



Contents lists available at ScienceDirect

Vaccine

journal homepage: www.elsevier.com/locate/vaccine

The social and socio-political embeddedness of COVID-19 vaccination decision-making: A five-country qualitative interview study from Europe



Bettina M. Zimmermann^{a,b,1}, Katharina T. Paul^{c,*,1}, Emília R. Araújo^d, Alena Buyx^b, Sebastian Ferstl^c, Amelia Fiske^b, David Kraus^c, Luca Marelli^{e,f}, Stuart McLennan^b, Vittoria Porta^g, Barbara Prainsack^c, Isabella M. Radhuber^h, Gertrude Saxingerⁱ

^a Institute for Biomedical Ethics, University of Basel, Basel, Switzerland

^b Institute of History and Ethics in Medicine, School of Social Sciences, TUM School of Medicine, Technical University of Munich, Munich, Germany

^c Department of Political Science & Research Platform Governance of Digital Practices (DigiGov), University of Vienna, Universitätsstraße 7, 1010 Wien, Austria

^d Institute of Social Sciences, Research Center on Communication Studies, University of Minho, Gualtar, 4710-057 Braga, Portugal

^e Department of Medical Biotechnology and Translational Medicine, University of Milan, Via Vanvitelli 32, 20129 Milan, Italy

^f Life Sciences & Society Lab, Centre for Sociological Research, KU Leuven, Parkstraat 45, 3000 Leuven, Belgium

^g Department of Experimental Oncology, IEO, Istituto Europeo di Oncologia IRCCS, Via Adamello 16, 20139 Milan, Italy

^h Department of Political Science, University of Vienna, Universitätsstraße 7, 1010 Wien, Austria

ⁱ Department of Political Science, University of Vienna, Universitätsstraße 7, 1010 Wien, Austria Institute of Social Anthropology, University of Bern, Lerchenweg 36, 3012 Bern, Switzerland

ARTICLE INFO

Article history:

Received 5 December 2022

Received in revised form 2 February 2023

Accepted 3 February 2023

Available online 16 February 2023

Keywords:

Vaccine hesitancy

COVID-19

Attitudes

Decision-making

Policy

Europe

Austria

Germany

Switzerland

Italy

Portugal

ABSTRACT

The uptake of COVID-19 vaccines has varied considerably across European countries. This study investigates people's decision-making process regarding vaccination by analyzing qualitative interviews (n = 214) with residents from five European countries: Austria, Germany, Italy, Portugal, and Switzerland. We identify three factors that shape vaccination decision-making: individual experiences and pre-existing attitudes towards vaccination, social environment, and socio-political context. Based on this analysis, we present a typology of decision-making regarding COVID-19 vaccines, where some types present stable stances towards vaccines and others change over time. Trust in government and relevant stakeholders, broader social factors, and people's direct social environment were particularly relevant to these dynamics. We conclude that vaccination campaigns should be considered long-term projects (also outside of pandemics) in need of regular adjustment, communication and fine-tuning to ensure public trust. This is particularly pertinent for booster vaccinations, such as COVID-19 or influenza.

© 2023 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

1. Background and context

Soon after COVID-19 was declared a pandemic, decision-makers turned to the development of effective vaccines against COVID-19.

* Corresponding author.

E-mail addresses: bettina.zimmermann@unibas.ch (B.M. Zimmermann), katharina.t.paul@univie.ac.at (K.T. Paul), emiliararaujo@gmail.com (E.R. Araújo), a.buyx@tum.de (A. Buyx), seb.ferstl@gmx.at (S. Ferstl), a.fiske@tum.de (A. Fiske), a12016878@unet.univie.ac.at (D. Kraus), luca.marelli@unimi.it (L. Marelli), stuart.mclennan@tum.de (S. McLennan), vittoria.porta01@universita-dipavia.it (V. Porta), barbara.prainsack@univie.ac.at (B. Prainsack), isabella.radhuber@univie.ac.at (I.M. Radhuber), gertrude.saxinger@univie.ac.at (G. Saxinger).

¹ The first two authors contributed equally to this paper and share first authorship.

Yet, despite early access to highly effective vaccines, uptake remained lower than expected in some parts of Europe [9], Fig. 1). While vaccination against COVID-19 remained voluntary for the general population throughout Europe, some countries introduced vaccination requirements for specific groups (e.g. healthcare professionals).² In addition, most countries implemented

² In this article, we differentiate between vaccine *mandates* that are implemented by law (with the consequence that unvaccinated people break the law), vaccination *requirements* to carry out a profession (with the consequence that unvaccinated people risk losing their jobs) and *incentives* to get vaccinated (with the consequence that unvaccinated people have no access to leisure activities or have to get tested first).

<https://doi.org/10.1016/j.vaccine.2023.02.012>

0264-410X/© 2023 The Author(s). Published by Elsevier Ltd.

This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

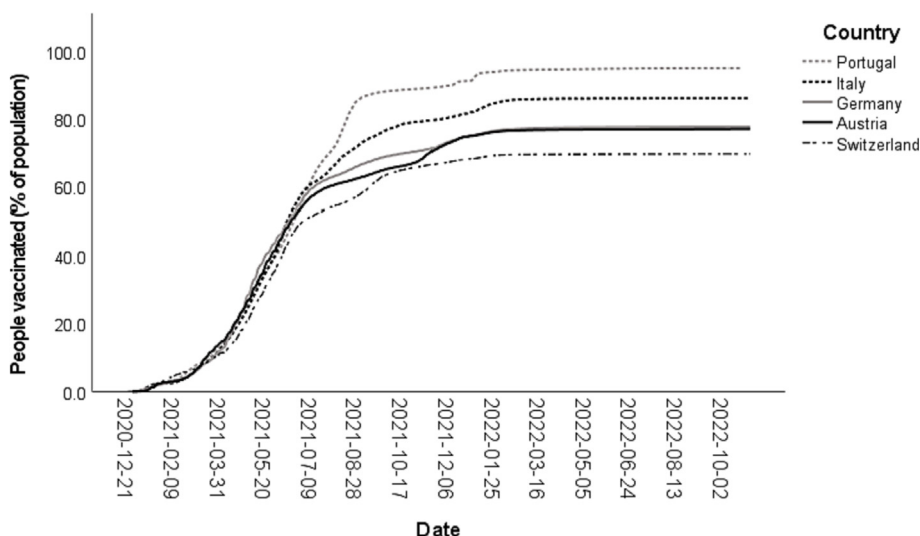


Fig. 1. Vaccine uptake in participating countries. Data source: Hannah Ritchie, Edouard Mathieu, Lucas Rodés-Guirao, Cameron Appel, Charlie Giattino, Esteban Ortiz-Ospina, Joe Hasell, Bobbie Macdonald, Diana Beltekian and Max Roser (2020) - “Coronavirus Pandemic (COVID-19)”. Published online at [OurWorldInData.org](https://ourworldindata.org/coronavirus). Retrieved from: <https://ourworldindata.org/coronavirus> [Online Resource].

incentives to get vaccinated, including vaccination certificates as a precondition to access certain places or cross borders, and restrictions for the unvaccinated [15]. Moving beyond an account of these policy instruments, we ask: What informs individual decision-making regarding COVID-19 vaccination?

Existing research has identified a set of themes that inform COVID-19 vaccination practices across countries. First, **pre-existing attitudes** regarding vaccinations shape stances towards a COVID-19 vaccine, both in favour of getting vaccinated [6] and for those who report hesitation [1,21].

Second, **trust** in government and health authorities has been shown to correlate with vaccine confidence [6,11,22,23,25,31]. Moreover, a lack of trust in the scientific community appears to be a strong predictor of vaccine hesitancy at the level of individuals [23,19]. Those who distrust political institutions also tend to distrust scientific research and are more prone to conspiracy beliefs [17,18]. More specifically, the trust invested in one’s sources of information informs decisions regarding COVID-19 vaccination: Both media sources [26] and personal contacts are key sources of information. Those who are hesitant tend to consume greater amounts of COVID-19-related information than those who generally refuse vaccines [25].

A third aspect relevant to COVID-19 vaccine decision-making is the **social influence** of friends, family, one’s workplace, or even casual conversation partners. Reasons for vaccination include fear of discrimination or the desire to safely visit and protect vulnerable family members [23,25] but social influence can also further increase vaccine hesitancy [21,23,36].

Fourth, **concerns about the safety and efficacy** of the vaccine are particularly pronounced in COVID-19 vaccination practices, partly, as we found earlier [27,12], due to the expedited vaccine development process [23,1,6,21,25,3] and the amplification of existing concerns during the pandemic [31].

In addition, as research preceding the pandemic has shown, **structural barriers** can prevent effective access to vaccination and vaccine uptake due to a lack of sufficiently convenient vaccination services [4].

Finally, emerging findings suggest that public debates regarding potential **vaccine mandates** indicate that mandates risk increasing opposition to vaccination among those who perceive vaccination as unnecessary or are undecided [34]; cf. [32].

This is particularly important considering that most people, even those who are hesitant to get vaccinated, do not categorically reject vaccines as such [24,13,37]. Instead, stances towards vaccination must be understood on a continuum ranging from “accept all” to “refuse all” [2,10], with the vast majority leaning towards a positive attitude in the case of most basic childhood immunizations. A recent cluster analysis based on Eurobarometer data suggests that, regarding COVID-19 vaccination, Europeans express different “shades of doubt” and that attitudes can be classified along a spectrum of vaccine-trusting, vaccine-distrusting, hesitant and free-choice advocators, fence-sitters, and agreeable/acquiescent (Rughinis et al 2022). In line with these findings, in our earlier study [28], we identified five anticipatory stances towards COVID-19 vaccination and postulated that these stances were contingent and provisional, and influenced by people’s broader communal, social, and societal context.

In this paper, we contribute to this literature by assessing how the broader sociopolitical context, people’s social environment and their more general stances towards vaccination inform COVID-19 vaccination decision-making. We analysed interviews with residents in Austria, Germany, Italy, Portugal, and German-speaking Switzerland held between June and November 2021. We used a qualitative approach to obtain a nuanced picture of people’s perceptions of COVID-19 vaccination, how these changed over time, and how they informed decision-making regarding COVID-19 vaccination.

2. Methods

This paper draws on the joint work of the members of the “Solidarity in times of pandemics” (SolPan) research commons, a large-scale qualitative longitudinal study that was set up ad-hoc in spring 2020, when COVID-19 was declared a pandemic [39]. Institutional ethics committees approved this study, including the University of Vienna (no. 00544), the Technical University of Munich (no. 208/20 S), the University of Basel (no. 101), and the University of Minho (no. CEICSH 061/2021).

Interviews were conducted in April 2020 (T1), October 2020 (T2), and again between June and November 2021 (T3). While T1 and T2 interviews were conducted in nine European countries,

due to limited resources, T3 interviews were only held in Austria, Germany, Portugal, Switzerland, and Italy.

2.1. Selection of countries

Due to the ad-hoc setup of the SolPan research commons, our research design, including the selection of countries, can best be described as pragmatic and opportunistic [35]. Human and material resources were major restricting factors. Our study sought to generate in-depth observations over time in different European countries. Accordingly, we focused on individual decision-making rather than political, social, or digital determinants of vaccination. Notwithstanding this emergent character of our study, this analysis systematically situated participants' narratives regarding vaccination decision-making in their country's political context.

The selected countries, all European liberal democracies, shared pandemic experiences due to relative geographical proximity and a similar burden of disease – even if this differed at different points in time. In all five countries included in this study, COVID-19 vaccines were available at no cost for the adult population at the time of the interviews. Portugal and Italy featured the highest COVID-19 vaccination rates in Europe at the time of the interviews (88.7 % and 78.4 % received at least one dose by 31 October 2021), whereas Germany (70.3 %), Austria (67.1 %), and Switzerland (66.1 %) featured lower rates. This trend continued as the pandemic progressed (Fig. 1) and resonates in some interviews.

Vaccination decisions must also be understood in the context of different vaccination systems. Here, data infrastructures have historically played an important role in monitoring and encouraging vaccine uptake in Nordic countries, for instance, by sending out written invitations for vaccinations [7]: Portugal put into place a national vaccination registry in 2018, Italy and Austria only introduced these in January and October 2021, respectively, and Switzerland and Germany to date have not implemented central national vaccination registries.

All five countries had implemented COVID-19 health certificates to prove vaccination against, recovery from, or a recent negative test for COVID-19. As an incentive to vaccinate, in Switzerland and Germany, COVID-19 tests for unvaccinated individuals to access public spaces had to be paid out of pocket in October and November 2021. Austrian policymakers had discussed strict restrictions for the unvaccinated in autumn 2021, resulting in stay-at-home orders for unvaccinated individuals in December 2021 and January 2022. In Germany and Austria, we found recurrent debates about vaccine mandates. Italy had vaccination requirements for healthcare workers in place since April 2021.

2.2. Recruitment

Participants were recruited through advertisements on the university websites of participating institutions, social media, snowballing, and convenience sampling. For Austria, Germany, Italy, and Switzerland, interviewees who had participated in previous rounds of interviews within the SolPan project were contacted again between June and November 2021. To make up for attrition and to increase sample diversity, some additional participants were recruited in Switzerland (n = 3) and Austria (n = 6) for T3 interviews. The Portuguese research team joined SolPan in 2021 and thus recruited all their participants at this time.

In the rapidly changing context of the COVID-19 pandemic, we aimed for well-defined, short windows of data collection but were unable to use traditional theoretical sampling (for more details on our sampling process and its underlying rationale, see [35]). The sample size was determined by resources whereas a minimum sample size of 20 interviews was agreed upon in the overall SolPan

consortium. To depict a diverse range of views and experiences, we recruited participants with different demographics (Table 1).

2.3. Data collection

We used largely identical interview guides (with small country-specific adjustments) in all countries. In T3, we asked participants about their experiences during the COVID-19 pandemic (see appendix for interview guide), including their experiences with and views on COVID-19 vaccination. Interviews were conducted in the respective language of the country by a member of the SolPan research commons. Interviewers had a background in the social sciences or bioethics and had prior experience with qualitative interviews. Where less experienced students were involved in interviewing, they were trained by an experienced SolPan member. All SolPan members met for one online training session on qualitative interviewing in March 2020.

Before commencing each interview, participants received information leaflets and were invited to raise any questions. Consent was obtained orally directly before the interview. Interviews lasted 30–80 min, were conducted via the phone or video chat (except for Portugal, where 21 interviews were conducted in person), audio-recorded, and transcribed verbatim. Swiss interviews held in a Swiss-German dialect were translated to standard German upon transcription. All transcripts were pseudonymised.

2.4. Data analysis

Qualitative analysis followed an inductive approach [5]. As part of the coding scheme developed by the SolPan research commons [33] parts of the interview transcripts concerning vaccination were tagged for further analysis. Each country team analysed the tagged sections of their interviews separately and wrote a report based on a template covering reasons and motives of participants for (not) getting vaccinated, changes in perceptions over time, perceived barriers and facilitators of vaccination (governmental incentives, national vaccination system), and a summary of features of the COVID-19 national immunisation programmes (cf. [29]). The lead authors condensed these reports into an early draft of the findings, which were iteratively discussed among the country teams.

3. Findings

We analysed 214 qualitative interviews with residents from Austria (n = 61), Germany (n = 40), Italy (n = 24 in June 2021 + n = 24 in October/November 2021), Portugal (n = 38), and Switzerland (n = 27) regarding the factors influencing individual COVID-19 vaccination decisions (see Table 1 for participant demographics). We report our findings in two parts: First, we establish how a range of socio-political factors specific to national contexts influenced individual COVID-19 vaccination decisions. The second part focuses on individual stances towards COVID-19 vaccines and the more immediate social surroundings influencing them by presenting a new typology of COVID-19 vaccination decision-making.

3.1. Embedding vaccination decisions in a broader socio-political context

To understand COVID-19 vaccination decision-making, we situated participants' narratives in their national context and COVID-19 vaccination governance more generally. Particularly in Portugal, our interviews point to the importance of administrative features of the national immunisation programme for vaccination decision-making. By sending out written invitations to residents through the digital vaccination registry, decision-makers empha-

Table 1

	Austria Sep-Oct 2021 (n = 61)		Germany Oct 2021 (n = 40)		Italy June 2021 (n = 24)		Nov 2021 (n = 24)		Portugal Oct/Nov 2021 (n = 38)		Switzerland Oct 2021 (n = 27)		Total (n = 214)	
Age														
18–30	14	23.0 %	8	20.0 %	3	12.5 %	1	4.2 %	10	26.3 %	5	18.5 %	41	19.2 %
31–45	12	19.7 %	16	40.0 %	9	37.5 %	10	41.7 %	8	21.1 %	6	22.2 %	61	28.5 %
46–60	21	34.4 %	4	10.0 %	6	25.0 %	6	25.0 %	10	26.3 %	7	25.9 %	54	25.2 %
61–70	13	21.3 %	8	20.0 %	2	8.3 %	3	12.5 %	8	21.1 %	4	14.8 %	38	17.8 %
70+	1	1.6 %	4	10.0 %	4	16.7 %	4	16.7 %	2	5.3 %	5	18.5 %	20	9.3 %
Gender														
Female	37	60.7 %	21	52.5 %	18	75.0 %	17	70.8 %	19	50.0 %	14	51.9 %	126	58.9 %
Male	24	39.3 %	19	47.5 %	6	25.0 %	7	29.2 %	19	50.0 %	13	48.1 %	88	41.1 %
Other	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0 %	0	0.0 %
Household														
Single	18	29.5 %	13	32.5 %	4	16.7 %	5	20.8 %	3	7.9 %	7	25.9 %	50	23.4 %
Couple	24	39.3 %	14	35.0 %	5	20.8 %	7	29.2 %	9	23.7 %	9	33.3 %	68	31.8 %
Living with child(ren) under 12	6	9.8 %	6	15.0 %	5	20.8 %	5	20.8 %	8	21.1 %	3	11.1 %	33	15.4 %
Living with child(ren) 12+	9	14.8 %	3	7.5 %	4	16.7 %	3	12.5 %	4	10.5 %	5	18.5 %	28	13.1 %
Other	4	6.6 %	4	10.0 %	6	25.0 %	4	16.7 %	14	36.8 %	3	11.1 %	35	16.4 %
Living area														
Big town	36	59.0 %	22	55.0 %	11	45.8 %	10	41.7 %	11	28.9 %	5	18.5 %	95	44.4 %
Medium/small town	11	18.0 %	8	20.0 %	7	29.2 %	10	41.7 %	16	42.1 %	9	33.3 %	61	28.5 %
Rural	14	23.0 %	10	25.0 %	6	25.0 %	4	16.7 %	11	28.9 %	13	48.1 %	58	27.1 %
Employment status														
Employed (long-term)	26	42.6 %	20	50.0 %	8	33.3 %	7	29.2 %	10	26.3 %	11	40.7 %	82	38.3 %
Self-employed	12	19.7 %	4	10.0 %	5	20.8 %	7	29.2 %	6	15.8 %	3	11.1 %	37	17.3 %
Employed (short-term)	3	4.9 %	2	5.0 %	3	12.5 %	1	4.2 %	5	13.2 %	6	22.2 %	20	9.3 %
Unemployed	3	4.9 %	2	5.0 %	2	8.3 %	2	8.3 %	4	10.5 %	0	0.0 %	13	6.1 %
Retired	10	16.4 %	10	25.0 %	3	12.5 %	3	12.5 %	9	23.7 %	7	25.9 %	42	19.6 %
Other	7	11.5 %	2	5.0 %	3	12.5 %	4	16.7 %	4	10.5 %	0	0.0 %	20	9.3 %
Education														
< 10 years	4	6.6 %	2	5.0 %	2	8.3 %	2	8.3 %	0	0.0 %	9	33.3 %	19	8.9 %
10–14 years	18	29.5 %	12	30.0 %	15	62.5 %	12	50.0 %	11	28.9 %	3	11.1 %	71	33.2 %
Higher education	39	63.9 %	26	65.0 %	7	29.2 %	10	41.7 %	27	71.1 %	15	55.6 %	124	57.9 %
Monthly household net income (prior to COVID-19 pandemic)														
< 1400 EUR/4000 CHF	9	14.8 %	4	10.0 %	2	8.3 %	3	12.5 %	8	21.1 %	5	18.5 %	31	14.5 %
1401–3000 EUR / 4001–7000 CHF	27	44.3 %	10	25.0 %	17	70.8 %	15	62.5 %	19	50.0 %	9	33.3 %	97	45.3 %
> 3000 EUR / 7000 CHF	25	41.0 %	26	65.0 %	5	20.8 %	6	25.0 %	11	28.9 %	13	48.1 %	86	40.2 %
Total	61	100.0 %	40	100.0 %	24	100.0 %	24	100.0 %	38	100.0 %	27	100.0 %	214	100.0 %

sised the necessity of vaccination and functioned to provide a robust technical system and social infrastructure at once. Implicitly, this was reflected in the interviews in references to the “social force” (*força social*) that rendered vaccination a social and organisational default and that was perceived positively by many Portuguese interview participants, as this participant illustrates:

Solidarity was almost imposed on us as a magic word, (...) as a social and political force of the pandemic. And I realised this a long time later. Even in political speeches (...) solidarity was not the spoken word, but all the speeches reminded (...) us of this solidarity implicit in everything we were doing. From now on, (...) forcibly, (...) complying with my rules or the rules imposed on me, is an act of solidarity with others. (POR-25)

Elsewhere, participants referred less to such a ‘social force’ but instead to governmental pressure to get vaccinated through vaccination requirements or the requirement to present a negative COVID-19 test for the unvaccinated to enter public spaces. In Italy, vaccination requirements for healthcare workers and the need for a Green Pass to access public spaces, including the workplace, elicited resistance from some: “I see it as a dictatorship [...] as it is unconstitutional. [...] it scared me so much.” (ITA-25). In Switzerland and Germany, unvaccinated people had to present negative COVID-19 tests for accessing restaurants, bars, museums, and other indoor leisure facilities but we find weaker opposition to these policies among Swiss and German respondents. On the contrary, several participants from Switzerland stressed that even though they felt that getting vaccinated should be voluntary, unvaccinated people

should bear the consequences of this choice. This position illustrates the emphasis on personal responsibility, which has been part of the Swiss COVID-19 policy narrative [38]:

And I think it's absolutely legitimate, if someone has this attitude [against getting vaccinated], that they then have certain disadvantages. Be it that they have to pay for the test themselves. Or that they can't go everywhere. I think they have to accept that if they choose this freedom [not to get vaccinated]. (SWI-27)

Financial incentives and hypothetical vaccination mandates were not portrayed as an important motive for or against vaccination, with the former being widely criticised among Austrian and Swiss participants:

I think it's a shame if [receiving 100EUR] is the only motivation to get vaccinated, on the other hand before people don't get vaccinated at all and then get sick and then we have to pay the costs through hospitalization, it's better if they get money for it. But I think it's just ridiculous that people decide to get vaccinated or not to get vaccinated because of something like that. (AUT-03)

In general, when evaluating the legitimacy of such vaccination incentives, participants weighed the value of controlling the pandemic against the value of protecting individual freedoms. In this way, our participants’ narratives mirrored the tensions that we observed in national vaccination policies.

In addition, some aspects of the national vaccination campaigns became very salient in public discourse, reinforcing the tangible social pressure to get vaccinated and, for some participants, creating distrust in authorities. Particularly among some German and Italian

participants, concerns with regards to the Oxford/AstraZeneca vaccine *Vaxzevria* undermined trust in scientific and political authorities as participants felt that safety concerns were left unaddressed. These concerns emerged in parallel with changing recommendations regarding target groups and a perceived lack of coordination between national and regional authorities. This German participant described their impressions regarding *Vaxzevria* as follows:

[...]STIKO [German national vaccination expert committee] was initially unclear as to whether it [Vaxzevria] should be approved at all. Then it was approved, then it was withdrawn again for people under the age of 60. So this back and forth [...] that's how it was in our personal life, too. We did get vaccinated but were not entirely comfortable with it. We would have rather taken a different [vaccine]. So that has caused a lot of uncertainty and has also driven a lot of people into an anti-vaccination stance, I think. (GER-45)

Across countries, many participants referred to official information sources, i.e. governments and scientific experts, as the most reliable sources. Several participants emphasised the importance of trustworthy information sources given the complexity of the pandemic situation, as this Portuguese participant described:

There you are, if the elites... We have to believe in the leaders [government, and scientists], don't we? I can't take my word for it, or my neighbors', who are not scientists, haven't done studies on anything, don't know anything about this. If we are told that this is the only way to control and improve and get through this all together, so be it. (POR-02)

By the same token, expressions of confusion and a perceived lack of a coherent institutional communication strategy by political decision-makers and scientists point to the key role of experts as providers of information:

These experts... we paid a lot of money to have all these experts, these luminaries. One said A, the other said B, the other said C and D. In the end, we never understood much. (ITA-26)

In sum, policy landscapes and public debates shaped trust in institutions and vaccination decision-making. While our participants reported on their individual experiences, the international setup of this study allowed us to situate these in their sociopolitical context. Below, we distill six distinct trajectories of vaccination decision-making from this data (see [Table 2](#) for an overview).

3.2. A typology of individual COVID-19 vaccination decision-making

1) Generally confident

In this first type of COVID-19 vaccination decision-making, participants stated that they decided to get vaccinated against COVID-19 as soon as vaccines became available, even before the licensing of the new vaccines. This decision was based on confidence in vaccines in general, as well as high trust in authorities and scientific experts recommending those vaccines, as these quotes demonstrate:

Well, I am generally a supporter of vaccination, because I believe that it is very helpful overall. And that's been rather confirmed by the whole COVID-19 thing. If anything, I'm even more in favour of vaccination now. (GER-16)

I said right from the start that I would take the vaccine immediately if they let me. (...) Honestly, I think I have nothing to lose, and I feel safer after a vaccine. I wasn't afraid at all of the vaccines and I was always looking forward [to the vaccine]. I have trust. (POR-37)

This speaks to earlier findings that, amongst other factors, more general sentiments regarding vaccination inform stances towards COVID-19 vaccination [28], with trust in its beneficial effects as well as a desire to protect oneself being key drivers.

Moreover, participants pointed to an enhanced sense of safety for their parents, grandparents, or other vulnerable people in their social environment as a motivation for getting vaccinated. One Italian participant, for example, saw vaccination as a “duty to ourselves but above all to others, to those who cannot get vaccinated” (ITA-05). This motive to ‘protect self and others’ was not limited to the *generally confident* type. As we will describe in the second decision type, other participants were hesitant at first, yet consideration for others trumped their doubts regarding safety.

2) Hesitant at first

A second group of participants pointed to a shift in the perception of COVID-19 vaccination over time. While initially hesitant or even skeptical in their accounts [12], they eventually chose to get vaccinated. Our data points to a range of interrelated drivers for this dynamic: First, initial safety concerns were outweighed by fears of long-term health complications arising from COVID-19 infections, as an Austrian participant explained:

[...] I have my brother-in-law, who is a doctor, and he has informed me in detail, he knows a lot about it [vaccination]. And then I told myself, okay, I'm going to get vaccinated. But then I found a lot of contrary opinions online. I got a lot of information on the internet, from acquaintances and from friends who said that I shouldn't get vaccinated and that it would have [negative] consequences, etc. So I decided not to get vaccinated. But then a friend of mine caught COVID-19, and had health problems over six weeks: fever attacks every night, shivering [...], so I decided I would get vaccinated after all. I got vaccinated anyway. (AUT-79)

Second, a desire to manage a more general sense of anxiety around the long-term societal implications of the pandemic prompted the decision to get vaccinated.

I think everything else scares me more. Maybe it's that. Maybe the situation at the beginning, where it was like, my goodness, now we all just have to sit at home, everybody's afraid of each other, the whole economy is going down the drain. [...] I think that scares me a lot more [than the vaccine]. That the world could be like this and stay like this. (SWI-22)

Third, as an elderly Swiss participant described, the decision to get vaccinated was also informed by their relatives' expectations and concerns for their health:

Because initially I still doubted, should I, shouldn't I [get vaccinated]? [...] And then [...] my daughter - actually, right, she didn't say, “you have to”. But I could see that she would rather have me do it. And then I just told myself, by all means, then I'll do it. Because if I got sick, [...] my daughter and granddaughter would look after me. They would be worried about me. I don't want them to think, “why didn't she get vaccinated?” So at that moment I just thought, yeah, I'll do my best. Because in case of illness, I would be happy if I still had people who would stand by me. (SWI-23)

Fourth, reports from celebrities, and more importantly, acquaintances or friends who had already received the dose without complications or adverse effects, helped participants overcome their initial fears as the vaccination campaign progressed. The notion of needing more time or wanting to wait (for better evidence or an enhanced sense of safety) was particularly striking with this group.

3) Uncertain after the fact

A third group of participants were vaccinated (at least once) against COVID-19 but expressed doubts and uncertainty afterwards about whether this was the right decision for them. These feelings also affected their willingness to receive booster vaccinations. Reasons for their emerging hesitancy included reports from acquaintances that had contracted COVID-19 despite having been

Table 2
Overview of types and their characteristics.

DIMENSIONS	TYPES					
	1	2	3	4	5	6
Stances towards vaccination	Generally confident	Hesitant at first	Uncertain after the fact	Doubtful but compliant	Hesitant but considering	Generally opposing
Vaccination status	Vaccinated	Vaccinated	Vaccinated	Vaccinated	Unvaccinated	Unvaccinated
Change of stance over time	Stable	Variable	Variable	Stable	Variable	Stable
Confidence about the efficacy of vaccine	High	Increasing over time	High	Low or indifference	Indifference	Low due to general mistrust
Confidence on the safety of the vaccine	High	Increasing over time	Decreasing over time	Low	Low	Low due to general mistrust
Most important influencing factors regarding decision	Self-protection, societal benefit, Availability of vaccines	Self-protection, societal benefit	Self-protection, societal benefit	Social influence	Fear of adverse effects, (Negative) incentives to get vaccinated	Individual autonomy, immunological superiority, general distrust
Most prominent disposition vis-à-vis vaccination	Positive expectation	Confident expectation	Positive expectation	Constrain/moral obligation	Fear	Autonomy and/or general distrust
Emotions post decision	Relief	Relief	Doubt	Doubt	Uncertainty (no final decision yet)	Defensiveness, anger

vaccinated or who had experienced (severe) side effects from COVID-19 vaccination. For example, one elderly woman from Switzerland said she had always been healthy but started to feel unwell repeatedly after being vaccinated against COVID-19. This resulted in her being hesitant to receive a third shot.

In addition, some were reluctant out of principle to get the third vaccine dose, expressing fears that booster vaccinations would be required too frequently – with economic profits for vaccine manufacturers but high costs for society.

And now my concern is: how long it is going to last? [...] I start to wonder, how often are we actually going to need to vaccinate ourselves and how much is that going to be conditioned by the vaccine market? Now that we're all vaccinated, now that cases have effectively dropped, I'm beginning to wonder about how much the economic implications will influence policy and therefore our lives, and whether this will be positive as well. (POR-28)

While this decision type was convinced about vaccination at first and became uncertain after receiving the vaccine, others got vaccinated despite persistent doubts.

4) Doubtful but compliant

Some participants were generally skeptical towards COVID-19 vaccines but got vaccinated nonetheless, by contrast to type 2 discussed above. In particular, this participant from Portugal framed their decision as a result of what they described as a social force: Their stance was shaped by their immediate social environments, such as family members or close friends.

I'm very skeptical about this aspect of vaccines. I, quite frankly, at this moment, am subject to being called all the time to go and take a second dose [...] And, to be honest, I'm afraid of getting it [the vaccine], I don't know why, but I didn't want to... My brother is the one who tells me "take it! Take it! Take it!", but I honestly don't know why... (POR-10)

Participants in this group felt torn between the institutional and social pressure to get vaccinated, their personal interest in getting vaccinated to move around freely, their safety concerns, and contradicting recommendations from their social environment. They were concerned that the expedited vaccine development process meant compromises for vaccine safety and feared that it might have long-term effects on people's health. This participant illustrates that these fears often came with a feeling of not being

informed properly: "In fact, there is talk of a third dose, but we continue with this lack of information, no one tells us what it may cause as side effects for certain individuals (POR-38)".

In addition to social and institutional pressure, some participants eventually complied with recommendations to avoid social and economic exclusion resulting from restrictions in place for unvaccinated people, as one Italian participant explained:

"I'm losing friends..." she said "... because of this [not being vaccinated]". Because they see me as a conspiracy theorist, someone who wants to put the whole of humanity at risk because I have doubts about the vaccine. But I can't even afford not to do it because I would be removed, my salary would not be paid, and with a daughter, I can't afford to lose my job. (ITA-16)

In sum, many participants who got vaccinated (types 1–4) based their decision on social reasons: They saw vaccination as an act of solidarity, as a way to avoid long-term health consequences resulting from COVID-19 infections, or as a means to regain freedom and social embeddedness. These motives resonate with the prominent discourse of the need to protect the elderly, showing that political discourse and lived experiences are inextricably linked.

5) Hesitant but considering

Some of the participants who were not vaccinated at the time of the interview had not made their final decision yet. They delayed COVID-19 vaccination for several reasons. First, these participants expressed a sense of anxiety around specific vaccines and their underlying technology. The speed with which COVID-19 vaccines were developed caused uncertainty, too:

I honestly don't feel like risking my life at 56 years old for something that hasn't been tested or has been tested minimally because we remember that important vaccines took 10, 15 even 20 years to become safe vaccines. (ITA-26)

Participants included in this group had often actively sought out information about the vaccine. Drawing on these sources – which they deemed to be trustworthy – they feared that the vaccine would have adverse effects such as strokes, sudden death, endocarditis, and other illnesses, including infections and thromboses. In contrast to the "generally confident" type, others also mentioned that they lacked trustworthy information and would want advice ideally from an expert in their direct personal environment:

I wouldn't know who I would trust 100 % in this regard. [...] You hear one thing and you think "oh yes, they are completely right". And then you hear about the contrary and you think "yeah, that's true". And then you wouldn't know anymore what the facts are. Because there are so many rumours around who is getting sponsored by whom." (SWI-24)

This type of hesitancy illustrates – as indicated above – that assessments of vaccines and decisions regarding vaccination are shaped by assessments of governance more generally. For example, these assessments of governance may concern the perceived integrity of scientific experts and regulatory agencies as well as the transparency regarding side-effects in clinical trials.

Notably, these unvaccinated participants expressed susceptibility to institutional pressure in the form of vaccination mandates or institutionalised incentives in the form of vaccination requirements for certain activities. Participants reacted to this prospect with a sense of resignation and felt that they had no effective choice in the matter out of fear of economic and social exclusion.

Well, if they now restrict it so that you can go to the gym or party only with vaccination, then I have no choice anyway. And I don't know if you've read it, but two weeks ago they were talking about soccer only being possible with 2G. So professional and amateur. That would be my reason [to get vaccinated]. (AUT-81)

Such negative incentives shed light on a more institutionalised form of social pressure that participants from type 4 (doubtful but compliant) also described. This is an important finding considering ongoing discussions regarding nudging towards vaccination and vaccination mandates: Other studies suggest that marginalising or blaming the unvaccinated may lead to even lower vaccine uptake among this population [30].

6) Generally opposing

A small subset of unvaccinated participants expressed categorical rejection of vaccines. These participants expressed strong and stable stances against COVID-19 vaccination. To them, not getting vaccinated became a matter of principle. One reason was the perception of being pressured and coerced by the government into vaccination: *"I really don't like to be externally influenced like this"* (SWI-24). In contrast to the type 5 participants (hesitant but considering), incentives to get vaccinated reaffirmed their decision not to get vaccinated.

The decision against getting the vaccine was frequently embedded in a skeptical attitude regarding COVID-19 policy measures more broadly. Participants felt that measures to manage the pandemic were disproportionate to the risks COVID-19 posed for themselves and society at large. Mistrust in political and scientific authorities, including national decision-makers and the WHO, as well as the media and the pharmaceutical industry, appears to have influenced decision-making across countries, too, as this Portuguese participant pointed out:

[...] the pharmaceutical industry is one of the richest in the world. And I believe in COVID-19, I believe in the virus, but I also believe that there was an opportunity, opportunism, to perhaps make a lot of money [...] once again, it was business and money that came before people's health because I don't know to what extent it makes sense for people to continue to take vaccines left and right. (POR-35)

Another recurrent reason against vaccination was a sentiment of immunological superiority. Some participants expressed the notion that their lifestyle (e.g. leading an active life, eating healthy, not smoking), personal health, and immune system would protect them against COVID-19:

I'm not at all worried about my own health anyway. That's why I still haven't gotten vaccinated. [...] So far I haven't had any COVID-19 symptoms and I've always had a good immune system. I know my body and I feel like I don't need it. I'm still young and healthy and, as I said, I don't see the need to protect myself yet. (AUT-81)

This final subgroup cannot be reduced to belief systems, poor information, or even ideology. While this stance is more stable over time than others covered here, it is equally shaped by individual experiences, social influence, and perceptions of vaccination policy and governance at large. The latter includes measures addressing the ongoing pandemic, but also a broader critique of the role of the pharmaceutical industry concerning vaccination.

4. Discussion

In the present paper, we examined how COVID-19 vaccination decision-making relates to national socio-political contexts and our participants' social environments by drawing on qualitative interviews conducted between June and November 2021 with residents from Austria, Germany, Italy, Portugal, and Switzerland.

The study sheds light on how people's vaccination decision-making is configured in relation to trust in governmental and other public policies. The COVID-19 pandemic led to increasing uncertainty not only concerning vaccines but also trustworthy information sources. Thus, rather than being a stable attitude towards public authorities, trust in governmental information is a complex relationship, emerging from the interactions of (a) previously held beliefs about the state and its governance, vaccinations more generally, and health, (b) perceptions of public policy at the time of (and immediately preceding) the vaccination campaign, and (c) input that people receive from their immediate social environments such as friends and family. In our data, this becomes evident, for example, in participants' reactions to the discussion of mandatory vaccination (for specific professional groups or the general public): Even people who were supportive of vaccination against COVID-19 were less likely to get vaccinated when faced with a general mandate. This newly emerging hesitation did not originate in their perceptions about vaccination as such. Instead, it originated in participants' perceptions of an adequate remit and limit of state power.

In our proposed typology, trust in authorities is a prominent decisional factor in types 1 (generally confident) and 3 (uncertain after the fact), and lack of trust is a decisional factor against vaccination for type 6 (generally opposing). This finding matches well-established models of vaccination decision-making [20,8]. Our study contributes to this literature by situating individual decision-making in particular sociopolitical contexts, showing that individual assessments of vaccinations are at once assessments of its governance. Moreover, we point to the relevance of social environments and interpersonal dynamics in shaping vaccine uptake. Social influence – in conjunction with policy discourses on solidarity – is particularly important for types 2, 4, and 5 (hesitant at first, doubtful but compliant; hesitant but considering). These findings could support vaccination policies that stress the collective good along with individual benefits.

The dynamic nature of stances towards COVID-19 vaccination illustrates the contingency of attitudes as well as actual decisions regarding vaccination. Even the different types we identified may not be mutually exclusive: For example, a doubtful but compliant person could later be uncertain after the fact. This means that decision-making is an ongoing process, particularly considering booster vaccinations, and that some people may be more susceptible to the constant flow of information and disinformation that has shaped the COVID-19 pandemic [16]. In addition, perceptions of

governmental and official scientific advice are complicated by and linked to informal discussions within a person's social environment, unstable trust relationships with authorities, and the ever-changing epidemiological circumstances of a pandemic. This means that vaccination campaigns are long-term social and political projects that require continuous evaluation and adjustment, as well as communication strategies that are sensitive to values, concerns, and expectations.

Finally, our typology supports the previously established notion that people do not necessarily support vaccines even if they get vaccinated [10,31]. Likewise, a considerable proportion of unvaccinated people are not generally opposed to vaccination. Yet, the sense of urgency that shaped policy discourse – including decision-makers, scientific experts, the media, and other stakeholders – left little room for addressing uncertainties, anxieties, and the vague but prominent notion of needing more time to come to a decision. Since crises often lead to situations of decisional urgency, any preparedness efforts should take into account the complexity and variability of vaccine stances.

4.1. Implications and limitations

Each of the five countries included in this study featured different epidemiological trajectories. Notwithstanding these differences, participant responses from these countries lent themselves well to an in-depth qualitative analysis of how personal stances towards vaccination, people's social environment, and their socio-political context influenced COVID-19 vaccination decision-making. While the qualitative nature of our analysis does not allow us to draw generalizable conclusions, we shed light on *how* the social environment and the political context shaped vaccination decision-making and stances during the COVID-19 pandemic.

Because of the fast-paced pandemic developments at the time, we could not aim for classical theoretical saturation when recruiting participants [35]. Instead, we considered demographic factors to the extent that we purposely recruited people from different genders, age groups, household incomes, family constellations, education, and living area (see Table 1). For the interviews held in 2021, we had to accept some dropouts, with the result that those identifying as male, elderly people, those unemployed or working in precarious jobs, those with basic education as well as those with a low income were underrepresented. Moreover, only a few participants opposed vaccinations in principle, as these are typically difficult to recruit (cf. [14], for a quantitative study). At the same time, the relative continuity in our sample allowed a unique perspective of vaccination decision-making over time.

5. Conclusions

This study illustrates how COVID-19 vaccination decisions were shaped not only by people's stances towards vaccination but also by their social environment, the broader socio-political context they lived in, and people's relationship to political and scientific authorities. The COVID-19 pandemic mobilised new and existing stances towards vaccination that we were able to observe in real time. For example, some who were hesitant at first became convinced about the safety and usefulness of the COVID-19 vaccines, whereas others were generally in favour of vaccination but became doubtful after receiving the first dose(s) of the COVID-19 vaccines (e.g. having experienced side effects), reports from their social environment, or disagreement with information or statements received from authorities. We conclude that, when stances change, they do so not merely because individual preferences change but because of (i) changing perceptions of the vaccine due to personal experiences or newly acquired (mis)information, (ii) influence

from people's close social environment, and (iii) implicit and explicit 'nudges' embedded in national immunisation programs that function not only as technical and logistical but social infrastructures, too.

We suggest that policy responses to the COVID-19 pandemic should systematically and explicitly consider the structural dynamics (e.g. centralised versus decentralised management) of vaccination decisions, while narratives of policy-makers, opinion leaders, and the media should focus more strongly on the affective components of decision-making. Especially in contexts in which debates about vaccination are highly politicised, vaccination decisions are often not a reflection only – or even primarily – of people's trust in vaccines, but their political stance and assessment of governance more broadly. In this context, the 'refusal' to get vaccinated can express dissatisfaction or anger about political leadership or the effect of other, non-vaccination related policies on various aspects of people's lives. Political decision-making thus needs to take into account people's lived experiences in addition to clinical and scientific data that is often expressed in metrics. Avoiding a social divide while emphasising the need to contribute to public health as a collective good undoubtedly entails walking a fine line but will be key in developing sustainable vaccination policies.

Data availability

Data will be made available on request.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

The first and corresponding authors contributed to this manuscript in equal parts and share first authorship. Funding for this study was received from: University of Basel research grant [3BE1003]; Federal Ministry of Education and Research in Germany: Global Health Research in the Wake of the Sars-CoV-2 Outbreak Grant [O1KI20510]; FWF – Austrian Science Fund (Elise Richter grant V561 and START grant Y1433); Cariplo Foundation, Social Science Research Grant (Bando Ricerca Sociale), 2020-1314. Open access funded by the FWF - Austrian Science Fund.

References

- [1] Al-Qerem W, Al Bawab AQ, Hammad A, Jaber T, Khaidr SI, Kalloush H, et al. Parents' attitudes, knowledge and practice towards vaccinating their children against COVID-19: A cross-sectional study. *Hum Vaccin Immunother* 2022;18(5):2044257. <https://doi.org/10.1080/21645515.2022.2044257>.
- [2] Bedford, H., K. Attwell, M. Danchin, H. Marshall, P. Corben, J. Leask (2018) Vaccine hesitancy, refusal and access barriers: The need for clarity in terminology. *Vaccine*, 36 (44) (2018), pp. 6556-6558.
- [3] Bell S, Clarke R, Mounier-Jack S, Walker JL, Paterson P. Parents' and guardians' views on the acceptability of a future COVID-19 vaccine: A multi-methods study in England. *Vaccine* 2020;38(49):7789–98. <https://doi.org/10.1016/j.vaccine.2020.10.027>.
- [4] Betsch C, Schmid P, Heinemeier D, Korn L, Holtmann C, Böhm R. Beyond confidence: Development of a measure assessing the 5C psychological antecedents of vaccination. *PLoS One* 2018;13(12):e0208601.
- [5] Charmaz K, Thornberg R. The pursuit of quality in grounded theory. *Qual Res Psychol* 2021;18(3):305–27. <https://doi.org/10.1080/14780887.2020.1780357>.
- [6] Dadras O, SeyedAlinaghi S, Karimi A, Shamsabadi A, Mahdiabadi S, Mohammadi P, et al. Public acceptability of COVID-19 vaccines and its predictors in Middle Eastern/North African (MENA) countries: A systematic review. *Hum Vaccin Immunother* 2022;1–16. <https://doi.org/10.1080/21645515.2022.2043719>.
- [7] Derrrough T, Olsson K, Gianfredi V, Simondon F, Heijbel H, Danielsson N, et al. Immunisation Information Systems – useful tools for monitoring vaccination

- programmes in EU/EEA countries, 2016. *Euro Surveill* 2017;22(17):pii=30519. <https://doi.org/10.2807/1560-7917.ES.2017.22.17.30519>.
- [8] Dubé E, Laberge C, Guay M, Bramadat P, Roy R, Bettinger JA. Vaccine hesitancy. *Hum Vaccin Immunother* 2013;9(8):1763–73. <https://doi.org/10.4161/hv.24657>.
- [9] ECDC (2022). *ECDC Vaccine Tracker*. (European Center for Disease Control). <https://vaccinetracker.ecdc.europa.eu/public/extensions/COVID-19/vaccine-tracker.html#uptake-tab>.
- [10] Enkel SL, Attwell K, Snelling TL, Christian HE. “Hesitant compliers”: Qualitative analysis of concerned fully-vaccinating parents. *Vaccine* 2018;36(44):6459–63. <https://doi.org/10.1016/j.vaccine.2017.09.088>.
- [11] Falkenbach M, Willison C. Resources or trust: What matters more in the vaccination strategies of high-income liberal democracies? *Health Policy and Technology* 2022;11(2):. <https://doi.org/10.1016/j.hlpt.2022.100618>.
- [12] Fiske A, Schönweitz F, Eichinger J, Zimmermann B, Hangel N, Sierawska A, et al. The COVID-19 Vaccine: Trust, doubt, and hope for a future beyond the pandemic in Germany. *PLoS One* 2022;17(4):1–15. <https://doi.org/10.1371/journal.pone.0266659>.
- [13] Geelen E, van Vliet H, de Hoogh P, Horstman K. Taming the fear of voice: Dilemmas in maintaining a high vaccination rate in the Netherlands. *Soc Sci Med* 2016;1982(153):12–9. <https://doi.org/10.1016/j.socscimed.2016.01.051>.
- [14] Henkel L, Sprengholz P, Korn L, et al. The association between vaccination status identification and societal polarization. *Nat Hum Behav* 2022. <https://doi.org/10.1038/s41562-022-01469-6>.
- [15] Heyerdahl LW, Vray M, Lana B, Tvardik N, Gobat N, Wanat M, et al. Conditionality of COVID-19 vaccine acceptance in European countries. *Vaccine* 2022;40(9):1191–7. <https://doi.org/10.1016/j.vaccine.2022.01.054>.
- [16] Hong H, Kim HJ. Antecedents and Consequences of Information Overload in the COVID-19 Pandemic. *Int J Environ Res Public Health* 2020;17(24). <https://doi.org/10.3390/ijerph17249305>.
- [17] Huber RA, Greussing E, Eberl J-M. From populism to climate scepticism: The role of institutional trust and attitudes towards science. *Environmental Politics* 2021;1–24. <https://doi.org/10.1080/09644016.2021.1978200>.
- [18] Kennedy J. Populist politics and vaccine hesitancy in Western Europe: An analysis of national-level data. *Eur J Pub Health* 2019;29(3):512–6. <https://doi.org/10.1093/eurpub/ckz004>.
- [19] Kohler S, Koinig I. The Effect of Science-Related Populism on Vaccination Attitudes and Decisions. *J Behav Med* 2022. <https://doi.org/10.1007/s10865-022-00333-2>.
- [20] Larson HJ, Clarke RM, Jarrett C, Eckersberger E, Levine Z, Schulz WS, et al. Measuring trust in vaccination: A systematic review. *Hum Vaccin Immunother* 2018;14(7):1599–609. <https://doi.org/10.1080/21645515.2018.1459252>.
- [21] Latkin C, Dayton L, Miller J, Yi G, Balaban A, Boodram B, et al. A longitudinal study of vaccine hesitancy attitudes and social influence as predictors of COVID-19 vaccine uptake in the US. *Hum Vaccin Immunother* 2022;1–9. <https://doi.org/10.1080/21645515.2022.2043102>.
- [22] Lazarus JV, Ratzan SC, Palayew A, Gostin LO, Larson HJ, Rabin K, et al. A global survey of potential acceptance of a COVID-19 vaccine. *Nat Med* 2021;27(2):225–8. <https://doi.org/10.1038/s41591-020-1124-9>.
- [23] Ledford CJW, Cafferty LA, Moore JX, Roberts C, Whisenant EB, Garcia Rychtarikova A, et al. The dynamics of trust and communication in COVID-19 vaccine decision making: A qualitative inquiry. *J Health Commun* 2022;1–10. <https://doi.org/10.1080/10810730.2022.2028943>.
- [24] MacDonald, N. E., & SAGE Working Group on Vaccine Hesitancy. Vaccine hesitancy: Definition, scope and determinants. *Vaccine* 2015;33(34):4161–4. <https://doi.org/10.1016/j.vaccine.2015.04.036>.
- [25] Morales GI, Lee S, Bradford A, De Camp A, Tandoc EC. Exploring vaccine hesitancy determinants during the COVID-19 pandemic: An in-depth interview study. *SSM - Qualitative Research in Health* 2022;2: <https://doi.org/10.1016/j.ssmqr.2022.100045>.
- [26] Parsons Leigh J, Halperin D, Mizen SJ, FitzGerald EA, Moss SJ, Fiest KM, et al. Exploring the impact of media and information on self-reported intentions to vaccinate against COVID-19: A qualitative interview-based study. *Hum Vaccin Immunother* 2022;1–9. <https://doi.org/10.1080/21645515.2022.2048623>.
- [27] Paul KT, Eberl J-M, Partheymüller J. Policy-Relevant Attitudes Toward COVID-19 Vaccination: Associations With Demography, Health Risk, and Social and Political Factors. *Frontiers. Public Health* 2021;9: <https://www.frontiersin.org/article/10.3389/fpubh.2021.671896>.
- [28] Paul KT, Zimmermann BM, Corsico P, Fiske A, Geiger S, Johnson S, et al. Anticipating hopes, fears and expectations towards COVID-19 vaccines: A qualitative interview study in seven European countries. *SSM - Qualitative Research in Health* 2022;2: <https://doi.org/10.1016/j.ssmqr.2021.100035>.
- [29] Paul KT, Loer K. Contemporary vaccination policy in the European Union: tensions and dilemmas. *J Public Health Policy* 2019;4(2):166–79. <https://doi.org/10.1057/s41271-019-00163-8>.
- [30] Rosenfeld DL, Tomiyama AJ. Jab my arm, not my morality: Perceived moral reproach as a barrier to COVID-19 vaccine uptake. *Soc Sci Med* 2022;294: <https://doi.org/10.1016/j.socscimed.2022.114699>.
- [31] Rughiniş C, Vulpe S-N, Flaherty MG, Vasile S. Shades of doubt: Measuring and classifying vaccination confidence in Europe. *Vaccine* 2022. <https://doi.org/10.1016/j.vaccine.2022.09.039>.
- [32] Slotte P, Karlsson LC, Soveri A. Attitudes towards mandatory vaccination and sanctions for vaccination refusal. *Vaccine* 2022;S0264410X22006971. <https://doi.org/10.1016/j.vaccine.2022.05.069>.
- [33] SolPan Consortium. (2021). *Codebook “Solidarity in Times of a Pandemic.”* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3776127.
- [34] Sprengholz, P., Korn, L., Eitze, S., Felgendreff, L., Siegers, R., Goldhahn, L., De Bock, F., Huebl, L., Böhm, R., & Betsch, C. (2022). Attitude toward a mandatory COVID-19 vaccination policy and its determinants: Evidence from serial cross-sectional surveys conducted throughout the pandemic in Germany. *Vaccine*, S0264410X2200130X. <https://doi.org/10.1016/j.vaccine.2022.01.065>.
- [35] Wagenaar H, Kieslich K, Hangel N, Zimmermann B, Prainsack B. Collaborative comparisons: A pragmatist approach towards designing large-scale, comparative qualitative research. *SSM - Qualitative Research in Health* 2022;2: <https://doi.org/10.1016/j.ssmqr.2022.100172>.
- [36] Walcherberger C, Eberl J-M, Partheymüller J, Paul KT, Stamm TA. COVID-19 vaccine hesitancy and gender. *European Journal of Politics and Gender* 2022;5(2):270–4. <https://doi.org/10.1332/251510821X16498676658252>.
- [37] Yaqub O, Castle-Clarke S, Sevdalis N, Chataway J. Attitudes to vaccination: A critical review. *Soc Sci Med* 2014;112:1–11. <https://doi.org/10.1016/j.socscimed.2014.04.018>.
- [38] Zimmermann BM, Eichinger J, Schönweitz F, Buyx A. Face mask uptake in the absence of mandates during the COVID-19 pandemic: A qualitative interview study with Swiss residents. *BMC Public Health* 2021;21(1):2171. <https://doi.org/10.1186/s12889-021-12215-4>.
- [39] Zimmermann BM, Wagenaar H, Kieslich K, Prainsack B, Meyers G, Buyx A, et al. Democratic research: Setting up a research commons for a qualitative, comparative, longitudinal interview study during the COVID-19 pandemic. *SSM - Qualitative Research in Health* 2022;2: <https://doi.org/10.1016/j.ssmqr.2022.100158>.