Research Supplement for ‘Communicating about Vaccination in the UK’

Research methods and sample composition

This supplement provides detailed information on the research informing FrameWorks’ strategic brief on reframing vaccination in the United Kingdom. Below, we outline the research conducted with researchers and practitioners, and with members of the public providing the evidence base for the brief, describing the methods used and sample composition.

Core ideas from the field of vaccination in the United Kingdom

To develop an effective strategy for communicating about an issue, it is necessary to identify a set of core ideas to get across about vaccination in the United Kingdom. For this project, these ideas were garnered from researchers and practitioners in the field of vaccination. FrameWorks researchers conducted eight one-hour interviews with researchers and practitioners in the field of vaccination in the United Kingdom, along with a review of the relevant literature on the issue. Between February and March 2021, researchers conducted interviews and, with participants’ permission, recorded and transcribed them for analysis. To refine the core ideas from the field of vaccination, FrameWorks conducted a 90-minute feedback session with researchers and practitioners in April 2021.

Interviews with researchers and practitioners in the field of vaccination in the United Kingdom were semi-structured, consisting of a series of probing questions designed to capture their understanding about vaccines and vaccination in the United Kingdom, including the science of how vaccines work, vaccine effects, what is most important for people to understand about vaccination and solutions to address vaccination uptake. In addition to pre-set questions, FrameWorks researchers repeatedly asked for elaboration and clarification and encouraged members of the sector to expand on concepts they identified as particularly important. In each instance, the researcher conducting the interview used a series of prompts and hypothetical scenarios for members of the sector to explain their research, experience and perspectives; break down complicated relationships; and simplify complex concepts.

Analysis of the interviews with researchers and practitioners in the field employed a basic grounded theory approach.[1] A FrameWorks researcher identified and inductively categorised common themes that emerged in each interview and across the sample. This procedure resulted in a refined set of themes, which researchers supplemented with a review of materials from relevant literature.

Public understandings of vaccination in the United Kingdom

A primary goal of this research was capturing various commonly held assumptions, or cultural models, that members of the public use to make sense of vaccination in the United Kingdom and issues related to the topic. Cultural models are cognitive shortcuts to understanding, or ways of interpreting, organising and making meaning of the world around us, shaped through years of experience and expectations and by the beliefs and values embedded in our culture.[2] These are ways of thinking available to all members of a culture, although different models may be activated at different times. Individuals belong to multiple cultures, each of which include multiple models (e.g., people participate in public cultures at multiple levels, including national and subgroup cultures). In this project, our goal was to explore the models available in public culture in the United Kingdom, but it is important to acknowledge that individuals have access to other models from other cultures in which they participate.

In exploring cultural models, we are looking to identify how people think rather than what they think. Cultural models findings, therefore, differ from public opinion research, which documents people's surface-level responses to questions. By understanding the deep, often tacit assumptions that structure how people think about vaccines and vaccination, we are able to understand the obstacles preventing people from accessing the core ideas described by researchers and practitioners in the field. We are also able to identify opportunities communicators can take advantage of; that is, existing ways of thinking that can help people arrive at a fuller understanding of the issue.

Cultural models interview and analysis methodology

To identify cultural models the public uses to think about issues related to vaccination in the United Kingdom, FrameWorks researchers conducted 25 virtual interviews with members of the UK public over Zoom from 5 May to 18 May 2021. A diverse sample of participants was recruited with variation along key dimensions, including, but not limited to, geography, socioeconomic status, education and race and ethnicity (see below).

Cultural models interviews were one-on-one, semi-structured interviews lasting approximately two hours. The design of the interviews was intended to allow researchers to capture broad sets of assumptions, or

cultural models, that participants use to make sense of a concept or topic area – in this case, issues related to vaccination in the United Kingdom. Interviews consisted of a series of open-ended questions covering participants' thinking about vaccines and vaccination in broad terms. Researchers then focused more specifically on participants' thoughts on particular concepts regarding vaccination, such as the science, development, benefits, safety, effects and access, as well as thoughts on factors influencing vaccination in the UK, as well as what can be done to address any issues with regard to vaccination in the UK. Researchers approached each interview with this set of topics but allowed participants to determine the direction and nature of the discussion. With participants' written consent, all interviews were recorded and transcribed.

A professional marketing firm recruited and selected the participants to represent variation along several dimensions. For all participants, this included gender, age, race and ethnicity, location in the United Kingdom, educational background, income, parental status, marital status, political affiliation, and whether they self-identified as religious or spiritual (as self-reported during the screening process). The sample of members of the UK public included the following:

Table 1. Demographic Information: Cultural Models Interviews

Variable	Frequency	Percent
Gender		
Male	12	48%
Female	12	48%
Nonbinary/Other	1	4%
Region		
North England	4	16%
South England	9	36%
London	3	12%
Midlands	3	12%
Scotland	2	8%
Wales	2	8%
Northern Ireland	2	8%

Ethnicity		
White	21	84%
Asian/Asian British	1	4%
Black/African/Caribbean/Black British	2	8%
Mixed/Multiple	1	4%
Income		
Less than £ 15,600	5	20%
£ 16,501 to £ 31,200	9	36%
£ 31,201 to £ 46,800	5	20%
£ 46,801 or more	6	24%
Education		
No formal qualifications/GSCEs or equivalent	4	16%
A level, apprenticeship or equivalent	10	40%
Undergraduate or postgraduate degree	11	40%
Party		
Conservative	10	40%
Labour	10	40%
Liberal Democrat	2	8%
Other (Green, SNP, Sinn Fein, Plaid Cymru)	3	12%
Age		
18–29	4	16%
30–44	13	52%
45–59	5	20%
60+	3	12%

Researchers used analytical techniques from cognitive and linguistic anthropology to examine how participants understood issues related to vaccines and vaccination in the United Kingdom.[3] First, researchers identified common ways of talking across the sample to reveal assumptions, relationships, logical steps and connections commonly made but taken for granted throughout an individual's talk and across the set of interviews. In short, the analysis involved discerning patterns in both what participants said (i.e., how they related, explained and understood things) and what they did not say (i.e., assumptions and implied relationships). In many cases, analysis revealed conflicting models that people brought to bear on the same issue. In such cases, one conflicting way of understanding was typically found to be dominant over the other in that it more consistently and deeply shaped participants' thinking (i.e., participants generally drew on this model with greater frequency and relied more heavily on this model in arriving at conclusions). To ensure consistency, researchers met after the first round of coding and analysis to compare and process initial findings. Researchers then returned to transcripts to revisit differences and explore questions that arose through this comparison. As part of this process, researchers compared emerging findings to the findings from previous cultural models research, using this as a check to ensure they had not missed or misunderstood any important models. Researchers then came back together and arrived at a synthesised set of findings.

Analysis centred on ways of understanding shared across participants. Cultural models research is designed to identify common ways of thinking that can be identified across a sample. While there is no hard and fast percentage used to identify what counts as shared, reported models are typically found in the large majority of interviews. Models found in a smaller percentage of interviews are reported only if there is a clear reason these models only appeared in a limited set of interviews (e.g., the model reflected the thinking of a particular subgroup of people).

While a sample of 20 participants is too small to ensure the sample is perfectly *statistically* representative, its demographic variability is adequate to ensure the identified patterns in thinking are *shared* across different groups within the United Kingdom. While larger sample sizes are needed to investigate *variability* within a population or to allow for statistically significant comparisons between groups, the goal of cultural models analysis is to describe *common* ways of understanding within a population. As a result, for cultural models research, sample size is determined by the concept of saturation: A sample is considered a satisfying size when new data do not shed any further light on underlying patterns of thinking within a population. For this project, our analyses confirmed a sample size of 20 interviews was sufficient to reach a point of saturation regarding cultural models of vaccination in the United Kingdom.

Survey experiment methodology

One online survey was conducted, involving a total sample of 1,907 participants aged 18 and over (average age = 49.59 years) from the UK. Target quotas were set according to national benchmarks for age, gender, household income, education level, race/ethnicity and political party affiliation. Target quotas for Asian, Black, and mixed-ethnicity participants were increased above national benchmarks to support subgroup analyses. Participants were recruited by Dynata, who also hosted the survey, and data were collected between 30 December 2021 and 18 January 2022. See below for more information about the sample composition. Data were not weighted.

Table 2. Demographic Information for Survey Experiment

Variable	Frequency	Percent
Gender		
Male	973	51%
Female	928	49%
Nonbinary/Other	6	0%
Region		
Southwest	189	10%
Southeast	334	18%
London	256	13%
East of England	209	11%
Midlands	81	4%
West Midlands	118	6%
Wales	84	4%
Northwest	282	15%
Yorkshire and the Humber	83	4%
Northeast	95	5%

Scotland	148	8%
Northern Ireland	28	1%
Ethnicity		
White	1288	68%
Asian/Asian British	200	10%
Black/African/Caribbean/Black British	203	11%
Mixed/Multiple	200	10%
Other	16	1%
Income		
Less than £ 15,600	339	18%
£ 16,501 to £ 31,200	622	33%
£ 31,201 to £ 46,800	409	21%
£ 46,801 or more	540	28%
Education		
No formal qualifications	141	7%
GSCEs or equivalent	518	27%
A level, apprenticeship or equivalent	456	24%
Undergraduate or postgraduate degree	792	42%
Party		
Conservative	665	35%
Labour	736	39%
Liberal Democrat	167	9%
Democratic Unionist Party	12	1%

Green Party	62	3%
Scottish National Party	63	3%
Sinn Fein	3	0%
Plaid Cymru	9	0%
Social Democratic and Labour Party	10	1%
Alba Party	0	0%
Alliance Party	4	0%
Other	177	9%
Age		
18–29	265	14%
30–44	528	28%
45–59	521	27%
60+	593	31%
Ideology		
Extremely left-wing	52	3%
Fairly left-wing	176	9%
Slightly left-of-centre	288	15%
Centre	829	43%
Slightly right-of-centre	306	16%
Fairly right-wing	210	11%
Extremely right-wing	46	2%
Parent?		
Yes	672	35%
No	1235	65%

Religion/Spirituality		
Extremely religious/spiritual	76	4%
Fairly religious/spiritual	306	16%
Slight religious/spiritual	406	21%
Neutral/agnostic	639	34%
Slightly anti-religious/anti-spiritual	111	6%
Fairly anti-religious/anti-spiritual	179	9%
Extremely anti-religious/anti-spiritual	190	10
Nationality		
Born in the UK to UK-born parents	1386	73%
Born in the UK to foreign-born parents	267	14%
Born outside the UK	254	13%
COVID-19 Vaccine Status		
Fully vaccinated	1491	78%
Partially vaccinated	143	7%
Plan to get vaccinated	80	4%
Refuse vaccination	103	5%
Unsure about vaccination	90	5%

All participants answered an identical series of questions designed to measure outcomes of interest, including cultural models, attitudes and policy preferences relating to vaccination. Each battery consisted of multiple questions and were primarily measured using Likert-type scales with five- or seven-point scales. Several forced-choice questions and open-ended questions requiring free-text answers were also included in the survey. Examples of survey items from each battery are provided in Appendix A below.

Analyses including bivariate correlation and chi-square analysis were used to describe the data and the relationships between variables. Several Analysis of Variance (ANOVA) and regression analyses were run as well to determine if there were differences in outcomes by racial/ethnic group or income. A threshold of $p < .05$ was used to determine whether results were significant.

As with all research, it is important to remember that results are based on a sample of the population, not the entire population. As such, all results are subject to margins of error.

Appendix A: Sample survey items:

Battery A: Understanding of benefits of vaccination

Please rate your level of agreement with each of the statements below:
[7-point Likert scale: 'Strongly disagree'; 'Disagree'; 'Somewhat disagree'; 'Neither disagree nor agree'; 'Somewhat agree'; 'Agree'; 'Strongly agree']
a1. Vaccination is beneficial to all of society.
a2. When people get vaccinated, it protects others who are unvaccinated.
a3. The risks of vaccination are small compared to their benefits.

Battery B: Understanding of systemic barriers to vaccination

There are vaccines for many different viruses, yet for each, there are people who don't get vaccinated. Please indicate how large of a role you think each of the following factors plays in why people don't get vaccinated: *[5-point Likert scale: 'No role'; 'A small role'; 'A moderate role'; 'A large role'; 'A very large role']*
b1. Inability to take time off to get vaccinated
b2. A person's individual health conditions
b3. Lack of reliable transportation to get to vaccination sites

Battery C: Policy support

How much do you favour or oppose the following policies? *[7-point Likert scale: 'Strongly oppose';' Oppose'; Somewhat Oppose'; 'Neither favour nor oppose'; 'Somewhat favour'; 'Favour'; 'Strongly favour']*
c1. Increase funding to hire people to coordinate vaccinations in every community
c2. Create a fleet of vaccine buses to bring vaccines to hard-to-reach communities
c3. Create better vaccination reminder services, booking systems, and record keeping

Battery D: Health and illness

Please rate your level of agreement with each of the statements below:
[7-point Likert scale: 'Strongly disagree'; 'Disagree'; 'Somewhat disagree'; 'Neither disagree nor agree'; 'Somewhat agree'; 'Agree'; 'Strongly agree']
d4. *[Safety in Numbers 1]* A person is less likely to become ill if others in their community protect themselves from illness and stay healthy.
d5. *[Safety in Numbers 2]* Each person has a responsibility to the community they live in to keep themselves healthy.
d6. *[Safety in Numbers 2]* When more people in a community take measures to prevent illness, disease won't spread as easily in that community.

Battery E: Vaccines

Please rate your level of agreement with each of the statements below:

[7-point Likert scale: 'Strongly disagree'; 'Disagree'; 'Somewhat disagree'; 'Neither disagree nor agree'; 'Somewhat agree'; 'Agree'; 'Strongly agree']

e1. *[Vaccines as Trainer 1*] A vaccine trains the human immune system to recognise and respond to a specific virus when it enters the body.

e2. *[Vaccines as Trainer 2]*. A vaccine provides instructions to the human immune system that helps it prepare for when a specific virus may enter the body.

e4. *[Vaccines at War 1]* A vaccine attacks and defeats viruses that enter the body.

e6. *[Vaccines at War 3]* A vaccine waits in the body and attacks if a virus enters.

e7. *[Vaccines as Medication 1]* Like any medication, taking too many vaccines could result in long-term harm or death.

e9. *[Vaccines as Medication 3]* Like any medication, vaccines may be more effective with some people than others.

Battery F: Vaccination access and uptake (label items F1-F6)

Please rate your level of agreement with each of the statements below:

[7-point Likert scale: 'Strongly disagree'; 'Disagree'; 'Somewhat disagree'; 'Neither disagree nor agree'; 'Somewhat agree'; 'Agree'; 'Strongly agree']

f1. *[Socioeconomic Stress 1]* People's life circumstances and income can make it difficult for them to get vaccinated.

f2. *[Socioeconomic Stress 2]* Limited resources and a lack of support can make getting vaccination and other health services too difficult.

f4. *[Ethnoreligious 1]* A person's race and religion hold influence over whether they get vaccinated.

f5. *[Ethnoreligious 2]* People from non-Christian religions are less likely to get vaccinated.

Battery G: National healthcare (label items G1-G6)

Please rate your level of agreement with each of the statements below:

[7-point Likert scale: 'Strongly disagree'; 'Disagree'; 'Somewhat disagree'; 'Neither disagree nor agree'; 'Somewhat agree'; 'Agree'; 'Strongly agree']

g1. *[NHS Universal Access 1]* It is the NHS's responsibility to keep everyone in the UK healthy.

g2. *[NHS Universal Access 2]* Everyone in the UK has access to vaccination because the NHS is equally available to everyone regardless of who they are or where they live.

g4. *[Health Care Nationalism 1]* The NHS reflects the values of British society.

g5. [*Health Care Nationalism 2]* Supporting the NHS makes you part of British society.

Battery H: Trustworthiness

h1. *[Doctor's/Scientists Care 1]* With regards to vaccinations, do you trust the recommendations of doctors and nurses? [Yes/No]

Subset h1a [If 'yes']

h1a1. How much of why you trust the vaccination recommendations of doctors and nurses is because of

their medical expertise? *[6-point Likert scale: 'None'; 'Very little'; 'Some'; 'Quite a bit'; 'A large amount'; 'A very large amount']*
h1a2. How much of why you trust the vaccination recommendations of doctors and nurses is because of their motivation to care for their patients? [*6-point Likert scale: 'None'; 'Very little'; 'Some'; 'Quite a bit'; 'A large amount'; 'A very large amount']*

h2. *[Friends/Family]* With regard to vaccinations, do you trust the recommendations of friends and family? [Yes/No]
Subset h2a [If 'yes']
h2a1. How much of why you trust the vaccination recommendations of friends and family is because of their personal experiences with vaccination? *[5-point Likert scale: 'None'; 'Very little'; 'Some'; 'Quite a bit'; 'A large amount'; 'A very large amount']*
h2a2. How much of why you trust the vaccination recommendations of friends and family is because they share your views on vaccination? *[5-point Likert scale: 'None'; 'Very little'; 'Some'; 'Quite a bit'; 'A large amount'; 'A very large amount']*

h3. *[Time Tested*] We can know if a vaccine is effective and safe once enough people have had it over a long period of time without harm or falling ill. *[7-point Likert scale: 'Strongly disagree'; 'Disagree'; 'Somewhat disagree'; 'Neither disagree nor agree'; 'Somewhat agree'; 'Agree'; 'Strongly agree']*.

h4. *[Proof of Science Model]* We can know that a vaccine is effective and safe if it has cleared scientific clinical trials. *[7-point Likert scale: 'Strongly disagree'; 'Disagree'; 'Somewhat disagree'; 'Neither disagree nor agree'; 'Somewhat agree'; 'Agree'; 'Strongly agree']*

Battery I: Government (label items i1-i3)

Please rate your level of agreement with each of the statements below:
[7-point Likert scale: 'Strongly disagree'; 'Disagree'; 'Somewhat disagree'; 'Neither disagree nor agree'; 'Somewhat agree'; 'Agree'; 'Strongly agree']
i2. *[Govern Corrupt 2]* Most elected officials are corrupt.
i3. *[Govern Corrupt 3]* The government puts corporate interests over the public's interests.

Battery J: COVID (label items J1-J5)

j1. How would you describe your personal situation regarding COVID-19 vaccines?
a. I have received all the injections required to be fully vaccinated against COVID-19.
b. I have started the vaccination process but need another shot to be fully vaccinated.
c. I plan to get vaccinated.
d. I will not get vaccinated.
e. I'm unsure about getting vaccinated.

Endnotes

1. Glaser, B. & Strauss, A. (1967). The discovery of grounded theory: Strategies for qualitative research (observations). Chicago: Aldine.

   Strauss, A. & Corbin, J. (1990). Basics of qualitative research: Grounded theory procedures and techniques. Newbury Park, CA: Sage.

2. Shore, B. (1998). Culture in mind: Cognition, culture, and the problem of meaning. Oxford University Press.

3. Quinn, N. (Ed.). (2005). Finding culture in talk: A collection of methods. New York, NY: Palgrave Macmillan.

About FrameWorks

The FrameWorks Institute is a non-profit think tank that advances the mission-driven sector's capacity to frame the public discourse about social and scientific issues. The organisation's signature approach, Strategic Frame Analysis®, offers empirical guidance on what to say, how to say it, and what to leave unsaid. FrameWorks designs, conducts and publishes multi-method, multidisciplinary framing research to prepare experts and advocates to expand their constituencies, to build public will and to further public understanding. To make sure this research drives social change, FrameWorks supports partners in reframing, through strategic consultation, campaign design, FrameChecks®, toolkits, online courses, and in-depth learning engagements known as FrameLabs. In 2015, FrameWorks was named one of nine organisations worldwide to receive the MacArthur Award for Creative and Effective Institutions.

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