the scientific authorities as *irresponsibly-placed*. This is contrasted with '*responsibly-placed trust* – trust granted in cases in which one has good reason to take one's source as trustworthy' (2018, 75). We'll come back to this in Section 4.
25. The strength of X's duty may further depend on the nature of X's relationship with Y: Lackey (2020, 42) argues that 'there are duties to object generated by special relationships,' such as friendship – even if objecting to a friend's assertion 'prevents no additional harm than is already prevented by [others'] objections.'
26. The obligation to voice disagreement stands even if there is not a clear guarantee that it will be effective (i.e. changing the interlocutor's mind). Relatedly, it seems plausible to think that the effectiveness of an objection could come in degrees; for instance, X might succeed in changing Y's mind about the safety of the Pfizer-BioNTech vaccine, while failing to restore Y's trust in scientific testifiers with respect to the safety of other vaccines.
27. Eugenia South, 'I'm a Black doctor who didn't trust the Covid vaccine. Here's what changed my mind', retrieved from https://www.nbcnews.com/think/opinion/i-m-black-doctor-who-didn-t-trust-covid-vaccine-ncna1255085.
28. We might describe this as a 'cascading' dynamic of trust, in this case affecting hierarchical trust relationships. Various studies have observed there is a strong correlation between hierarchical trust (resp. mistrust) and horizontal or social trust (mistrust), i.e. trust in other members of society (Eek and Rothstein 2005; Rothstein and Uslaner 2005).
29. See e.g. (Jamison, Quinn, and Freimuth 2019; Callaghan et al. 2021). Most of these studies focus on attitudes of institutional mistrust – both vaccine- and non-vaccine-related – in the US; for discussions of vaccine hesitancy in countries other than the US see e.g. (González-Block et al. 2020; Mosby and Swidrovich 2021; Facciolà et al. 2019).
30. It is thus tragically unsurprising that in the US, 'of those who have received at least the first dose of a vaccine, 5.4% are Black people, compared to 60% who are white people. According to a recent Kaiser Family Foundation poll, about 35% of Black Americans said they don't plan to get the vaccine, citing fears about safety and concerns that the vaccines are so new' (https://www.webmd.com/vaccines/covid-19-vaccine/news/20210202/black-vaccine-hesitancy-rooted-in-mistrust-doubts).
31. In fact, Grasswick's paper helped reassure us that we were on to something.
32. We are only concerned with scenarios in which a lay agent's (positive or negative) confidence in a particular vaccine is a byproduct of an underlying attitude of (positive or negative) trust in the vaccine-promoting institutions. We are thus not considering cases in which an agent somehow comes to harbour an attitude of vaccine confidence through evidentiary channels other than testimonial trust exchanges involving the vaccine-promoting institutions. This is partly because, even if genuinely 'trust-free' evidence-gathering were a possibility for lay individuals, it is quite clearly not the norm (cf. Section 2);

nor should it be, on the assumption that testimonial exchanges based on well-placed trust and equitable divisions of epistemic labour are part of the normative ideal (Grasswick 2018). And it is partly because one of our aims here is to bring to light certain specific (but not uncommon) circumstances in which speaking up against VH assertions can bring about new epistemic harms.

33. Thanks to two external commentators for pushing us to clarify our discussion on this point.
34. A useful concept here is what Dotson (2011, 239ff.) terms *situated ignorance*, which 'follows from one's social position and/or epistemic location with respect to some domain of knowledge.' Situated ignorance 'can be mostly non-culpable and unconscious, but it is also reliable.' In turn, 'ignorance that is reliable, but not necessarily harmful in one situation' – such as Scenario C – 'could be reliable and harmful in another', and thus pernicious – as in Scenario F. As Dotson (2011) also notes, a further potential upshot of structural marginalisation in scenarios such as these is what she terms *testimonial smothering*: 'the truncating of one's own testimony in order to insure that the testimony contains only content for which one's audience demonstrates testimonial competence.'
35. For instance, Z might think that W should seek additional evidence about the vaccine through alternative, trustworthy testimonial channels. Even if this were feasible (which it typically is not), this would place an unjust burden on W, and indeed it would further compound existing epistemic injustices.
36. In effect, Z would be demanding that W behave irrationally – by trusting the testimony of untrustworthy authorities.
37. It can also entail speaking up against the downgrading of the speaker's testimony by a third party.
38. Amanda Machado, 'Why many Latinos dread going to the doctor, https://www.theatlantic.com/health/archive/2014/05/why-many-latinos-dread-going-to-the-doctor/361547/.
39. For instance, different segments of society may count as 'most vulnerable' depending on whether greater importance is attached to bodily concerns such as age, presence of co-morbidities, etc. vs. shared cultural concerns, such as preservation of linguistic heritage; see e.g. https://www.nytimes.com/2021/01/24/opinion/covid-lakota-language.html.
40. Johnson (2020) defends a similar conclusion when she argues that recognition of an agent's *epistemic vulnerabilities* 'that come from having basic and legitimate epistemic needs' – such as forming warranted vaccine-related beliefs – 'generate obligations for those who are well-positioned to meet this need' – such as trustworthy health professionals.

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