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Short communication

The French public's attitudes to a future COVID-19 vaccine: The politicization of a public health issue

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ABSTRACT

As Covid-19 spreads across the world, governments turn a hopeful eye towards research and development of a vaccine against this new disease. But it is one thing to make a vaccine available, and it is quite another to convince the public to take the shot, as the precedent of the 2009 H1N1 influenza illustrated. In this paper, we present the results of four online surveys conducted in April 2020 in representative samples of the French population 18 years of age and over (N = 5018). These surveys were conducted during a period when the French population was on lockdown and the daily number of deaths attributed to the virus reached its peak. We found that if a vaccine against the new coronavirus became available, almost a quarter of respondents would not use it. We also found that attitudes to this vaccine were correlated significantly with political partisanship and engagement with the political system. Attitudes towards this future vaccine did not follow the traditional mapping of political attitudes along a Left-Right axis. The rift seems to be between people who feel close to governing parties (Centre, Left and Right) on the one hand, and, on the other, people who feel close to Far-Left and Far-Right parties as well as people who do not feel close to any party. We draw on the French sociological literature on ordinary attitudes to politics to discuss our results as well as the cultural pathways via which political beliefs can affect perceptions of vaccines during the COVID-19 pandemic.

Credit author statement

JKW designed the study, participated in the analysis and wrote the article. CA and PPW participated in the design of the study, in writing the paper and conducted the statistical analyses.

1. Introduction

As Covid-19 spreads across the world, governments turn a hopeful eye towards research and development of a vaccine against this new disease (Yamey et al., 2020). In the past century, vaccination has progressively been seen not only as one of "medicine's greatest life-savers" but also as the ideal form of intervention against infectious diseases (Allen, 2008; Holmberg et al., 2017; Moulin, 1996). The special status of vaccination is manifest in contemporary pandemic preparedness and management as it has been institutionalized in the past 20 years. In most countries in the global North, pandemic preparedness plans highlight the importance of devoting special resources to vaccine research and development as well as fast-tracking market approval procedures (Torny, 2012). The hopes put in vaccination have not been dampened by the experience of the latest main pandemic in the global North: the 2009 H1N1 influenza scare.

But while governments succeeded in rolling out vaccines before the main wave of influenza cases hit the Northern hemisphere, they did not obtain high vaccination coverage in the public. In most countries, this vaccination campaign was a resounding failure. Sweden, Canada, the USA, the Netherlands, Hungary, and Norway were the only countries to achieve more than 20% coverage. In France, only 8% of the population was vaccinated (Setbon and Raude, 2010). It is one thing to make a vaccine available, and it is quite another to convince the public to take the shot. In the case of a putative future COVID-19 vaccine, it is crucial to take into consideration another development of the past ten to twenty years. For more than a decade now, public doubt about vaccines has become an increasingly important global issue (Dubé et al., 2013; Larson et al., 2016). This has recently led the World Health Organization to include "Vaccine Hesitancy" – i.e. negative attitudes towards vaccines

that do not amount to a radical refusal of any form of vaccination – in its list of "ten threats to global health in 2019". When a vaccine will be available, will it be widely used? In countries where vaccine hesitancy was widespread before the COVID-19 epidemic, will it affect the coronavirus vaccination campaign?

In this paper, we present the results of four online surveys conducted in April 2020 in representative samples of the French population 18 years of age and over (N = 5018). These surveys were conducted during a period when the French population was on lockdown and the daily number of deaths attributed to the virus reached its peak. We found that if a vaccine against the new coronavirus became available, almost a quarter of respondents would not use it. We also found that attitudes to this vaccine were correlated significantly with political partisanship and engagement with the political system.

These results are interesting not only because one would expect hesitancy toward this particular vaccine to be weak given the strength of the international mobilization, the stringency of containment measures, and the number of deaths rising rapidly. They are also striking because, at the time, no prominent politician had questioned the safety or efficacy of the future COVID-19 vaccine. This is in sharp contrast with previous studies of the relationship between politicization and vaccine hesitancy which have focused on vaccines for which there have been much political investment in mainstream news - such as the MMR and HPV vaccines in the United States of America (Baumgaertner et al., 2018; Featherstone et al., 2019; Joslyn and Sylvester, 2017; Kahan, 2014). We set these results against the backdrop of the recent transformations of the French political landscape and discuss the cultural pathways via which political beliefs can affect perceptions of vaccines during the COVID-19 pandemic.

2. Methods

2.1. Design and sample

During each week of April 2020, we conducted a cross-sectional online survey among a sample representative of the French population aged 18 and over (N = 1006 from 7th to 9th April, N = 1005 from 15th to 17th, N = 1004 from 24th to 26th, N = 2003 from 30th April to 4th May, global sample N = 5018). For each survey, participants were randomly selected from an online research panel of more than 750,000 nationally representative households of the French general population developed and maintained by IFOP (Paris, France), a survey research firm (https://www.ifop.com/). Random sampling was stratified to match French official census statistics for gender, age, occupation, size of the population in the area of residence and region. The study design was approved by the ethical committee of the University Hospital Institute Méditerranée Infection (#2020–018).

2.2. Data collected

In addition to background socio-economic variables (gender, age, educational level), we computed each respondent's equivalized household income per month, taking the size and composition of the household into account, using the Organization for Economic Cooperation and Development's scale. Then we built a three-item indicator: 'low income' refers to the first quartile of the household income per consumption unit (HICU), 'intermediate income' to the second and third quartile, 'high income' to the last quartile. Regarding the COVID-19 pandemic, participants were also asked whether they have been diagnosed with COVID-19 and to what extent they were concerned about being infected with it. They had to mark their level of concernvfrom 0 (no concerned at all) to 10 (very concerned) and we re-coded their answer into a binary outcome: 'veryconcerned' for marks 9 and 10, 'less concerned' for lower marks. Regarding partisanship, we followed a standard practice in contemporary political science research in France (Fillieule et al., 2017). Respondents were asked to which French political party they felt the

closest (among a quite comprehensive list of 17 parties), and responses were encoded into a four-item outcome: Far-Left, Green party, Left/-Center/Right governmental parties, Far-Right. For those who answered they felt close to no party, we aimed to assess their degree of distance toward the political system. We therefore considered their voting behavior at the first round of the 2017 presidential election, and we regrouped them into three categories: no current preference but voted in 2017, no current preference and abstained in 2017, no preference and other (for those who did not respond to the question related to the 2017 election or were too young to vote). Regarding vaccination, respondents were asked whether they would agree to get vaccinated if a vaccine against the COVID-19 was available: 'certainly', 'probably', 'probably not', 'certainly not'. Responses were merged into a binary outcome: 'COVID-19 vaccine refusal' equaled 1 if participants answered probably or certainly not, otherwise the value was 0. Finally, in case they answered probably or certainly not, they had to indicate why. Three non-exclusive reasons were proposed: being against vaccination in general, thinking that a vaccine produced in a rush is too dangerous, and finally considering the vaccine useless because of the harmless nature of the COVID19. Respondents could also elaborate about other motives.

2.3. Statistical analysis

We first used bivariate analyses and a logistic regression to investigate factors associated with COVID-19 vaccine refusal, using respondents' socio-economic background, COVID-19 diagnosis and concern, and political preferences as covariates. We repeated these analyses for each of the three pre-coded reasons for refusal. As the corresponding sample sizes were smaller, we used a forward stepwise selection method (entry threshold p < 0.05) to retain statistically significant covariates only.

3. Results

3.1. Almost a quarter of respondents would not take a vaccine against COVID-19

Among the 5018 individuals surveyed, almost a quarter declared that they would refuse "certainly" (7.9%) or "probably" (16.1%) the coronavirus vaccine if it were available. First, we compared the two groups of people who would refuse the coronavirus vaccine. No difference was found according to gender, age, and COVID-19-related concern. However, other differences were observed as people with an educational level under the High School degree, those with a low or intermediate level of household income per consumption unit (HICU), and those feeling close to a Far-Right party, were more numerous to be certain they would refuse the vaccine. Table 1 displays the results of descriptive and multivariate analyses highlighting factors associated with refusing the coronavirus vaccine ("certainly" or "probably"). Therefore, refusing the vaccine was found to differ according to sociodemographic characteristics such as gender, age, and level of HICU: women, young people (aged under 35 years old), and those with a lower level of HICU were more likely to refuse the vaccine. By contrast, no difference was observed across educational levels. Surprisingly, no difference was found between people who were diagnosed with COVID-19 (2,5% of our sample) and those who were not. However, COVID-19-related concern seemed to have a strong influence on intentions to vaccinate: those who were highly concerned about being infected with the disease were less likely to refuse the vaccine compared to others (16.9% against 25.8%, p < 0.0001).

After adjustment for gender, age, education level, HICU, and COVID19 diagnosis in a logistic model, partisan preference remained significantly associated with refusing the coronavirus vaccine. Indeed, respondents who felt close to radical parties and those who did not feel close to any party and did not vote at the last presidential campaign were significantly more likely to refuse the vaccine compared to respondents

Table 1
Variables associated with COVID19-related vaccine hesitancy.

		Coronavirus vaccine refusal	
		Row %	Adjusted OR [95% CI]
	All	24.0	
Gender		***	
	Men (n = 2389)	20.6	0.75 [0.65; 0.86]***
	Women (n = 2629)	27.1	-1-
Age		***	
	<35 y.o (n = 1290)	33.1	1.24 [1.06; 1.45]***
	35 - 64 y.o (n = 2494)	25.8	-1-
	>64 y.o (n = 1234)	10.7	0.41 [0.33; 0.51]***
Educational level			
	Lower than High School degree (n = 2550)	23.6	0.97 [0.78; 1.20]
	High School degree (n = 952)	27.5	1.03 [0.81; 1.30]
	Two- or three-year undergraduate degree (n = 712)	23.8	0.95 [0.74; 1.22]
	Higher than Bachelor's degree (n = 804)	21.4	-1-
Level of HICU		***	
	Low (n = 1116)	31.8	1.65 [1.31; 2.09]***
	Intermediate (n = 2766)	24.7	1.50 [1.23; 1.83]***
	High (n = 1136)	14.5	-1-
Has been diagnosed with COVID-19			
	Yes (n = 125)	23.8	0.77 [0.50; 1.19]
	No (n = 4893)	24.0	-1-
COVID-19-related concern		***	
	High (>8) (n = 1034)	16.9	0.54 [0.45; 0.66]***
	Lower (n = 3984)	25.8	-1-
Partisan preference[#]		***	
	Far-Left parties (n = 558)	28.9	1.36 [1.06; 1.74]*
	Green party (n = 398)	24.4	1.00 [0.75; 1.33]
	Left/Center/Right parties (n = 1552)	12.5	0.60 [0.48; 0.75]***
	Far-Right parties (n = 787)	33.1	1.81 [1.45; 2.27]***
	No preference but voted in 2017 (n = 863)	22.8	-1-
	No preference and abstained in 2017 (n = 309)	37.6	1.59 [1.19; 2.12]**
	Other no preference (n = 551)	32.0	1.32 [1.03; 1.68]*

*p < 0,05; **p < 0,01; p < 0.001.

Population: respondents for the waves 3 to 6 of the COCONEL survey (n = 5018).

[#] Far-Left parties pool: LO, NPA, FI, PC; Green party is EELV; Left/Center/Right parties pool: G.s, PS, LReM, MoDem, Parti Radical, UDI, Agir, LR; Far-Right parties pool: DLF, UPR, LP, RN.

with no partisan preference but who still voted in 2017 2017 (aOR [95% CI]: 1.36 [1.06; 1.74] for Far-Left parties, 1.59 [1.19; 2.12] for those with no preference and who abstained, and 1.81 [1.45; 2.27] for Far-Right parties), and even more compared to people who felt close to governing parties (Right, Centre and Left) (aOR [95% CI]: 0.60 [0.48; 0.75]).

3.2. Reasons to refuse the coronavirus vaccine

Three main, but not exclusive reasons, were given to refuse the coronavirus vaccine: being against vaccination in general (reason chosen by 27.6% of refusers), thinking that a vaccine produced in a rush is too dangerous (64.4%), and finally considering the vaccine useless because of the harmless nature of COVID-19 (9.6%). Moreover, around eight percent of refusers declared another reason to reject this vaccine, including a general lack of trust (about politics, about medicine, about science, about the pharmaceutical industry or unspecified), doubt about the efficiency of the vaccine (because of the mutation process of the virus, comparisons with the influenza vaccine), but also the belief that the respondent was already immunized against the virus. But these responses were too diverse to be pooled into a new category.

Analysis of these three main reasons highlighted the differentiated effects of the factors identified as associated with refusing the coronavirus vaccine according to the reason given. Table 2 shows for instance that men were more likely to refuse the vaccine because of the harmless nature of the disease whereas women were conversely more likely to be against the vaccine (this one specifically or because they are against vaccination in general).

These logistic models did not identify any strongly different effects of partisan proximity according to the reason for refusing the vaccine.

However, some of those effects seem stronger according to the reason given. Far-Right parties related effect was higher when people refused the vaccine because they were against vaccination in general (aOR = 2.14 *versus* 1.81 in the full model), while Far-Left parties related effect was higher when people refused the vaccine because of the harmless nature of the disease (aOR = 2.33 *versus* 1.36 in the full model). Also, people who did not feel close to any party and did not vote at the last presidential campaign were more likely to refuse the coronavirus vaccine following one main reason: they thought that a vaccine produced in a rush is too dangerous. Finally, people who felt close to governing parties (Left-Center-Right), were much less prone to refuse the vaccine for the first two reasons (being against vaccination in general: aOR = 0.52; thinking that this vaccine is too dangerous: aOR = 0.59; all reasons confounded in the full model: aOR = 0.60).

4. Discussion and conclusion

We showed that almost a quarter of French adults would not get vaccinated against COVID-19 and that the main reason for this reticence was the idea that this vaccine would not be safe. This result is coherent with previous studies showing that, in France, reticence towards vaccines tends to be vaccine-specific rather than targeted at vaccination in general (Ward et al., 2019). This tendency is not limited to the French public as the literature on vaccine hesitancy has shown in the past ten years (Attwell, 2018; Dubé et al., 2013). But our main finding was that partisanship was an important determinant of attitudes to this future vaccine.

To our knowledge, this is the first study of the effect of politicization on attitudes to vaccines in France, one of the most vaccine-hesitant countries in the world (Gallup, 2019; Ward et al., 2019). The role of

Table 2
Variable associated with refusing COVID19 vaccine according to the reason exposed.

	Against vaccination in general *versus* acceptance	Hesitancy about the coronavirus vaccine *versus* acceptance	Harmless nature of COVID-19 *versus* acceptance
	Adjusted OR [95% CI]	Adjusted OR [95% CI]	Adjusted OR [95% CI]
Gender			
Men	0.56 [0.44; 0.72]***	0.69 [0.59; 0.82]***	1.77 [1.19; 2.64]**
Women	-1-	-1-	-1-
Age			
<35 y.o	NS	1.36 [1.14; 1.62]***	2.24 [1.52; 3.31]***
35 - 64 y.o		-1-	-1-
>64 y.o		0.29 [0.22; 0.38]***	0.06 [0.01; 0.28]***
Level of HICU			
Low	2.49 [1.66; 3.73]***	NS	NS
Intermediate	1.86 [1.29; 2.70]**		
High	-1-		
COVID-19-related concern			
High (>8)	0.46 [0.33; 0.64]***	0.68 [0.55; 0.84]***	0.27 [0.13; 0.57]***
Lower	-1-	-1-	-1-
Partisan preference			
Far-Left parties	1.56 [1.03; 2.37]*	1.43 [1.07; 1.91]*	2.34 [1.06; 5.17]*
Green party	1.19 [0.74; 1.93]	1.04 [0.75; 1.44]	1.02 [0.37; 2.80]
Left/Center/Right parties	0.50 [0.33; 0.76]**	0.56 [0.43; 0.74]***	1.03 [0.48; 2.21]
Far-Right parties	2.15 [1.49; 3.11]***	1.47 [1.12; 1.92]**	3.94 [1.92; 8.08]***
No preference but voted in 2017	-1-	-1-	-1-
No preference and abstained in 2017	1.43 [0.87; 2.37]	1.74 [1.26; 2.41]***	0.95 [0.30; 3.04]
Other no preference	1.44 [0.96; 2.17]	1.22 [0.91; 1.63]	2.92 [1.37; 6.23]**

*p < 0,05; **p < 0,01; p < 0.001.
[NS] covariate not selected by the stepwise procedure.
Population: respondents for the waves 5/6, 7/8, 9/10, 11/12 of the COCONEL survey (n = 5018).
Variable put in the models and unselected in all of them by the stepwise procedure: education level and being diagnosed with COVID19.

politicization in vaccine hesitancy has mostly been studied in the United States of America where political polarization has increasingly become an object of concern in the past 10 years. Several studies found that conservative ideology or republican partisan identity is associated with various forms of vaccine scepticism (Baumgaertner et al., 2018; Featherstone et al., 2019; Hornsey et al., 2020; Joslyn and Sylvester, 2017; Rabinowitz et al., 2016). Other American studies have found no impact of politicization (Kahan, 2014; Pew Research Center, 2020). Recently, polls have suggested that Republicans are more likely to believe conspiracy theories relative to a future COVID-19 vaccine or to refuse it (APNORC, 2020; CNN, 2020; Yahoo! News, 2020). In Australia, one study found little effect of partisan identity on the propensity to believe vaccines are unsafe (only people who would vote for the green party were slightly more likely to believe that) (Smith et al., 2019) while another found that negative attitudes to vaccines were linked to "minor political parties" (Rozbroj et al., 2019). In our study, we found that attitudes towards this future vaccine do not follow the traditional mapping of political attitudes along a Left-Right axis. We found an opposition between people who feel close to governing parties (Right, Centre and Left) on the one hand, and, on the other, people who feel close to Far-Left and Far-Right parties as well as people who do not feel close to any party (with the highest reticence for those among them who did not vote in 2017). These results underline the two main transformations of the French political system of the past 20 years: a rise in abstention and a possible current crisis of the Left-Right partisan dichotomy.

Let us start with non-partisanship and abstention. In France, the main explanation for abstention is not that it reflects a conscious rejection of the political system in its present form (Braconnier, 2017; Buton et al., 2016). There is evidence to suggest that dissatisfaction toward the political system is also very prevalent among those who do vote. Abstaining would rather reflect an absence of political socialization: the development of a taste for political issues as well as the presence in everyday life of the type of cultural practices (such as following the news) that lead people to maintain this interest as well as prompt them to participate in political elections. The fact that

non-partisanship is associated with refusal of a future vaccine - especially when combined with abstention – suggests that it reflects at least some dissatisfaction and distrust of institutions. This might be because abstention is more prevalent among the poor and marginalized, groups most at risk of having difficult interactions with the various institutions of the French State or to feel abandoned by them. This interpretation is supported in part by our finding that refusal increases as income decreases. Nevertheless, this interpretation is weakened by the fact that non-partisanship was such a significant factor even after controlling for income.

As for the rift in attitudes between people who feel close to governing parties and those who feel close to Far-Right and Far-Left parties, this could reflect an on-going transformation of the French political landscape. This transformation is partly due to the evolution of the main Far-Right party: the "Rassemblement National" (RN). Since 2011, it has been engaged in a strategy of normalisation or "de-demonization" by rebranding their xenophobic nationalism as a defence of the hard workers against the pro-European elites (Crépon and Mayer, 2015; Dézé, 2017). This strategy has allowed the FN-RN to gain in popularity to the point that it is considered the main opposition party since the 2017 presidential election. The emergence of Emmanuel Macron's centrist party La Republique en Marche (LaREM) is another important evolution as former left-wing voters moved to this centrist party while others moved towards the Far-Left Party France Insoumise. The emergence of LaREM and the rise of the FN-RN have also affected the main Right-wing party Les Républicains which has struggled to respond to this increased competition on both sides. These phenomena combined with the emergence of new radical political media, and with the development of social media has led many to believe that we are witnessing a process of polarization "à la française": a "vertical" polarization where the opposition is not so much between the Left and the Right but between institutionalist actors (governing parties, mainstream media …) and anti-elite actors (radical parties, social movements and media) (Institut Montaigne, 2019).

But how can these political opinions affect representations of a

putative future vaccine against COVID-19? Indeed, most issues related to health are not commonly perceived as politicized. How do individuals come to include a vaccine in the list of objects and decisions upon which they apply their political understanding of the world? In his work on motivated reasoning, Dan Kahan suggests two pathways via which worldviews and ideology come to play in people's perceptions: a) the person spontaneously perceives the issue as warranting a political-cultural interpretation, and b) the sources of information provide cues signalling the political-cultural nature of the issue at hand (Kahan, 2012; Kahan et al., 2017). Activists and politicians have a crucial role in foregrounding politics in people's perception of issues. In the case of the putative future vaccine against COVID-19, it is important to note that, to our knowledge, at the time of writing this paper, no major political figure had voiced concern over these future vaccines. This constitutes a sharp difference with other studies of the effect of politicization on vaccine hesitancy which have tended to focus either on attitudes to vaccination in general or on attitudes to intensely debated and politicized vaccines such as MMR and HPV. This particularity suggests that the reticence we recorded is at least in part due to the spontaneous understanding of this issue using a political lens. But the question remains of what, in this idea of a future COVID-19 vaccine, constitutes a partisan cue for our respondents. We suggest two non-exclusive interpretations.

Firstly, this politicized reticence could reflect the mobilizations in the past years of Far-Right and Far-Left activists against certain vaccines or vaccination in general. These mobilisations could have sensitized Far-Right and Far-Left leaning people to vaccine-related issues in general. But if we follow this interpretation, we should find the strongest reticence among people feeling close to the Green party since environmental activists have been among the most visible figures of vaccine criticism in the past ten years (Ward, 2016). The fact that we only found a relatively small over-representation of reticence among them could reflect the diversisty within its activist base and electorate. The party attracts both moderate reformers who advocate for more sustainable development and for alliances with governing parties and radical activists who advocate for a more significant overhaul of institutions (Boy, 2012; Ollitrault, 2008). The issue of vaccination seems to have fallen spot on these lines and has been the object of much internal and public debate in the past years. Those who pushed forward the issue of vaccination could only represent a dissenting minority within this movement.

Secondly, this reticence could reflect the increasing politicization of debates surrounding the pandemic. During the period covered by our surveys, members of the Far-Right and the Far-Left have severely criticised the government on many issues. This was particularly the case of the Rassemblement National which seems to have adopted a strategy of systematic criticism, while France Insoumise has opted for more targeted attacks (Le Monde, 2020). Both have presented the various difficulties faced during this pandemic and the errors made by public authorities as reflecting the ideology of "Macronism". In doing so, they may have fostered a general distrust of public health authorities and decisions regarding anything related to COVID-19 – including future vaccines.

This brings us to our final point. Whether this hesitancy will spread or shrink will depend on the evolution of knowledge on the virus and its spread in France. It will also depend on the mobilisations of vaccine critical activists, especially on social media, which some studies suggest have intensified since the beginning of the pandemic (Ball, 2020). While we could not assess the extent of French vaccine critics' mobilisations on social media and their effect on the wider public's attitudes, such phenomena should be investigated further to better understand the origins of the reticence towards a future COVID-19 vaccine. But how governments will anticipate possible reticence in the future and whether they manage to avoid vaccines becoming part of political debates constitutes another crucial factor. The choice to make the future vaccine mandatory or not is also likely to bear on the public's perception, as studies suggest that political polarization is stronger on the issue of legal mandates than

it is on the issue of vaccine safety (Blank and Shaw, 2015; Kahan, 2014). It is crucial to guarantee that all the necessary precautions are taken before marketing the vaccine and to communicate transparently on the process as we have argued elsewhere (COCONEL, 2020).

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