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Expert authority and support for COVID-19 measures in Germany and the UK: a survey experiment

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ABSTRACT

During COVID-19, various public institutions tried to shape citizens' behaviour to slow the spread of the pandemic. How did their authority affect citizens' support of public measures taken to combat the spread of COVID-19? The article makes two contributions. First, it presents a novel conceptualisation of authority as a source heuristic. Second, it analyses the authority of four types of public institutions (health ministries, universities, public health agencies, the WHO) in two countries (Germany and the UK), drawing on novel data from a survey experiment conducted in May 2020. On average, institutional endorsements seem to have mattered little. However, there is an observable polarisation effect where citizens who ascribe much expertise to public institutions support COVID-19 measures more than the control group. Furthermore, those who ascribe little expertise support them less than the control group. Finally, neither perception of biases nor exposure to institutions in public debates seems consistently to affect their authority.

The COVID-19 pandemic led to an extraordinary need for large-scale societal cooperation. In order to minimise the dangers of the virus, various actors advised citizens on how to behave, catapulting medical and health policy experts into the spotlight of public attention. Statements by public health institutions made headline news, health researchers from reputable universities became daily guests on primetime tv shows, and the World Health Organisation's (WHO) every move was closely reported. Through a novel survey experiment conducted in May 2020, our study tries to evaluate whether these institutions' statements facilitated the

support of policy measures. In other words, did their authority influence citizens' support of public measures taken to combat the spread of COVID-19?

We present an original conceptual understanding of authority as a source heuristic. Source heuristics are cognitive shortcuts people use when they base their evaluation of a claim on characteristics of the source rather than on its content. To measure authority as a source heuristic, we asked citizens how far they support public measures against COVID-19 and named several sources of the recommendation. We varied between health ministries, public health agencies, universities and the WHO. Thereby, we explore institutional authority, measured through respondents expressed support for measures that were endorsed by one of these institutions.

On average, the endorsements of the mentioned public experts did not influence support for COVID-19 measures. If anything, we find a small negative treatment effect for universities. This null effect seems to be driven by substantial polarisation concerning the perceptions of these public experts. We examine the extent to which three source characteristics shape this polarisation: expertise, neutrality and exposure. We find citizens' evaluations of expertise seem to polarise support for COVID-19 measures. When they evaluate expertise as high, they are more likely to support measures than the control group. When they see the expertise as low, they are less likely to support measures than the control group. We find a similar polarisation for exposure, albeit for only a limited number of institutions. Impartiality perceptions, however, do not seem to shape the authority of the institutions we study. The findings imply that institutional authority cannot just strengthen certain policy positions, but institutional endorsements might even alienate actors that are not convinced of their expertise.

Our study contributes to two bodies of literature in political science. First, it speaks to the literature on crisis management. Authors have analysed the factors that shape crisis preparedness, leaders' decisions, organisational responses, the media, institutional structure, and the trade-off between response and democracy during crises (Bauer and Becker 2014; Boin et al. 2005; Boin and McConnell 2007; Bolleyer and Salát 2021; Eckhard et al. 2020; Goldberg et al. 2021; Hegele and Schnabel 2021; Rosenthal and Kouzmin 1997; Steinebach and Knill 2018). The developing literature on COVID-19 has emphasised the importance of understanding citizens' perceptions because effective crisis response depends on their compliance with containment measures (Ansell et al. 2021; Goldberg et al. 2021; Oana et al. 2021). However, we know little about the role of experts in shaping citizens perceptions during crises in general, and COVID-19 specifically. We build on discussions analysing the central role

experts play in the sense-making process through informing policy choices and legitimising policy during crises (Baekkeskov and Öberg 2017; Boswell 2009; Brinks and Ibert 2020; Rosenthal and Hart 1991; Stern 1991). We add to this literature by studying the degree to which citizens are swayed by the public health advice of different kinds of institutions during COVID-19.

Second, there is a crucial debate on the role of experts in public policy (Christensen 2020). Within these debates, authors have provided insights into the determinants of expert influence on the policy process (Ingold and Gschwend 2014; Ladi 2005), the generation of expertise of bureaucracies (Bendor *et al.* 1985), the role of epistemic communities in policy making (Haas 1992), and the attitudes of citizens towards expert-based decision making (Ackermann *et al.* 2019; Bertsou and Pastorella 2017; Lavezzolo *et al.* 2020). Due to the considerable uncertainty prevailing during crises, endorsements of traditional experts become particularly relevant (Baekkeskov 2016). Public debates are crowded with experts that advise citizens and governments on the right course of action (Rosenthal and Hart 1991). Some go as far as to argue that experts can 'freeze deliberations' during crises (Baekkeskov and Öberg 2017: 1006). Public health emergencies require a large number of citizens globally to change their behaviour. Therefore, it is crucial to understand whether delegated experts hold the authority to influence citizens' support for crisis policies.

This article proceeds in five steps. First, we discuss the role of authority during crises. Second, we derive four hypotheses from the literature on expert authority. Third, we elaborate on our survey experiment conducted in May 2020 in Germany and the UK. Fourth, we examine the findings to evaluate the hypotheses. Finally, we conclude by discussing the implications of our argument and findings in light of the literature on crisis governance and experts.

Authority during crises

Based on the literature on crisis governance, we understand a crisis as 'a serious threat to the basic structures or the fundamental values and norms of a system, which under time pressure and highly uncertain circumstances necessitates making vital decisions' (Rosenthal *et al.* 1989: 10). COVID-19 certainly falls into this category, as it threatens the life of citizens and well-being all over the world, evolved rapidly in the first months of 2020, and was accompanied by considerable uncertainty over what the appropriate response should be.

The combination of time pressure and high uncertainty during crises leads to many voices that vie for the attention of policy makers and

citizens (Rosenthal and Hart 1991). One of the fundamental challenges of crisis governance is to make sense of this novel and complex situation (Boin *et al.* 2005). To reduce uncertainty, governments and the public consult experts who can provide crucial information on the likely outcomes of different policy options (Baekkeskov and Öberg 2017). Societies have specialised agencies and institutions that are charged with maintaining the specialised expertise to be utilised during crises (Boin and Lodge 2016). For example, health research institutes, like the German Robert Koch Institute (RKI), play only a minor role in public debates during regular times. During the COVID-19 outbreak, reports by the RKI made headlines in German newspapers and were reported in the evening news. Researchers from the institute were advising governments and citizens on how to slow the spread of the pandemic.

These institutions are also spotlighted by politicians who seek to assure the public that their decisions are well-informed. This was especially relevant during COVID-19 when governments needed to secure the cooperation of large segments of the population to ensure the success of community health safety measures. At times it seemed like governments were hiding 'behind the backs of experts' (Lodge and Boin 2020) to assure the public that they were doing everything in their power to stop the spread of the pandemic. This is a common feature of crises more generally, where actors gain the public's ear from a badge or their technical expertise (Boin *et al.* 2005: 78).

The phenomenon that certain institutions can hold authority has long been debated (Barnett and Finnemore 2004; Friedman 1990; Herbst 2003; Steffek 2016; Zürn 2018). We use the concept of authority to denominate a form of power that induces voluntary deference to a certain actor's requests. Subsequently, we discuss this concept and derive testable implications for our study of authorities' role in shaping citizens' opinions during the COVID-19 pandemic.

The authority of institutions and public opinion

Authority, as discussed in the literature, has two central qualities. It is a relational phenomenon, and it is (primarily) based on voluntary deference. First, authority materialises in the relationship between two actors— a superior actor which holds authority over an authority addressee. The authority addressee acknowledges the authority's privilege through deference to its demands (Friedman 1990; Hurd 1999). Second, it is a distinct form of power that works more through voluntary subordination than coercion (Lake 2010; Zürn 2018).

We argue that authority works as what we call a 'source heuristic' from the authority addressee's vantage point. The concept of heuristics stems from seminal research in cognitive psychology (Tversky and Kahneman 1974). It is built on the insight that human rationality is bounded by inescapable limitations on processing and memorising information (Simon 1957). Attention is limited, and gathering all possible information is costly. This implies that assessing choice alternatives represents a nearly insurmountable challenge. Humans resort to shortcuts, called heuristics, to ease inference and make decisions under these constraints. A source heuristic is a particular kind of heuristic in which the source of a claim is the shortcut. For example, a citizen who reads a headline in which the WHO recommends that citizens wear face masks can evaluate the recommendation based on prior knowledge on the efficacy of face masks, a prior view of the WHO, or a combination of the two. Both psychologists and scholars of political communications have studied the role of sources in shaping public opinion (Chaiken 1980; Chung et al. 2008; Hovland and Weiss 1951; Pornpitakpan 2004). These insights resonate directly with the claims made by political scientists working on institutional authority (Zürn 2018). Authority serves as a cognitive shortcut through which addressees decide based on the source, rather than the content. In other words, it functions as a source heuristic.

We argue that, due to uncertainty, authority as a source heuristic is a crucial factor during crises. As discussed, uncertainty is regarded as one of the three essential characteristics of crises (Rosenthal et al. 1989). Citizens and decision makers are faced with a range of possible interpretations of a crisis and need to make sense of the continuously evolving situation. To do so, they draw on heuristics and cognitive shortcuts (Boin et al. 2005), such as the authority of specialised institutions. By relying on public institutions tasked with providing specialised advice in the crisis, citizens can regain some certainty in times of crisis. Based on these insights, our first hypothesis focuses on this mechanism of authority as a source heuristic and posits:

> H1: Mentioning that a specialised institution is the source of a claim will increase the agreement of citizens with said claim.

Perceptions of expertise are an essential factor determining whether statements are seen as authoritative (Boswell 2009; Herbst 2003; Kao et al. 2021). The second hypothesis focuses on the credibility actors have during crises due to their institutional expertise. The argument is that institutions can hold expert authority. Expert authority is the recognition of the competency of the superior to use their superior knowledge to assess, judge and recommend a policy (Barnett and Finnemore 2004; Zürn 2018). It is present when recognising a claim is based on a recognition of the

expertise of the source, more than on the content. The mere possession of knowledge or expertise by the public institutions does not necessarily result in expert authority. While institutions might have substantial knowledge, citizens do not need to see them as experts. This perception of the source in the mind of the addressee matters for the recognition of expert authority. Based on this discussion, we derive our second hypothesis:

> H2: Mentioning that a specialised institution is the source of a claim will further increase the agreement of citizens with the claim, the more citizens perceive the institution as an expert.

Institutional authority can also be undermined if institutions appear unduly influenced by specialised interests. The authority debate in international relations has repeatedly highlighted the link between neutrality and authority (Barnett and Finnemore 2004). If citizens perceive an institution as biased, they will be more likely to question whether the advice of these institutions is credible (Heinzel et al. 2020). Consequently, they are not regarded as authorities. For example, the COVID-19 pandemic saw vigorous debates over the independence of the WHO from donor countries (Griffiths 2020) and its primary private donor (Patz and Goetz 2019), the Bill and Melinda Gates Foundation. The third hypothesis accounts for these considerations.

> H3: Mentioning that a specialised institution is the source of a claim will further increase the agreement of citizens with the claim, the more citizens perceive the institution to be unbiased towards particular interest.

Authority can further depend on the degree to which citizens have been signalled that an institution is an authoritative voice in the public debate. The media is a central actor during crises, and one can hardly escape the constant media reports on different aspects of the crisis (Baekkeskov and Öberg 2017; Boin et al. 2005). Experts are frequently used as sources for major news outlets (Albaek et al. 2003). Media filtering presents a central mechanism that shapes whose analyses of the crisis are considered and how the crisis's narrative evolves (Baekkeskov and Öberg 2017). For example, during COVID-19, Christian Drosten, the head virologist of the Charité Berlin, has gained an enormous public profile in Germany. Without a doubt, he has become 'Germany's most famous virologist' (Deutsche Welle 2020). His emergence as Germany's central expert on the virus originated from a combination of his technical expertise as one of the most renowned virologists working on coronaviruses, his institutional badge as the head of the institute of virology at the prestigious Charité Berlin, and his skills as a public communicator. Exposure to experts and the institutions they are affiliated with cues

citizens to whom they ought to listen. Consequently, our fourth hypothesis is:

> H4: Mentioning that a specialised institution is the source of a claim, will further increase the agreement of citizens with the claim, the more citizens have recently been exposed to the institution.

Research design

In order to operationalise authority as a source heuristic, we draw upon a survey experiment conducted in May 2020. We use a survey experiment because we can achieve higher internal validity by identifying causal effects more straightforwardly than through other commonly used statistical methods of causal inference. Employing randomisation on a representative sample allows for generalisation to a larger population of interest (Dellmuth and Tallberg 2020).

Despite the substantial internal validity of experimental studies, there are two limitations to external validity that should be considered when discussing our findings. First, research on source credibility in political communications and psychology has found that source endorsement effects on opinions are somewhat fleeting (Gaines *et al.* 2007; Hovland and Weiss 1951). We believe that this is less of a threat to external validity in our study than in other studies focussing on source endorsements. During the pandemic, one could not follow the news without noticing the omnipresence of experts advising citizens on COVID-19. Therefore, it is likely that the effect we study occurs more frequently during COVID-19 than in cases where citizens do not hear endorsements again for months. Second, although the set-up of the survey experiment allows for estimating the causal effect, the trade-off involved is that we create a somewhat artificial situation. In reality, citizens are not faced with isolated endorsements by specific experts.

In order to implement the survey, we relied on online panels of the reputable global survey company YouGov. YouGov provided representative samples of 2,000 respondents through targeted quota sampling (by gender, age, education, region). We weighted responses so that they correspond to the distribution of these observed traits in each country's overall population. YouGov's practice of giving small monetary incentives could cause some unease around impacting motivation. However, this is less of a concern in our study because we do not seek to identify the exact level of agreement citizens have with certain measures taken concerning COVID-19. Instead, we are interested in differences between respondents who are 'treated' with the respective authorities to identify the causal effect of authority. Furthermore, the choice of YouGov is in

line with several recent studies using survey companies in experimental research (Anderson *et al.* 2019; Dellmuth and Tallberg 2020).

Case selection: institutions, countries and timing

Many institutions tried to advise governments and citizens alike on the best way to respond to COVID-19. Our study focuses on four types of institutions that are the most likely cases for authoritative advice during a pandemic. We choose most likely cases because we are interested in whether institutions can shape citizens' responses. If we did not find an effect of these institutions' endorsements, it would be unlikely that other institutions would produce such an effect.

We selected four types of institutions that all possess delegated authority to manage the crisis and provide the respective advice on halting the pandemic's spread. First, we focussed on the respective ministry that is responsible for health. Governments ask sector-specific ministries to develop and disseminate specialised expertise (Bendor *et al.* 1985). During an emergency, this empowerment typically increases. For example, citizens look to government ministries to provide authoritative advice during crises (Boin and Lodge 2016). Second, we chose intergovernmental organisations because they have similarly been delegated substantial authority in providing citizens and governments with advice on how to solve global cooperation problems, like pandemics (Kreuder-Sonnen 2020). Third, governments have created specific agencies that focus on producing health research and informing the public. These health institutes have a specific place in debates on public health. Fourth, university researchers have a social mission to produce knowledge on a wide range of topics. Public health and virology researchers are taking centre stage during COVID-19, advising the public.

Germany and the UK were selected as the two countries where the survey experiment was conducted. First, the two countries have large populations to which the survey generalises because of the representative sample. Second, the experiences of both countries with COVID-19 are somewhat diverse. Germany reacted earlier to the pandemic and tried to mitigate the spread by introducing a range of lockdown measures early on. The UK took the different approach of waiting longer, reportedly to increase immunity among its citizenry. Third, the two countries have relatively detached public discourses in different languages that evolve somewhat independently. Therefore, one can be reasonably confident of observing the experts' roles in two separate deliberations on the COVID-19 crisis.

Finally, the exact four public institutions needed to be identified. The national health ministries of both countries were included, because of

Table 1. Case selection for the survey experiment.

Country	Ministry	Institute	University	International organisation
Germany	Federal Ministry of Health	Robert Koch Institute	Charité Berlin	World Health Organisation
United Kingdom	Department of Health and Social Care	National Institute for Health Research	Oxford University	World Health Organisation

their greater relevance for the citizenry. Regarding intergovernmental organisations, there are several candidates whose actions have implications for health outcomes directly (Hanrieder 2015) or indirectly (Forster *et al.* 2020). We opted for the WHO because it is the worlds' major international organisation focussing on health policy and health crisis by mandate and by scientific reputation (Bayerlein *et al.* 2020). We chose the RKI in Germany and the National Institute for Health Research in the UK as public health institutes. These are two central government-affiliated agencies tasked with furthering health research in both countries[1]. To identify most likely cases, we tried to focus on the most reputable institutions when selecting universities. This means that we cannot infer to the universe of universities in both countries, because they are not representative. Nevertheless, focussing on the most reputable universities seemed appropriate, because they are the universities which played the most prominent role in the COVID debate. The decision was based on rankings (to be taken with a grain of salt) and universities' importance in public debates. For Germany, we chose the Charité Berlin. Charité was ranked second in Germany in prominent rankings in 2020 (Times Higher Education 2020) and researchers from the institution have occupied a special place in German public discourse during COVID-19. For the UK, we selected Oxford University, which was ranked first worldwide in the same rankings (Times Higher Education 2020), and known as an authority on scientific knowledge beyond the academic community. To ensure that respondents associated Oxford with health experts and not with other academic disciplines, we specified the department of population health in the survey. Table 1 lists the institutions that were part of our study.

Survey design

The dependent variable is derived from a survey question that focuses on citizens' opinions towards several COVID-19 public measures. When designing the question, both conceptual and ethical concerns needed to be considered. On the one hand, the survey was supposed to gauge support for COVID-19 measures. At the same time though, the questions should not contribute to spreading false information during a global

pandemic. Therefore, we decided to base our question specifically on the WHO's recommendations, as it is the only institution that explicitly advises citizens from both countries. When wording the question, we followed the wording from the WHO's COVID-19 strategy update, published in April 2020, immediately before our survey was commissioned (World Health Organization 2020). Each respondent got a short text to introduce them to the recommendation. The control group's text was 'It is recommended that the government take public measures to reduce contact between individuals because of coronavirus. These public measures include the suspension of mass meetings, the closure of work and education facilities, and public transport reduction'. After the short text, respondents answered the following question: 'To what extent do you support these public measures?'. Respondents indicate their support on a six-step ordinal scale ranging from 'not support at all' to 'strongly support'.

In line with the theoretical expectations regarding authority as a source heuristic, we conducted a 'mere mention' survey experiment (Gaines *et al.* 2007). Respondents were randomly assigned to four treatment groups and one control group. All five groups got the recommendation for public measures to address COVID-19. The only difference was the 'mere mention' of the source of the recommendation. In the control groups, respondents got the abstract wording 'It is recommended'. The four treatment groups were each asked treated questions with the mention of one of the four types of institutions, adjusted to each country: the question was phrased as, for example, 'The *World Health Organisation* recommends (…)'.

Additionally, we collected further data on social cues and the specific traits of the respondents. In order to evaluate H2, H3 and H4, we asked respondents to evaluate the four institutions along the three dimensions. For expertise (H2) respondents were asked 'For each of the following organisations, please indicate to what extent you believe that they have expertise in combating diseases?'. To test the role of neutrality (H3), we asked respondents 'For each of the following organisations, please indicate to what extent you believe that they are influenced by special interests or members?'. Finally, for exposure (H4), we asked 'For each of the following organisations, please indicate to what extent you have heard of them over the last few weeks'. Descriptive statistics on answers and the distribution of responses in the control group and the treatment groups can be found in the Online Appendix (Table A1 and Figures A1–A6). We interacted the source evaluations with the treatment to understand whether source perceptions shape public institutions' authority. We refrained from artificially dictating beliefs on expertise or neutrality to ensure as much external validity as possible. However, this also means that we could not
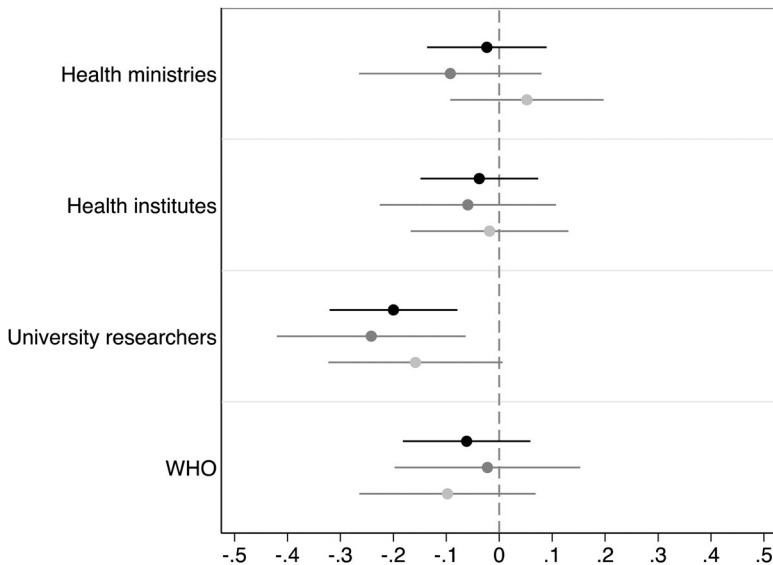
Figure 1. Average Treatment Effect of experts' endorsements on support for COVID-19 measures. Note: both countries (black), UK (dark grey) and Germany (light grey), whiskers are 95% confidence intervals.

use experimental manipulations to induce these source characteristics. We discuss this issue in more detail below.

Additionally, we collected data on a range of control variables. Controls include citizens' levels of worry about COVID-19 as an indicator for individual threat perception. Standard controls in survey research, like data on age, education, party support in the last election, and the region in which respondents live, were also collected. We randomised the order of the questions for each respondent to reduce priming and question order effects, i.e. that answers to prior items affect later items.

Analysis

To evaluate hypothesis 1, we display the average treatment effects for all four treatment groups compared to the control group based on a simple OLS-model estimating the conditional difference in means. Throughout the paper, models reported include concern about COVID-19 as a control variable and models that pool Germany and the UK further include a dummy indicating from which country the respondent comes. Observations are weighted so that the sample is representative of the respective populations of Germany and the UK.

The treatment does not seem to influence citizens' evaluation of COVID-19 measures in most of the cases examined in Figure 1 (H1). For

Table 2. Interaction between expertise and treatment (H2), both countries.

	(1) Ministry	(2) Institute	(3) University	(4) WHO
Treatment at low expertise	−0.2652[+]	−0.3107[+]	−0.7261***	−0.5758**
	(0.1507)	(0.1836)	(0.2124)	(0.1749)
Expertise	0.1401***	0.1401***	0.0986**	0.1035***
	(0.0323)	(0.0358)	(0.0368)	(0.0304)
Treatment# expertise	0.0915*	0.0808	0.1577**	0.1580***
	(0.0466)	(0.0496)	(0.0563)	(0.0457)
Germany dummy	−0.5084***	−0.4845***	−0.4783***	−0.3173***
	(0.0596)	(0.0668)	(0.0721)	(0.0653)
COVID-19 concern	0.4723***	0.4631***	0.4721***	0.4890***
	(0.0323)	(0.0372)	(0.0359)	(0.0366)
Constant	2.1270***	2.0588***	2.1703***	2.0114***
	(0.1578)	(0.1897)	(0.1864)	(0.1779)
N	1545	1397	1311	1599
R^2	0.353	0.338	0.319	0.348

Standard errors in parentheses; $^{+}p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$.

health ministries, health institutes or the WHO, we do not find a statistically significant association of the treatment. Therefore, we cannot reject the null hypothesis that mentioning a given institution does not influence citizen support for COVID-19 measures. For university researchers in the UK, the coefficient is negative and statistically significant, translating into a similar observation when looking at both countries. If anything, source heuristics seem to undermine support for endorsed measures rather than increase it on average.

Expertise and authority

The picture looks different when we focus on the three source characteristics (H2–H4). First, we discuss whether authority differs at different levels of expertise. We only use expertise evaluations regarding the respective type of institutions (e.g. universities for universities). The statistically insignificant coefficients observed in Figure 1 seem to be the result of substantial polarisation. Table 2 displays the coefficients for models interacting the treatment with respondents' evaluations of public institutions' expertise in both countries (H2). The treatment is negative and statistically significant for respondents perceiving institutional expertise as low. This finding applies to all four groups of institutions, i.e. the ministries, institutes, universities and the WHO. Citizens are less likely to express support for COVID-19 measures than the control group when they read that an institution, which they perceive as having only low expertise, endorsed the policies. The coefficient regarding expertise shows that the higher the expertise evaluations, the more positive citizens are towards COVID-19 measures. The interaction term is positive and significant for ministries, universities and the WHO. This implies that the
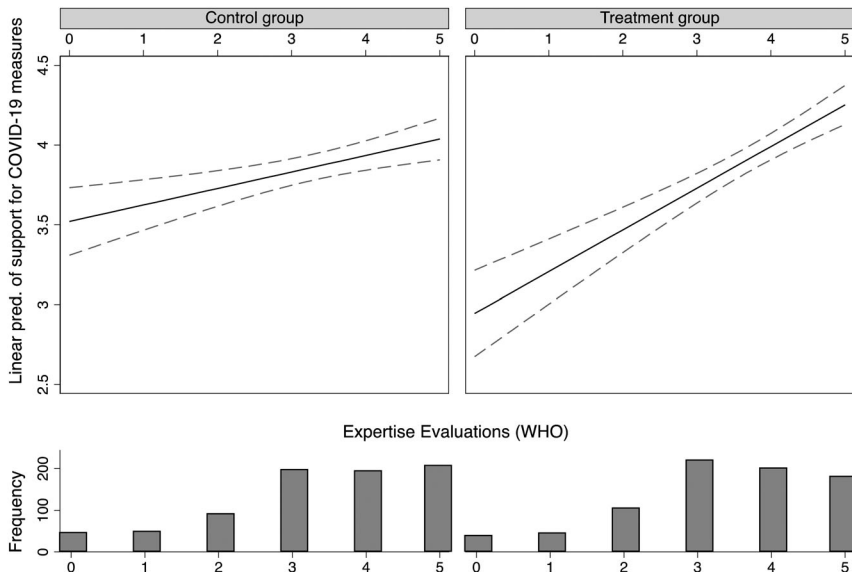
Figure 2. Adjusted predictions based on Model 4 focussing on the World Health Organisation. Note: whiskers are 95% confidence intervals, visualisation based on package written by Helmdag (2018).

treatment group shows more substantial support for COVID-19 measures than the control group at the highest levels of expertise.

Figure 2 presents a visualisation of the finding. It displays the treatment and control group's predictions at each level of expertise perception based on Model 4. One can see that the treatment effect is negative at the first three levels of expertise perception, which amount to roughly 25 percent of respondents. It is indistinguishable from zero at levels 3 and 4 and only becomes positive for those respondents that judge the WHO as having very high expertise (c. 25 percent of respondents). The findings are surprising given the discussions on the authority of experts. While the positive case of authority is anticipated ('researchers from Oxford say so, it should be supported') the negative case is more surprising ('researchers from Oxford say so, it should not be supported'). However, the finding is robust across institutions, and we observe it in both countries.

Similar patterns emerge when disaggregating the results by country. Table 3 displays the interaction of expertise and the treatment for each institution in each country. Polarisation seems to be the central finding across institutions. In Germany, we observe a statistically significant interaction for all three national institutions, but not the WHO. In the UK, the interaction is significant for universities and the WHO, but not for the health ministry and the research institute.

Table 3. Interaction between expertise and treatment (H2).

Country	(5) Ministry GER	(6) Institute GER	(7) University GER	(8) WHO GER	(9) Ministry UK	(10) Institute UK	(11) University UK	(12) WHO UK
Treatment at low expertise	−0.4297*	−0.5087*	−0.7896**	−0.3802	−0.0152	−0.0622	−0.6390*	−0.8247**
	(0.2075)	(0.2390)	(0.2844)	(0.2367)	(0.1964)	(0.2754)	(0.3182)	(0.2640)
Expertise	0.1730***	0.1930***	0.1170*	0.1423**	0.0939*	0.0539	0.0658	0.0598
	(0.0448)	(0.0475)	(0.0524)	(0.0458)	(0.0450)	(0.0529)	(0.0477)	(0.0403)
Treatment # expertise	0.1397*	0.1295*	0.1645*	0.1083	0.0250	0.0185	0.1501^{+}	0.2156***
	(0.0662)	(0.0632)	(0.0752)	(0.0683)	(0.0593)	(0.0758)	(0.0834)	(0.0643)
COVID-19 concern	0.5543***	0.4546***	0.5011***	0.5024***	0.3587***	0.4479***	0.4195***	0.4718***
	(0.0394)	(0.0398)	(0.0436)	(0.0426)	(0.0538)	(0.0711)	(0.0634)	(0.0620)
Constant	1.2903***	1.4396***	1.5582***	1.5113***	2.6422***	2.3802***	2.4385***	2.2544***
	(0.1712)	(0.2074)	(0.2254)	(0.2017)	(0.2568)	(0.3261)	(0.2937)	(0.2741)
N	784	790	731	779	761	607	580	820
R^2	0.370	0.330	0.301	0.301	0.197	0.240	0.226	0.325

Standard errors in parentheses; $^{+}p < 0.10$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Table 4. Interaction between neutrality and treatment (H3), both countries.

	(13) Ministry	(14) Institute	(15) University	(16) WHO
Treatment at low bias	−0.0335	−0.1600	−0.0675	0.0107
	(0.1433)	(0.1260)	(0.1447)	(0.1351)
Bias	−0.0932**	−0.1257***	−0.0783*	−0.0835**
	(0.0336)	(0.0323)	(0.0391)	(0.0308)
Treatment # bias	−0.0056	0.0465	−0.0637	−0.0289
	(0.0463)	(0.0458)	(0.0550)	(0.0440)
Germany dummy	−0.4982***	−0.4573***	−0.4949***	−0.4124***
	(0.0636)	(0.0649)	(0.0747)	(0.0655)
COVID-19	0.5097***	0.5096***	0.4911***	0.5290***
concern	(0.0326)	(0.0325)	(0.0347)	(0.0346)
Constant	2.6371***	2.6762***	2.6216***	2.4961***
	(0.1532)	(0.1613)	(0.1770)	(0.1679)
N	1433	1313	1250	1452
R^2	0.320	0.329	0.306	0.326

Standard errors in parentheses; $^+p < 0.10$, $^*p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

These findings could be interpreted in different ways because expertise evaluations were not experimentally manipulated. The interpretation we offer is that expert authorities polarise citizens. However, the result could arguably be driven by motivated reasoning (Hvidman 2019; van den Bekerom *et al.* 2020). We run several robustness tests described in more detail below (Online Appendix, Tables A14 and A15) to account for this possibility.

Neutrality and authority

We now turn to the hypothesis focussing on the neutrality of public institutions (H3). We do not find a similar interaction of the treatment with neutrality perceptions in Table 4. Respondents who evaluate institutions as biased are less supportive of COVID-19 measures in the control group. Nevertheless, we do not find a significant interaction with the treatment. Therefore, we cannot reject the null hypothesis that bias perceptions are unrelated to institutions' authority in public opinion. The findings are similar when disaggregating the countries (see Table A1 in the Online Appendix).

Exposure and authority

The final hypothesis (H4) focussed on the exposure to the institutions in public debates. The data show mixed results, which are presented in Table 5. First, there is no interaction between exposure to the ministry or the WHO and support for COVID-19 measures in the treatment group. Individuals that have been more exposed to certain institutions do not seem to support COVID-19 policies more. However, we do find a

Table 5. Interaction between exposure and treatment (H4), both countries.

	(1) Ministry	(2) Institute	(3) University	(4) WHO
Treatment at low exposure	0.0620	−0.3445*	−0.5057**	−0.2021
	(0.1961)	(0.1683)	(0.1630)	(0.2272)
Exposure	0.0454	0.0103	−0.0147	−0.0132
	(0.0316)	(0.0307)	(0.0291)	(0.0300)
Treatment # exposure	−0.0205	0.0668^{+}	0.0923*	0.0296
	(0.0429)	(0.0374)	(0.0431)	(0.0464)
Germany	−0.5198***	−0.5481***	−0.5017***	−0.3752***
	(0.0609)	(0.0777)	(0.0725)	(0.0686)
COVID-19 concern	0.5101***	0.5026***	0.5044***	0.5316***
	(0.0326)	(0.0336)	(0.0349)	(0.0378)
_cons	2.1939***	2.4125***	2.4685***	2.2980***
	(0.1961)	(0.1918)	(0.1872)	(0.2102)
N	1582	1421	1369	1617
R^2	0.318	0.308	0.301	0.302

Standard errors in parentheses; $^{+}p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$.

significant interaction for the health institutes and the universities. Citizens that have heard more about these institutions in recent weeks are more likely to support COVID-19 measures and, thus, defer to the institutions' authority. When we disaggregate by country, we observe the same pattern for universities. Conversely, the significant interaction for the institute present in the aggregated sample is absent for the UK or Germany individually (Table A2 in the Online Appendix).

Throughout the empirical section of this paper, three findings stand out. First, we do not find on average that institutional endorsements sway respondents. Second, we have substantial evidence that support for COVID measures is polarised along with respondents' expertise perceptions of the different institutions. Citizens that judge institutions' expertise as low are less likely to support COVID-19 measures in the treatment than in the control group, and respondents become more likely to support measures when their expertise perceptions are higher. Third, we find some evidence for the importance of exposure to institutions, specifically, for universities and, to a lesser extent, for health institutes. Overall, the findings imply that perceptions of expertise seem central in reinforcing or undermining authority in public debates during COVID-19.

Categories of respondents and their expertise evaluations

To better understand which groups of citizens ascribe more expertise to the respective institutions, we now discuss the distribution of expertise evaluations by gender, age, education and party support in the last election. We will only highlight some trends here, but include the full results (Figures A7–A10) in the Online Appendix.

What is apparent from the correlations between expertise evaluations and the four categories of respondents is that there are substantial differences between Germany and the UK concerning which kinds of citizens trust the different institutions' expertise. We ran simple OLS-regressions, including categorical predictors, and discuss statistically significant results ($p < 0.05$) for the four categories in turn. First, there are variations by gender (Figure A7). In both countries, women ascribe more expertise to the university than men. Women evaluate the WHO's expertise lower than men in Germany, and in the UK, they ascribe more expertise to the ministry and the WHO. Second, differences by age are more substantial in Germany than in the UK (Figure A8). In Germany, older citizens credit the ministry, institute and university with significantly less expertise than the youngest age group (18–24). In the UK, this does not seem to be the case. Third, there are clear patterns by education in the UK, but not in Germany (Figure A9). In the UK, the expertise ascribed to any institution increases with education, and the correlation is significant for the ministry, university and the WHO. For Germany, such an association cannot be observed. Fourth, party support seems to be a predictor for expertise in both countries (Figure A10). In Germany, supporters of three parties attribute significantly less expertise to most or all of the studied institutions: the far right (AFD), the liberals (FDP) and the far left (Die Linke). This finding is interesting, because in a famously peculiar distribution by party, COVID-19 measures were supported least by AFD, FDP and Die Linke supporters in Germany around the time the survey was conducted (ARD 2020). At the least, this regularity is coincidental. Still, it could also indicate that party distribution of COVID-19 policy support is partly due to the difference in the expertise ascribed to central actors in the debate. In the UK, respondents' expertise evaluations seem to align with the left-right spectrum of UK politics. Supporters of parties on the left of the spectrum (labour, liberal democrats, greens) credit institutions with more expertise than those on the right. The exception is SNP supporters, who are significantly less convinced of the expertise of the ministry, institute and the WHO and ascribe significantly more expertise to the university. One should keep in mind that these findings do not stem from the experimental design, and we did not set out to test what determines citizens' perceptions of these institutions' expertise. Therefore, the coefficients cannot be interpreted as causal effects. Nevertheless, these differences might reflect the interplay between the supply and demand sides of anti-elite rhetoric in Germany and the UK. On the demand side, some citizens seem to trust traditional hierarchy more than the authority of those who have been officially assigned as experts (Caramani 2017; Inglehart 2008). The parties that target these citizens differed between both countries. In the UK, the Brexit

referendum tapped into these grievances, and the Tory party was able to capitalise on the corresponding voter base. In Germany, the AFD and Die Linke focus more on these parts of the citizenry.

Robustness of results

In order to substantiate the conclusions drawn from our survey experiment, we run several robustness cheques. These are reported in the Online Appendix. First, given that expertise was not experimentally manipulated, one could possibly interpret our results differently. Therefore, we briefly discuss the issue of motivated reasoning, citizens' evaluations of expertise being driven by their prior beliefs regarding COVID measures. Recent research in public administration has focussed on motivated reasoning in shaping citizens' perceptions (Hvidman 2019; van den Bekerom et al. 2020). The danger would be that citizens whose prior attitudes to COVID-19 are negative, reconcile the apparent inconsistency with institutional endorsements by devaluing an institution's expertise. To account for this argument, we re-estimated the models, using only the respondents' average expertise perceptions regarding all institutions, not just the treated institutions. Additionally, we swapped the evaluations regarding the two governmental institutions (WHO and ministries) and the two research institutions (universities and institutes). Due to the survey design, each group was not faced with their disagreement with institutions. Therefore, we deem motivated reasoning less likely in these cases. The results are robust to using mean evaluations and results for all institutions, except for the WHO, are robust to swapping expertise evaluations (Table A14). Furthermore, we tackled the issues head on, by estimating the average treatment effect on expertise evaluations at different levels of public support for COVID-19. Only in the WHO case, we find a marginally significant association between the treatment and expertise evaluations (Table A15). A second alternative explanation is that some third variable would drive both expertise evaluations and support for COVID-19 measures. One possible candidate is trust in governments, which has been used to great effect to explain variations in patterns of evaluations of COVID-19 measures (Altiparmakis et al. 2021; Kritzinger et al. 2021; Nielsen and Lindvall 2021). However, this argument cannot explain why differences between the control and the treatment groups exist at the same levels of expertise evaluations but only the more general correlation between expertise and support for COVID-19 measures. Third, we estimated the models without control variables to ensure that the inclusion of concern about COVID-19 does not drive the results (Tables A3 and A4 in the Online Appendix). Fourth, we controlled for

additional individual characteristics such as age, education, party support, the region each of the respondents lived in, and gender (Tables A7–A9). Fifth, one could argue that the biggest split in our answer categories is between those who support COVID measures and those who do not. Therefore, we reran the models collapsing the scale to a binary indicator focussing on supporting or opposing COVID-19 measures (Tables A10 and A11). Sixth, since answers are given on an ordinal scale, we re-estimated the models using ordinal logit rather than OLS regressions (Tables A12 and A13). Seventh, we conducted an attention check and re-estimated models focussing only on those respondents that passed said check (Tables A5 and A6). While the results for some institutions depend on specification choice, the overall results hold when using these different specifications.

Conclusion

During COVID-19, various public institutions tried to shape citizens' behaviour to slow the spread of the pandemic. However, we do not know whether their advice mattered. Our paper has presented a novel conceptualisation of authority as source heuristic and has tested if characteristics of a source increase support for public policy options. Two findings stand out. First, on average, institutional endorsements did not seem positively to affect citizens' support of COVID-19 measures in May 2020. If anything, we have found a small and negative effect of the treatment with the endorsements of universities. Second, we found that expertise, and in some cases, exposure seems to affect the potency of institutional endorsements. The treatment group shows stronger support for COVID-19 measures than the control group at higher levels of expertise, which means that roughly 25 percent of respondents are swayed by the endorsements of institutions they regard as having expertise. Third, this finding on expert authority seems to stem from a substantial degree of polarisation regarding public institutions' different expertise perceptions held among respondents in both countries. This finding is surprising. Whereas the literature on expert authority highlights that the quality of the source will increase support, it has yet to consider the opposite effect, i.e. that source heuristics can also decrease agreement. It is noteworthy that citizens negatively adjust their opinions on the importance of a public health measure when they have a low evaluation of the source's expertise. Citizens who otherwise might have supported measures seem to be swayed by public institutions' endorsements towards less support.

Our study has some limitations in scope and inference. First, it was limited to two countries from the Global North. It remains to be seen

what role institutional authority plays in other contexts. Quite similar to our findings, a recent conjoint experiment in Malawi showed that the respect for expertise drives citizens' compliance with COVID-19 measures. Here, citizens indicated more compliance with COVID-19 measures when they were advised by hospital heads whose expertise they valued highly (Kao *et al.* 2021). Second, the expertise evaluations of respondents were not experimentally manipulated. While we deem alternative explanations unlikely due to the study's design and the discussed robustness cheques, we cannot completely rule out all possibilities. Future research could expand the geographical scope of the study and further unpack the relationship between expertise perceptions and polarisation.

Our findings have important implications for debates on experts' role in public opinion, particularly during crises. The literature has highlighted that expert consensus can guide policy makers (Rosenthal and Hart 1991) but can also endanger public deliberations by providing authoritative interpretations that are difficult to contest (Baekkeskov and Öberg 2017). Our results show that related assumptions on the authority of experts in crisis governance need to be questioned. The institutional endorsements can alienate actors that are not convinced of institutions' expertise, which can lead to non-compliance with crisis measures.

Our findings also speak to the discussion on expert authority in several sub-fields of political science (Barnett and Finnemore 2004; Boswell 2009; Herbst 2003; Zürn 2018). This literature has not seriously engaged with the point that traditional standard-bearers of expertise can induce polarisation. Our results call for the consideration of work that has focussed explicitly on the recent rise of polarisation of the scientific claim to superior knowledge (Mede and Schäfer 2020; O'Connor and Weatherall 2018) and the rise of anti-establishment narratives in Western Europe and beyond (Koch 2020; Mudde and Kaltwasser 2018; Norris and Inglehart 2019). Since the pandemic outbreak, we have seen the further spread of substantial misinformation from various alternative sources. These have ranged from conspiracy theories that the virus was spread through the 5 G network, or was part of a Chinese bioweapon programme. Furthermore, bad health advice was rampant, including that people should not eat ice cream or supplement their diets with as much vitamin C as possible (BBC 2020). Efforts to combat such misinformation have not reached a substantial segment of the population. For example, in July 2020, 25 percent of Americans still believed that the COVID-19 outbreak was planned (Schaeffer 2020). And polarisation seems to affect compliance with policy measures. As Ansell *et al.* (2021) show, compliance with distancing measures was lower in municipalities that supported populist parties. Our findings may contribute to explaining why established institutions could not reach some parts of

the population. The evidence we present suggests that the prevalence of traditional experts in public debates and the media could even have intensified the opposition to COVID-19 measures taken by governments from those citizens, who ascribe little expertise to them.

Note

1. The counterparts to the RKI in the UK would be the four health agencies in England, Scotland, Wales and North Ireland. Because we did not conduct the survey separately for the four parts of the UK, we decided to opt for the NIHR as a public health agency, though it is more focused on research funding than the RKI.

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