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Science communication in non-ideal contexts

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Abstract

In daily life, most of us lack the cognitive resources to make judgements on scientific matters by ourselves. Often, we reach our judgements by relying on testimony of others. This is captured by the concept of epistemic deference: one defers one's belief on a matter to others' testimony. When it comes to scientific matters, most of us don't just defer to anyone's testimony: one first identifies trustworthy informants on the matter and defers to their testimony only. Conventional literature on this topic is dominantly concerned with highly idealised contexts and falls silent on non-ideal ones. I show this with a case study of COVID-19 vaccine hesitancy in China. In this paper, I make a preliminary attempt to provide alternative guidance for problematic environments with politicized scientific institutions and heavy information censorship such as China. I argue that the 'dissent scouting' requirement is a helpful addition in epistemically problematic environments.

1. Introduction

In daily life, most of us lack the cognitive resources to make judgements on scientific matters by ourselves. Often, we reach our judgements by relying on testimony of others, e.g., by reading health guidance to learn about how to prevent spreading COVID-19 or watching a press conference on vaccine efficacy and side effects. This is captured by the concept of epistemic deference: one defers one's belief on a matter to others' testimony. When it comes to scientific matters, most of us don't just defer to anyone's testimony: one first identifies trustworthy informants on the matter and defers to their testimony only. An immunologist might count as a trustworthy informant on COVID-19 vaccine safety but not an undergraduate student. Epistemic deference to the former might be justified but not the latter. But is it always the case? This paper is motivated by three relevant questions: what justifies epistemic deference? When should epistemic deference happen? And to whom should one defer her beliefs? More concisely put: when and why should one defer her beliefs to whom?

There are numerous perspectives to offer responses, and for the writing to be manageable, I approach it from the perspective of scientific communication. Most literature is concerned with ideal contexts and falls silent on non-ideal contexts (McKenna 2023). Roughly, conventional answers in the literature (Goldman 2001; Anderson 2011; John 2011; Zagzebski 2012; Figdor 2023) argue that in order to have true

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beliefs, when one is a novice (without the relevant cognitive resources to answer a scientific question at hand), she should defer her beliefs to a trustworthy expert. Otherwise, she can be said to be irrational, e.g., if she believes an untrustworthy expert's testimony or a novice's testimony. And this is justified by the institutional structure of science non-defeatably. In this essay, I focus on the non-ideal contexts and will argue that in the absence of testimonial virtues, dissent scouting can be a normatively helpful alternative to assess expert testimony in problematic environment.

An exemplary scenario where the conventional discussions apply can be illustrated in a thought experiment: Suppose Emma has only studied middle-school level science and is a novice about scientific matters. She wants to find out whether the COVID-19 vaccines are safe. She googled the vaccine precautions online and found out that on the official government website, leading immunologists and major news outlets have stated they are safe. However, Emma has also found contradictory testimonies on social media and heard some rumours from her neighbour (suppose she is also a novice) that the vaccine is not safe, because someone has had a serious adverse reaction to the vaccine and died because of it. Emma chooses to believe her neighbour's testimonies and decides not to take the vaccine. This would be an exemplary scenario for conventional discussions: contradictory testimonies between apparently trustworthy experts and low-profile rumour spreaders faced by the lay public who is recommended to trust the experts. In this scenario, Emma will be judged as irrational because she turned to the wrong informant.

However, I think the Emma scenario is too idealised to usefully model real-life scientific communication. In a more realistic scenario, there aren't contradictory testimonies by obviously trustworthy experts and obviously untrustworthy rumour spreaders, then the conventional responses will fail to give normatively helpful recommendations on the lay assessment of expert testimony. Most conventional accounts take for granted an ideal epistemic context with virtuous science communicators and a healthy media environment, therefore, their normative guidance and conclusion do not transfer straightforwardly to non-ideal epistemic contexts. Science communicators are assumed to be communicating virtuously with an aim to maximise the lay public's number of true scientific beliefs. The media environment is assumed to be the liberal model in the North Atlantic with dominating commercial media and low state intervention. I show that the two idealised assumptions about the science communicators and epistemic environment fail to be obtained in many countries in the world. This means Emma might be permitted to trust her neighbour in some particular context. The main takeaway from the investigation is that we should not expect a universal expert identification guidance will apply in most countries, instead, we need to develop contextually relative guidance considering the local media environment. I make a preliminary attempt to provide alternative guidance for problematic environments with politicized scientific institutions and heavy information censorship such as China. I argue that the 'dissent scouting' requirement is a helpful addition in epistemically problematic environments. In the following, I shall try to convince you of the above claims.

I will do this in the following five sections: in Section 2, after outlining two influential conventional responses, I summarise them into two premises. Then I argue both premises are false in Section 3, by testing them with a case study of COVID-19 vaccine hesitancy in China. In Section 3.1, I show that one of the reasons why both premises fail is because their assumptions about the epistemic environment are too idealised and non-representative of many countries in the world. This calls for a revision of the two premises. I attempt to do this in Section 4, by adding an extra requirement of 'dissent scouting' with problematic epistemic environments in mind, before replying to objections.

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2. Conventional responses

Now I focus on responses from Goldman (2001) and Anderson (2011) whose accounts provide practical guidance for the lay assessment of expert testimony that are most relevant to our discussion. Their conventional responses to the question can be summarised into two premises:

I call the first one **Rationality Constraint** premise:

(1) The lay public should defer beliefs about scientific matters which she is not in an epistemic position to judge, to and only to the testimony of a trustworthy expert. Otherwise, the lay public is judged as irrational.

And, the second **Proper Epistemic Deference** premise:

(2) The institutional structure of science justifies epistemic deference to the trustworthy expert's testimony, non-defeatably.

Jointly they decide when and why the novice should defer her beliefs about a scientific matter to whom.

2.1. Rationality constraint

For the Rationality Constraint criterion, both authors claim to have provided some credentials of a 'trustworthy expert' so that the public can use them to judge putative experts' trustworthiness and therefore the credibility of their testimony. There are two main sets of credentials, I call the first set '*epistemic competency*' and the second '*testimonial virtues*'. A trustworthy expert should be both epistemically competent and testimonially virtuous.

Epistemic competency requires that any expert must have the relevant cognitive resources and understand the scientific matter at hand. For example, they should have the skills to either carry out relevant experiments, establish causal connections or analyse data collected. Some of these cognitive tasks are not straightforwardly observable or intelligible to the lay public. Therefore, they cannot make first-order judgments (e.g., on the validity of a mathematical proof) of a putative expert's epistemic competency. Instead, they can use some second-order judgements, such as some formal or informal credentials of expertise assessed by a third party (not by the novice or the expert herself). Possessing these credentials signals epistemic competency. For example, an education qualification is a formal credential of expertise issued by the university, having a PhD degree signals one's epistemic competency in the relevant field. Receiving recognition from fellow experts (e.g., in the form of a book review) counts as an example of an informal credential signalling one's epistemic competency in that area.

Testimonial virtues are defined loosely here. They refer to some communication norms (often exemplified as ethical norms of communication) conducive to truth, such as honesty, sincerity and responsibility. Conventional accounts require that all expert testimonies should be communicated in a testimonially virtuous way, with the aim to maximise the lay public's true beliefs about scientific matters. To put it simply, the expert should not lie about her findings, hide conflicts of interest or publicise crackpot theories. Only when epistemic competency is coupled with testimonial virtues, the putative expert can be said to be trustworthy, and belief in her testimony is justified.

It is worth pointing out that having epistemic competency alone only defines a cognitive expert, not necessarily a trustworthy expert because the cognitive expert might

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be lying, or communicating misleading information. Therefore, epistemic competency and testimonial virtues act as a constraint on the lay public's epistemic deference. Their joint uptake defines Rationality Constraint for the lay public: rationally, the lay public should only defer their beliefs to a putative expert who possesses both epistemic competency and testimonial virtues. Otherwise, the lay public can be said to be irrational. Therefore, the Rationality Constraint premise is both normative and descriptive: it provides guidance for the lay public on whom they should trust, and it judges whether the public's epistemic deference is rational or not. Now I show some more detailed examples of the two premises in the conventional accounts.

2.1.1. Goldman's account

The account by Goldman (2001) provides 5 features of a trustworthy expert to help the novice with identification.

Goldman imagines a scenario where a novice has to choose between the testimonies of two putative experts. He sets out five features of a trustworthy expert that should bolster the novice's confidence in accepting her testimony: (1) responsiveness to the opponents' criticism; (2) a consensus of her testimony from fellow experts in the field (3) informal/formal recognition from other experts; (4) potential conflict of interest of her testimony; (5) the expert's past track records. Features (2) and (3) are indicators of epistemic competency, while features (1) and (4) are indicators of testimonial virtues, and feature (5) both indicate epistemic competency and testimonial virtue.

For criteria of epistemic competency, according to feature (2), a consensus (on a putative expert's testimony) among other true experts in a field gives a very high probability that the testimony is true. This can be tricky since we can imagine a case where there is a consensus of false testimony, e.g., expert B's testimony received a consensus in an anti-vaccine Facebook group, but intuitively it seems wrong to suggest this bolsters the novice's justifieness in trusting the expert B's testimony. The putative experts need to meet some credentials for their consensus to be reliable. This is closely linked to feature (3), where the putative expert's sociological status (third-party assessment) plays a role in signalling their epistemic competency. Having a research position in a leading laboratory suggests that the putative expert has passed the scientific standards and possesses relevant cognitive resources to address the relevant scientific problems.

For criteria of testimonial virtues, an example of feature (1) could be a live debate between the two putative experts which the novice witnesses (or later watches/hears/reads a reconstruction of the debate). The expert who can give detailed support for her testimony and respond to potential criticism is epistemically superior to the other putative expert who cannot do so. According to feature (4), if there is evidence that some interests lie behind a putative expert's testimony, then it should lower the novice's justifiedness in accepting the testimony. If anti-RNA vaccine activists were found to receive bribery from alternative vaccine companies, i.e., viral vector vaccines, then their testimony on the danger of RNA vaccine should have lower (than its already low) credibility. According to feature (5), if a putative expert *both* has succeeded in the past with her cognitive resources, e.g., in repeatedly giving the right statement, *and* she has told the truth about it, then her testimony has a higher probability of being true, than another putative expert with a worse track record. For example, on recommendations on public health issues, the chief scientist at WHO has a better track record than the administrator of an anti-vaccine group on Facebook. Putative experts who possess superior epistemic competency and more testimonial virtues are more trustworthy than

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those who don't. The lay public should defer their beliefs to the former, they can be said to be irrational if otherwise.

2.1.2. Anderson's account

In a similar fashion, Anderson (2011) has provided some credentials for the lay public to assess whether a putative expert is trustworthy. For epistemic competency, helpfully, she provided a list of epistemic hierarchies to rank the epistemic competency of putative experts, and therefore the credibility of their testimonies. In her list, the most credible testimony is by an expert who plays a leading role in advancing theories that have opened up major new lines of research, they may have received prestigious academic awards. For example, being awarded the Nobel Prize in biology proves the putative expert's scientific competency. The least credible testimony is by putative experts who only received foundational formal training in the relevant field, e.g., with only a Bachelor's degree in the field. She also required there to be a communal scientific consensus of her testimony, most often in the form of peer-reviewed publications. Publishing papers in peer-reviewed journals signals a collective confirmation of her mastery of the topics in the target field by fellow experts under rigorous scientific standards.

For testimonial virtues, Anderson requires a trustworthy expert to be epistemically responsible and honest. The expert should not publicise 'crack-pot' theories outside of her own field of competence; repeat false claims or refuse standard peer-review procedures (e.g., sharing research data and methodology); have no potential conflict of interest or previous record of plagiarism, and not make false accusations. Anderson postulated that assessing a putative expert's epistemic credibility and testimonial virtues are 'readily accessible' to anyone with the internet: '*discoverable within the first few entries of a simple Google search*' (p. 150, italics added).

2.2. Proper epistemic deference

At this point, the conventional accounts disagree. Regarding Proper Epistemic Deference (what justifies the lay public's epistemic deference to experts), there are two competing views. I call the first view the *Individualist view* and the second the *Institutionalist view*. Anderson (2011) and most discussions on scientific communication (John 2018; Figdor 2023) adopt the Institutionalist view, which is also the dominant position in the literature (Hardwig 1991; Hawley 2017; Irzik and Kurtulmus 2019).

For the Individualist view, epistemic deference is best justified on an individual basis, by the individual putative expert's trustworthiness, instead of the institutional structure of science. Her trustworthiness (her epistemic competency and testimonial virtues) is best determined by consulting her past track records of cognitive success. For example, whether she has repeatedly been able to give true recommendations or has deliberately made false claims before. Goldman (2001) pointed out the importance of the Individualist view in the presence of institutional failures. For example, as pointed out by feminist epistemologists, due to cognitive biases certain viewpoints or standpoints within a field might be excluded and underrepresented. This leads to an underappreciation of a certain type of evidence and leads to institutional bias in addressing a scientific problem. Therefore, when the scientific institution itself is not well-ordered as envisaged by Kitcher (2001), assessing an expert's testimony requires a more individualistic method.

For the Institutionalist view, individual epistemic competency is defeatable, only the institutional structure of science guarantees the trustworthiness of an expert and therefore justifies epistemic deference to her testimony, non-defeatably. The Institutionalists argue that the Individualist view oversimplifies scientific production

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and overlooks the sophisticated cognitive division of labour in modern sciences[1]. Behind a scientific claim, it is often the joint efforts made by a group of scientists, instead of an individual scientist (Hardwig 1991). Therefore, it is the scientific institution that guarantees epistemic deference, instead of individual scientists. Considering the institutional nature behind modern science production, it does not make sense to assess the trustworthiness of an individual expert alone, since an individual scientist's trustworthiness is derived from the trustworthiness of the institution of science. Therefore, epistemic deference is justified on an institutional basis.

Given that the institutionalist view is the dominant position in the literature, for now, I define Proper Epistemic Deference as epistemic deference justified on an institutional basis (I will discuss the difference if we adopt the Individualist version of Proper Epistemic Deference in Section 3.1.) For example, the expert's high ranking in the scientific institutional hierarchy signals her meeting the epistemic standards, which non-defeatably justifies a novice's deference to her testimony on a relevant scientific matter. Therefore, the response to our question of why Emma shouldn't believe her neighbour's testimony that 'COVID-19 vaccines are unsafe' is because it fails the Rationality Constraint and Proper Epistemic Deference premises. In the following, I argue that both premises are false due to over idealised assumptions about the epistemic environment. Conventional responses only apply to ideal epistemic contexts, but fall silent on the lay assessment of expert testimony in non-ideal contexts. This means that given different assumptions about the epistemic context, there are alternative responses to our question. Indeed, I shall try to convince you that one is not irrational to believe 'COVID-19 vaccines are unsafe' in problematic environments with authoritarian regimes and heavy state intervention in the media environment. I do this by first providing a concrete case study which we can use to see, why conclusions by the conventional responses are not transferable to problematic environments. In particular, we will see that that the Chinese public's distrust of experts, disbelief in their testimony and belief in peer testimony, might not be irrational.

3. Case study

In early 2023, 33% of the over-60s age group (roughly 85 million people) and 60% of the over-80s age group (roughly 21 million) had not received a third vaccine against the Omicron coronavirus variant in China (Zhou *et al.* 2019; Leng *et al.* 2021). Previous research has shown that vaccination services already became available in early 2021 (Liu *et al.* 2021; Xu *et al.* 2021) with 3 types of COVID-19 vaccines approved for use by the National Medical Products Administration (NMPA) (Feng and Qin 2021), one of the main vaccine regulation departments. This kind of refusal or delay in acceptance of vaccination, despite the availability of vaccination services is defined as 'vaccine hesitancy' by the World Health Organization (WHO) (MacDonald *et al.* 2015). This shows there exists some vaccine hesitancy in elder age groups in China.

Primary information channels for the public can be broadly divided into official media and independent social media. Official media refers to the ones run by the state that involve professional editorial procedures of fact-checking, so it is a form of expert testimony. Examples in China include Xinhua (news), CCTV (China Central Television channels), and People's Daily (newspaper). The most popular independent social media are TikTok, Sina Weibo (a microblogging site similar to Twitter) and WeChat (similar to Facebook). Because users can express their opinions on a topic they do not have

[1]For this reason, McKenna (2023, p.45) has argued that Anderson's account is less ideal than Goldman's account and should be preferred.

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extensive knowledge about, there is a lot of misinformation and rumours, so these sources are a form of peer testimony.

Substantial scientific communication can be found in both official media and social media: information on COVID-19 itself, its symptoms, what to do if tested positive, including recommendations for food recipes. But there are also rumours about the danger of vaccines on social media. Currently, peer testimony on the serious side effects of Chinese vaccines is circulating on WeChat, Weibo and TikTok despite official efforts to censor them.

The rumours include: Sinovac vaccines lead to lumps and hair loss (the hashtag 'Sinovac vaccine counterfeit' has over five million views on Sina Weibo) (David 2022); Green tea is enough to combat the viruses and so forth. Although the rumours were quickly removed after appearing, the removal of them deepened people's scepticism that they might be telling a truth the government was trying to hide.

The scepticism is not empty, there have been numerous health-related scandals, for example, the notorious poisonous baby-milk formula scandal. A state-owned dairy firm Sanlu was responsible for the death of 6 infants and kidney problems of an estimated 296,000 babies, who consumed its baby milk formula. It was found out that Sanlu deliberately added melamine (a chemical component used for making plastics) in order to boost the protein level of the baby milk formula, so as to pass the nutritional tests set by the NMPA. Sanlu has lobbied local municipal authorities to cover up the safety problems (Wu 2008). Warnings of Sanlu milk formula first appeared on social media in May 2008, and many private users on Weibo posted their disturbing experience of taking babies to the hospital at night. The official media (newspaper in Hebei, for example) was informed that babies were becoming ill after consuming Sanlu formula milk powder in July 2008, just when China was preparing for the summer Olympics. To prioritise the positive images of China, the government prohibited reporting any negative news, thus, there was no reporting from the official media. Details of the cover-up were exposed on social media in September. Sanlu has lobbied local municipal authorities to cover up the safety problems (Wu 2008), this delayed the report of the scandal and consumers who were unaware of the incidents were still feeding their babies the contaminated milk formula. Similar safety problems were also found in baby formula produced by Mengniu and Yili, China's two largest dairy product firms (Wu *et al.* 2017). It was found out more than 40 politicians had economic ties with the problematic dairy firms and received bribes from them, some of them held editorial positions in official media (Liu and Ma 2016; Yang 2013). China has since reformed the baby milk formula industry after 2008. The official media claim all the products are now safe. But the customers remain distrustful (Huang 2018). Chinese families have turned to foreign-produced milk powder formulas in recent years, for example from Australia and parts of Europe (Wong 2013).

When examining the effects of public distrust in vaccines, limited access to information must be taken into account. In China, the state and the corporate elites try to maintain media hegemony with information censorship (e.g., suppress certain information) and propaganda (e.g., shape the public's positive attitudes towards the government) (Yang 2013). Even Chinese professional journalists think information by the Chinese official media has low credibility (Stockmann 2011; Wang and Mark 2013). Thus, peer testimony on social media is now a competing information channel to expert testimony in China. It has also been found that sometimes the Chinese public places higher credence on citizen-generated reports or when the news is shared by people they have stronger ties with, such as family and close friends (Wang and Mark 2013).

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After the Sanlu baby milk formula scandal and many other infamous safety scandals (Zhou *et al.* 2019), the public places lower credence on statements by NMPA, because it is not clear when the health experts are telling the truth. It has been shown that social media acts like whistle-blowers in China. Because of their previous good track records in predicting safety risks, it is now a competing information channel to the official media in China (Wang and Mark 2013).

3.1. Case study discussion

In the previous section, we have seen a case of COVID-19 vaccine hesitancy, now I will assess the Chinese public's reaction under these two premises – Rationality Constraint and Proper Epistemic Deference. Then I will argue they fail to provide helpful recommendations on how the lay public should assess putative expert testimony. The public is left in a deference limbo – they should neither defer to the expert testimony nor the online social media testimony.[2]

Applying the Rationality Constraint criterion, in both Anderson and Goldman's account the normative recommendation is that the Chinese lay public should not defer to informal online testimony, because most online users are not cognitive experts, not to say trustworthy ones. Most informal testimony or rumour spreaders online were not able to respond to scientists' criticism of their hypothesis; their testimony did not have consensus among fellow experts in immunology; they do not have formal recognition such as PhD qualifications in sciences; their testimony might be motivated by hidden financial interests and online testimony is known for low credibility and bad track records. Therefore, they fail all features on Goldman's list and are ranked at the bottom of Anderson's epistemic hierarchy list.

Similarly, according to the Rationality Constraint criterion, the Chinese public should not defer to relevant health officials' testimony, for example, 'vaccines are safe and effective' by the NMPA. NMPA's statement on COVID-19 vaccines has been validated by the WHO and most health professionals at NMPA are active researchers in vaccination with PhD qualifications, so they pass features (2) and (3) on Goldman's list and are ranked high in Anderson's list of epistemic hierarchy. However, even if health professionals at NMPA might satisfy the 'epistemic competency' criterion in vaccination, immunology or biomedical sciences, failing the other 'testimonial virtue' criteria means they are at best cognitive experts, not trustworthy experts. That is to say, they might know the scientific matter well, but their testimonies are not guaranteed to be true, due to a lack of transparency (e.g., information suppression in media), conflicts of interest (e.g., government intervention to curate information) and notorious bad track records (NMPA department's cover-up of health crisis, chief scientists' false announcements). They fail features (4) and (5) on Goldman's list, 'responsible' and 'honest' communication criteria in Anderson's account. Therefore, their current testimony on the safety and efficacy of vaccinating COVID-19 vaccines might not be true either. Therefore, they fail to meet the requirements for being trustworthy experts. The Rationality Constraint would conclude that belief in expert testimony on vaccinating the COVID-19 vaccines is irrational.

In the case study, we have seen that the Chinese public violated the Rationality Constraint premise, they did the contrary to its normative recommendation. Among the elders, where vaccine hesitancy was high, their reported reasons highly match rumours on social media regarding vaccine side effects. The similarity allows us to attribute their vaccine hesitancy, to a large extent, to the belief in peer testimony – rumours – on

[2]Thanks to Jingyi Wu for this way of phrasing the dilemma.

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informal social media. Among other age groups, there was a high credence in health expert testimony and a high vaccination rate. Therefore, the Chinese public's reaction to expert testimony and peer testimony will be judged as irrational.

However, there are some reasons to doubt the Rationality Constraint premise. Under its normative recommendation, the Chinese public shouldn't believe health experts' testimonies on COVID-19 vaccine safety due to their bad track records and lack of testimonial virtues. However, due to heavy state intervention in scientific communication (and all other communication involving media), testimonial virtues are not always available in China, this means no putative experts in China are trustworthy experts, they are at best cognitive experts. Then the lay public would always be judged as irrational no matter which scientific communicator they trust. I find this unacceptable. Ought implies can. The normative recommendation of Rationality Constraint is detached from the reality in China. The political structure makes it hard, if not impossible, to foster and maintain testimonial virtues in communication. Due to the political constraints on publication and media, the Chinese public simply doesn't have access to experts who possess both epistemic competency and testimonial virtues as required by the current Rationality Constraint. Then wouldn't it be unfair to judge violation of the premise as irrational, when the public simply doesn't have the means to abide by it? I find the Rationality Constraint premise to be both normatively unhelpful and its conclusions descriptively unfair.

Even if we accept the Rationality Constraint, it leads to a contradiction with the second premise Proper Epistemic Deference. According to the Proper Epistemic Deference premise, the official health experts have a higher ranking in the institutional hierarchy, e.g., many of them have PhDs in the field, compared to informal testifiers on social media. Therefore, the Proper Epistemic Deference would recommend that on an institutional ground, the Chinese public's epistemic deference to their health expert is justified. But this contradicts our previous conclusion. Rationality Constraint just concluded that the Chinese public shouldn't trust their health experts or informal social media testimonies. Yet Proper Epistemic Deference concludes that their epistemic deference to the health experts is justified? This means that even if we accept the first premise, it will lead to a contradiction with the second premise. The two premises are inconsistent and the entailed conclusions (e.g., the Chinese public is irrational) should be rejected.

Moreover, institutional failures in China pose doubt on the second premise, that epistemic deference is non-defeatably justified by the institutional structure of science. Most proponents of the Institutionalist view had in mind the model of well-ordered science, where only trustworthy scientists would be rewarded. However, as we have seen in the case study, not recognising institutional failures can render public guidance normatively unhelpful. I will attempt to revise both premises with practical constraints in mind in the next Section.

Before revising both premises, it is helpful to investigate the reasons why they fail, so we can avoid making the same mistakes in the revision. I suggest that the problem with conventional accounts is their normative recommendation is unhelpful, in fact, they make no recommendations in non-ideal contexts at all. Saint-Croix (2024) has pointed out that idealizing away the epistemic environment can distort epistemic normativity. The two premises only tell us what we should do in an overly idealized epistemic context: with epistemically virtuous science communicators and an epistemically healthy media environment. However, these are often not available in non-ideal epistemic contexts. Now I show that these assumptions are unrepresentative of and inapplicable to the epistemic environment of many country worldwide.

First, in real life, science communicators do not always communicate virtuously with an aim to maximise the lay public's number of true scientific beliefs, e.g., honestly

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reporting a scientific consensus, sincerely framing the matter in a value-neutral way, and being transparent about their conflict of interests (Bright 2021). The case study above captures a public health crisis where epistemically vicious experts lie about scientific consensus, frame reports with political aims and hide/suppress contradictory evidence.

The Rationality Constraint premise takes the existence of testimonially virtuous cognitive experts for granted: they communicate with an intention to maximise the number of true beliefs of the lay public. In an ideal context, the individual expert herself could decide whether or not to practise testimonial virtues. Therefore, they require testimonial virtues to be a necessary condition for being a trustworthy expert. That is to say, a cognitive expert can be a trustworthy expert if she wants to. For example, Anderson (2011) require testimony to be communicated in a *responsible* (they can be held accountable for the statements they make, i.e., they cannot be anonymous), *transparent* (e.g., not refusing to share the methods/data of research for no good reason; not failing to respond to refutations) and *honest* way (e.g., there is no plagiarism or faked data, no suppression of relevant information).

However, ought implies can. Cognitive experts in some countries simply can't be testimonially virtuous on certain topics even if they want to. For example, in authoritarian countries like China, the contents of publications or public speech are under political censorship efforts. Although online social media provides an alternative channel for informally communicating censored topics, even if the officially suppressed research findings (of the group) managed to escape online censorship, they will be removed quickly once found out. This means the publicised 'scientific consensus' might actually still be under dispute in the scientific community. The absence of testimonial virtues makes it hard to distinguish scientific consensus from disputed claims, an officially reported 'consensus' might turn out to be politically motivated and false as has happened in the past.[3]

Figdor (2023) has already pointed out the importance of recognizing the social situatedness of science communication. Many if not most science communications happen outside of professional research institutions. While most scientific inquiries are the joint efforts of a community of scientists, not all scientists communicate science, and not all scientific communicators are cognitive experts. In fact, many scientific communicators are meta-experts (e.g., science journalists, think tanks, science museums etc): they are experts in correctly identifying the cognitive experts. These meta-experts include traditional science journalists, science museums, science galleries or think tanks. Also, it is unrealistic to assume that all science communicators' sole/main aim is to maximise the number of lay public's true beliefs. Different groups of science communicators often have different institutional structures. Given the epistemic division of labour in many countries, a large number of science communicators are often outside the institutional strucure of science. That is to say, they don't operate with the reward-punishment system of well-justified arguments, but rather with alternative commercial reward-punishment systems. This means conclusions by the conventional accounts do not straightforwardly transfer to problematic environments like in China.

Second, the functioning of conventional accounts requires the presence of some characteristics in the media environment that are absent in many countries in the world. Research in communication studies shows that media environments across the globe are not homogeneous, even for countries sharing similar political systems. Work on comparative media studies by Hallin and Mancini (2004, 2012) has helpfully illustrated

[3]For example, AIDS epidemic cover-up in the mid-1990s (Kaufman, 2009), 2003 SARS cover-up (Benitez, 2003) and 2008 Poisonous baby milk formula cover-up (Wu, 2008).

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variations of media environments, which influence the contents of scientific communication. From some sample countries in the Mediterranean, North/Central Europe, the North Atlantic and the Eastern Europe, they categorised their media environments according to how they scale in four dimensions: (a) mass circulation press; (b) political parallelism; (c) the degree and nature of journalistic professionalism and (d) the extent of state intervention. Based on their scores, the sampled countries can be classified into four types: (1) Polarized Pluralist Model; (2) Democratic Corporatist Model; (3) Liberal Model; (4) Post-communist Model.[4] Goldman and Anderson's accounts implicitly assumed type (3) Liberal Model media environment in the North Atlantic. The prominent feature of this media type is the dominance of commercial media and low political partisan media. This means that media in the North Atlantic region has a high autonomy over the contents they produce, and low state intervention can secure their neutrality. However, these characteristics are absent in our case study country China. For example, Anderson claims that credentials of testimonial virtues are 'discoverable within the first few entries of a simple Google search' (Anderson 2011, p.150) while scientific consensus can be found in Wikipedia entries (p.152). However, Google or Wikipedia are not available in China, alternative search engines, online encyclopaedias, and in fact all media channels are directly or indirectly controlled by the Chinese Communist Party which censors the contents and sets the agenda for all communications, including scientific communication. This makes it difficult for the lay public to check cognitive experts' past track records of error or dishonesty; and to verify whether a publicized consensus is actually the scientific consensus, or merely a disputed claim. Given that the credibility of scientific communication is impacted by the local media environment, there is a need to develop different models of assessing expert testimony suitable for different media types.

In summary, the current two premises have been shown to fail to inform public beliefs on scientific matters in China or most non-ideal contexts in the world. Credentials of 'epistemic competency' and 'testimonial virtues' are not always applicable or effective in identifying trustworthy experts. The discussions call for a revision of normative recommendations in non-ideal contexts where conventional accounts fall silent. It should acknowledge 'vicious' science communicators and unhealthy media environments.

Previously, Figdor (2023) discussed how social deference interacts with epistemic deference when the lay public assess expert testimony. Her discussion is focused on cases in free society in which epistemic virtues are far less hindered. In the following discussion, I expand the discussion to consider problematic environments. I augment the first Rationality Constraint premise with an extra dissent scouting requirement in the next section. If we change the first Rationality Constraint premise, we also need to reconsider the second Proper Epistemic Deference premise.

4. Revised premises

I weaken the Rationality Constraint premise to make room for some features in non-ideal contexts, especially problematic ones, where some conventional credentials of trustworthy experts are unavailable. Problematic epistemic contexts refer to contexts where there is strong state intervention in media with political curation or censorship on communication channels and a lack of alternative political views in media (low political parallelism), like those in authoritarian regimes. The revised account should be

[4]Asian and African countries have not been included in their model, which suggests we should expect an even greater diversity of media environments across the globe.

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normatively useful in non-ideal epistemic contexts, especially problematic ones, at least, more so than the conventional accounts in guiding the lay public to assess expert testimony. In order to do so, it should acknowledge vicious scientific communicators and an unhealthy media environment. Its intended audience is the lay public who cannot be sure whether the reported 'expert consensus' is a scientific consensus or only a disputed claim while some key information is being suppressed.

I revise the Rationality Constraint by adding the *Dissent Scouting* requirement while weakening the testimonial virtue requirement. Briefly, testimonial virtues aren't always available in non-ideal epistemic contexts, especially problematic ones, so requiring testimonial virtue is normatively unhelpful. For example, checking the past records of cognitive experts might not be possible. Internet censorship efforts in some problematic epistemic contexts actively erase major past wrongdoings. In addition, consensus checking might not be available either, as it is difficult to distinguish publicized consensus from a disputed claim in problematic contexts as has happened in the past.[5] Therefore, some conventional methods to ensure that the cognitive experts are not lying, hiding financial ties or key data are not available in problematic environments. However, the public still needs a method to avoid wrongly believing cognitive experts' testimony. This can be done through dissent scouting. In many problematic environments, dissent has been the gateway to exposing false consensus and institutional wrongdoings.[6] Therefore, I argue that dissent scouting can act as a helpful alternative to *testimonial virtue* for the lay public to assess the truth of cognitive experts' testimony.

In this paper, dissent scouting specifically refers to some proactive actions the lay public should take before deferring to expert testimony and after identifying dissents. They should check whether there are dissenters claiming the contrary, either through traditional media or informal social media. If they identified dissents, then they should re-engage with the experts to seek explanation and clarification. Following a similar definition of dissent by Lynch (2018), in this paper 'dissents' refers to publicly expressed disagreements or criticism, towards the official consensus by institutions (the government, health department or major media). Yet, they are not directly aimed at changing the beliefs of the decision-makers but indirectly aiming to influence public beliefs on decision-makers' testimonies, and subsequently alert the public about confirming their planned policies. Dissent Scouting recommends the lay public to be proactive because the problematic epistemic environment does not look after them as well as a healthy epistemic environment. One might immediately object that this sounds like an open invitation to crackpot theories, rumours or conspiracy theories, and it can lead the public to believe false claims and cause disastrous health consequences. It is worth clarifying that I am not proposing the lay public in a problematic epistemic environment shouldn't believe expert testimony at all, or that all dissents are worth considering. Dissent scouting is by no means suggesting the lay public should just believe any propositions claiming the contrary to the expert testimony. Of course, not all dissents can defeat a cognitive expert's testimony or deserve serious uptake. I am only suggesting that due to the absence of testimonial virtues, caution is the appropriate attitude before deferring to a cognitive expert's testimony. There is a two-step checklist for dissent scouting before the lay public defer to a cognitive expert's testimony:

1. Dissenter epistemic competency and/or the number of dissents. Check whether they have credentials (i.e, being a doctor of a certain hospital/ immunologist

[5]For example, the case of Lysenkoism in USSR (John, 2019).

[6]The 2003 SARS outbreak was exposed by a whistle-blower (Benitez, 2003) to international media which pressured Beijing to acknowledge it to the public.

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employed by certain universities), a track record of public communication on similar topics and interaction with scholars in this area. And check the number of dissents, whether there are outpouring numbers of videos, pictures, or whether a topic becomes a top search on social media. If the dissents don't possess any of the above criteria, then the dissents are inappropriate. If they possess one or more of the above, then the lay public should move to step 2.

2. Re-engagement with the consensus communicators. The lay public should contact the relevant scientific communicators who publicised the received view, it could be cognitive experts (such as health professionals in local hospitals, scientists in universities, or health officials from local or central government) or science journalists in a media company. In this way, they can seek confirmation of the dissent or demand investigations into it.

For step 1, if the dissenters are ranked high in Anderson (2011)'s hierarchy list or there are outpouring dissents on the same matter online, then one should reconsider epistemic deference to expert testimony. Dissent scouting acts as a safety net to prevent deferring to lying or irresponsible cognitive experts, or when the media channels distort the scientific consensus under pressure from interest groups. It rests on the fact that in problematic epistemic environments, it is difficult for the public to tell when the experts are lying or providing misleading information. For the public, not knowing when the publicised consensus is true or false can cause delayed uptake of public health policies. When the epistemic environment fails to promote testimonial virtues or regulate testimonial vices and when institutional failures have been frequent, it is only natural to be sceptical towards the expert testimony. Dissent scouting is therefore a normatively more helpful alternative to testimonial virtue in guiding the lay public on when to defer to the cognitive experts' testimonies. I will address worries about potential industrial manipulation of evidence and a lack of response from the experts in Section 4.1.

Moreover, only some dissents should be considered. I think there are at least two types of dissents worth considering: *whistle-blowing* by internal cognitive experts in a scientific institution and *bell-ringing* by a large number of citizen witnesses. The former is primarily propositional[7] that spoke against the publicised consensus to raise alarm or expose wrongdoing domestically or internationally. They disagree with the propositional contents of the expert's testimony (e.g., the factual contents of an official health statement), the evidence used or they might provide formerly suppressed data. Just like putative experts vary in their epistemic competency, whistle-blowers do too.

Whistle-blowers need to be cognitive experts from scientific institutions. They are subject to the epistemic competency criteria, the lay public is still required to assess whether whistle-blowers are cognitive experts, for example, using Anderson (2011)'s epistemic hierarchy ranking. That is to say, it is not justified to believe in dissents by someone who doesn't even possess a qualification in the relevant scientific field. There is a special case when dissents are especially worth considering: when the whistle-blower herself was involved in the group that produced the publicised consensus. For example, if the whistle-blower is a scientist who has participated in the research on vaccine efficacy, but chose to speak against the publicised consensus on an informal ground (e.g., through social media), then the revised account suggests the publicised consensus has a lower credibility and epistemic deference to it should be reconsidered. This is

[7]It is worth pointing out that whistle-blowers can be directly at both internal (colleagues within the institution) and external interlocutors (wider public in the country)(Brown et al., 2014). For the purpose of the argument I only focused on the external dimension directed at the public.

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because the reported consensus does not always follow the actual scientific consensus, but can be distorted for political or financial reasons.

Bell-ringing is another form of dissent worth engaging in. It is by non-expert citizens whose witnessing led them to 'ring bells' to raise alarm over institutional wrongdoing (Miceli *et al.* 2014) or doubts over the truth of publicised consensus. This kind of dissents are primarily non-propositional, it could be videos and photos online whose contents contradict the publicised consensus. For example, in the Sanlu baby milk formula case above, videos by parents of hundreds of babies waiting for surgery overnight in the hospital as a result of consuming supposedly 'safe' Sanlu baby milk formula (judged and reassured by the NMPA). In these cases, the dissenters don't have to be cognitive experts (e.g., about food science) to produce reliable testimony. If the number of bell-ringers is high, there is a reason to reconsider the publicised expert testimony. Therefore, even the epistemic competency component of Rationality Constraint is relaxed: the evidence to doubt the credibility of expert testimony comes from the public's witness which contradict expert testimony.

If we accept the revised first premise, then the second premise – Proper Epistemic Deference – needs to be reconsidered. Dissent testimonies are mostly informal, they are individually testified and non-representative of their institutions.[8] This means the assessments of experts' trustworthiness on an individual basis are needed, she needs to be decoupled from the scientific institution, whose consensus (or so as publicised) she is testifying against. This means that the Individualist view is not so bad after all! Dissent Scouting provides a way to resist testimonial vices in a non-ideal epistemic context when scientific institutions fail to regulate them. There are numerous apparent concerns with dissent scouting, in the following I defend the usefulness of dissent scouting in problematic contexts: the *price* of dissent and subsequent public *action* after *inappropriate* dissent has been identified make it more useful to conventional recommendations on the lay assessment of expert testimony.

4.1. Objections

One might object that dissents of both kinds can be manufactured and manipulated by interest parties (Oreskes and Conway 2011). Manufactured dissents are dangerous: not only do they mislead the public to false beliefs about the current state of scientific knowledge on a particular matter, delaying population-level response to public policies, but they can also be detrimental to the scientific community where some individual scientists might have to waste valuable research time to clarify false dissents, or worse, they might be intimidated to pursue their research further. Recommending 'dissent scouting' therefore inherits both dangers.

However, only inappropriate dissents pose the above dangers, not all dissents are inappropriate or detrimental to scientific progress, some dissents can promote the advancement of sciences by pointing out new lines of inquiry and new methodologies. Therefore, instead of banning or ignoring dissents altogether, we can do better at distinguishing appropriate dissents from inappropriate dissents. There are practical strategies to do so. However, most strategies concern 'scientific dissent' from within a scientific community, such as the influential critical discursive strategy advocated by Helen Longino (2002, p. 129–134). They not only disagrees but challenges the consensus

[8]An anonymous reviewer has helpfully pointed out that individual science communicators' are often part of the institutional media as former employees, current free-lancers, and possessors of the right credentials'. Although their testimonies are non-representative of their institutions, the credibility of their testimonies is derived from the institutions.

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view (on theories, methods or assumptions) accepted by the majority of scientists in the relevant scientific community. However, in 'dissent scouting' I do not merely refer to scientific dissent.

My proposal broadens the scope of appropriate dissent. First, some whistle-blowers might count as scientific dissenters but some might not: they are not disagreeing or challenging the consensus view accepted by the majority of scientists in the scientific field, rather, they are trying to publicize this consensus view, because the current 'consensus' supporting the public policies is false or a disputed claim. This has to do with the peculiar media environment in problematic contexts when strong economic or political power might suppress the spread of scientific consensus. Second, bell-ringers defined in this paper do not fit the criteria of scientific dissent either, but they should be respected and engaged by the lay public and scientific community alike. As we have seen in the case study, there are historical reasons to distrust scientific institutions in problematic contexts, and citizen witnesses prove a helpful way to disclose institution cover-ups. In summary, there are ways to distinguish manufactured and manipulated dissents, not all types of dissents will be engaged by the scientific community and lay public. Dissent scouting only recommends engagement with appropriate dissents (whistle-blowers and bell-ringers).

Given the discussion is on non-ideal contexts, we should also consider non-ideal believers.[9] In this proposal, after identifying appropriate dissents, dissent scouting recommends the lay public delay their deference to expert testimony and re-engage with experts to seek confirmation. This two-step checklist seems to be requiring too much effort from non-ideal believers. It is possible that they do not scout for dissents or re-engage with the experts. Previously, Brennan (2022) has pointed out that the conventional account by Anderson (2011) demands too much from the novices. The effectiveness of Anderson's account requires the novices to possess some virtues. For example, they should be open-minded and be willing to update their old false beliefs with the testimony of trustworthy experts. Yet some beliefs concern one's self and social identity and are hard to change. Now it is even less likely the novices will scout for dissents which is an additional task on their to-do list.

However, I think when the risks are high and it concerns personal health, as shown in the Sanlu baby milk formula incident, there is a strong motivation for the lay public to figure out the true state of affairs, or a course of action despite epistemic uncertainty. Having said this, there is a serious problem with the proposal, a lack of re-engagement might not be due to intellectual laziness but fear of retaliation. For example, political scientists have shown 'self-censorship' effect in authoritarian regimes often leads citizens to censor their own speech for any potential criticism of the state (Shen and Truex 2021). The effectiveness of the proposal will be limited in edge cases where public is too afraid to even demand clarification from the scientific communicators or most dissents are effectively suppressed. For example, when they don't even have any access to the dissenter.[10]

However, precisely because the price of dissent is high in problematic contexts, it adds credence to their testimony: it might cost the dissenters' future prospects of promotion, their jobs, ability to loan from the bank, application for national benefits like state pension, or even their freedom. Risk consideration bolsters testimonial virtues. For example, one of the earliest whistle-blowers on the outbreak of COVID-19, Dr. Li Wenliang was summoned by police and threatened with legal action over his online warning (Green 2020). This differs from open debate societies where state intervention

[9]Thanks to an anonymous reviewer for this important point.

[10]Thanks to an anonymous reviewer for pointing this out.

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in media is low, and dissents generally face little or no political, financial or legal consequences. The high price of dissent provides a strong reason to think that dissenters (primarily the whistle-blowers) in problematic contexts are not just doing it for fun, or do it without considering the consequences on their personal lives. Therefore, appropriate dissents in problematic contexts have higher credibility than in open debate societies, if they can be identified.

Another problem lies in reaction from the experts – when there is no timely response or no response from them at all – the lay public seems to be left alone to wager the risks and decide for themselves whose testimony to believe eventually. Epistemic luck becomes salient in this case.[11] The success of dissent scouting in preventing personal/public uptake of false consensus is a probabilistic event. It depends on timeline of rolling out the public policy and its political/economic importance; the number of lay public involved and whether the social pressure they create can lead to transparent investigation and timely response etc. Situations like this can be fruitfully investigated with network modeling in formal social epistemology (Wu 2023). However, before an empirical conclusion on 'dissent scouting' can be reached, I hope the discussion above has at least shown why there has been a rise of 'dissenting science communicators' in non-ideal contexts, the ethical/epistemic/social/economic problems created or solved by them demand scholarly attention.

One may object that the 'dissent scouting' seems to be suggesting a wholesale rejection of the scientific establishments in problematic contexts; surely, one might argue, the more appropriate strategy is to reform the scientific institutions, regain public trust in them, cultivate a more epistemically virtuous population and move towards a more ideal environment, instead of accepting their absence and advocate for dissent scouting. I am not suggesting a wholesale rejection of the scientific establishment in problematic epistemic environments. I am proposing ways to resist testimonial vices such as information suppression in non-ideal contexts, where it is hard to know to what extent scientists are being silenced and the officially announced results are actually false. Then, is this a rejection of idealization in epistemology? No, it is merely pointing out that when 'normativity' is unconstrained by context, it can become normatively unhelpful in providing practical guidance. Non-ideal epistemology is helpful, as pointed out by Greco (2023), because it is context-sensitive and can reveal shortcomings in ideal epistemology and suggest better alternatives.

Political theory has discussed individual responsibility to resits under non-ideal contexts. For example, Rawls has defended dissents' value to 'inhibit departures from justice and to correct them when they occur' (Rawls 1999, p. 336). If the responsibility to resist overcomes the fear of future persecution, it leads to an important question for future research (Roberts 2020): what resources and strategies are available for the lay public to circumvent online censorship? Alternatively, maybe the responsibility should be placed on institutions rather than individuals, I discuss a relevant proposal in the last section.

One might still be concerned that even if whistle-blowers might face serious consequences, it does not apply to all of them, or to bell-ringers. Furthermore, they might be dissenting for the wrong reasons, for example, not out of altruistic care for the health and safety of fellow citizens, but financial interests. It is undeniable that there are false dissents in problematic contexts motivated by 'inappropriate reasons'. For example, whistle-blowers might defame an annoying director for personal reasons; bell-ringer might fake their videos or photos to attract public attention and financial interest. They might face little consequence when the stakes are low and they don't seriously damage the political or financial interests of power groups. Dissent scouting seems to permit this type of problematic dissent. I have two responses to this line of criticism. First, even if the

[11]Thanks to an anonymous reviewer for suggesting this.

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dissents are motivated by personal reasons such as financial interests, it does not entail they are false. Just like Kitcher (1993) has pointed out, whether a scientist is motivated by purely epistemic reasons to pursue her research is independent of whether she can produce high-quality research. Some scientists might be motivated by a mixture of epistemic, moral or political values in their research, but it doesn't entail their research output is not worth engaging. Similarly, some 'inappropriate motivations' might be permitted in dissent scouting. Dissenters might be motivated by personal interests but this is independent of whether she can expose false consensus or institutional wrongdoings. Second, as previously discussed, even if the lay public scouted inappropriate dissents, dissent scouting does not recommend they should just believe it, it recommended that they should delay deference to expert testimony while trying to challenge the experts to reply to the dissents they scouted.

Regarding the recommendation of building an epistemic virtuous population, there have been similar proposals by Anderson (2012). She argues that to solve the problems in our socio-epistemic world, epistemic virtue is needed at the smaller individual scale as well as the bigger collective and institutional scales Anderson (2012), p. 171. This is because many problems we face in daily life are structural problems. Problems at the structural level are due to the global, macro properties of a system of rules. Only by changing these rules that govern exchange and interactions between individuals, can we have more epistemic virtues in the world. Therefore, structural solutions – to institutionalise epistemic virtues – are required to combat structural problems. This is an attractive proposal, however, I think precisely because structural changes are required, it is unlikely to be implemented in problematic contexts, at least in the short run, where the political or economic power groups lack the incentive. The lay public still needs applicable credentials to identify trustworthy experts during the transition period. Therefore, despite the fact that the revised Rationality Constraint carries certain risks, it is a normatively more helpful and applicable guide for the lay public in a non-ideal epistemic environment at the moment.

More recently, Elliott (2023) has argued that instead of a single strategy to solve dissent, we need a more contextualised approach when dealing with different kinds of dissent. For problematic contexts, I think the most concerning problem is not the existence of inappropriate dissent or failure to identify them, but that fact that most dissents are being labelled as incredible rumours or gossips. In the philosophy literature, rumours and gossips are taken to be a poor-quality testimony, for example, Coady (2006) labels rumours as a 'pathological testimony' and Goldman takes rumours as a prime example of low credibility (Goldman 2001). Our discussions imply that rumours might possess higher epistemic value. There are authors more sympathetic toward rumours and gossips and whose arguments apply to a non-ideal context. For example, Gelfert (2014) thinks that it is justifiable to believe in rumours when one has no access to official trustworthy information (e.g., in an authoritarian regime); or when the rumours provide a first encounter with a new piece of information one otherwise could not have accessed. Rumours on Chinese vaccines fit the condition outlined by Gelfert since despite officials' information being available, due to past bad track records, they are of low credibility; also, rumours on social media in China give the public access to censored information on sensitive topics that they otherwise would not have known (Sanlu). Similarlly, Alfano and Robinson (2017) have argued that when the oppressed gossip warning about the misconduct of the oppressors out of an altruistic desire to protect others, it becomes a tool of resistance and can be seen as a burdened virtue.

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5. Conclusion

In conclusion, the COVID-19 vaccine hesitancy in China provides a relevant case to illustrate my argument that reserved epistemic deference to the experts does not always suggest the public is irrational. The discussion above suggest that discussion in expert identification need to consider the local media environment and their variations to provide normatively helpful guidance for the lay public. In non-ideal contexts, some credentials of trustworthiness might be absent (e.g., testimonial virtues in China), which means that the lay public needs alternative methods to assess expert testimony. For problematic epistemic contexts, I made a preliminary attempt to augment the conventional accounts. I argue that in the absence of testimonial virtues, dissent scouting can be a normatively helpful alternative to assess expert testimony. Hopefully, I have persuaded you that the augmented account (addition of dissent scouting and relaxation of testimonial virtues) is a helpful short-term strategy in guiding the lay public more than the conventional accounts. Or at least I have shown that given different assumptions about the epistemic environment, responses to the question of 'when and why should one defer her beliefs to whom?' are not so straightforward.[12]

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