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Effect of informational COVID-19 vaccine videos on perceptions of vaccination among unvaccinated individuals

Submission date
20/04/2023

Recruitment status
No longer recruiting

Registration date
21/04/2023

Overall study status
Completed

Last Edited
17/11/2025

Condition category
Infections and Infestations

[_] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[X] Results
[_] Individual participant data

Plain English summary of protocol

Background and study aims
In this large-scale online experiment the impact of two primary interventions was explored. The first intervention is the viewing of informational videos on COVID vaccines designed to fill informational gaps. The second intervention is a “paradoxical reasoning" protocol that asks respondents to engage with reductio-ad-absurdum arguments to soften their positions on COVID vaccination. The final objective is mainly to analyze the impact of these interventions on the COVID perceptions of the respondents.

Who can participate?
Unvaccinated individuals aged 18 years or over who were willing to participate in an online study

What does the study involve?
Participants were randomly assigned to one of three video treatments: a control group with no access to the videos, an optional group with access to the videos, and a required group that must watch the vaccine technology video before having the option to watch the other three videos.
Participants were also randomly assigned to one of four paradox treatments, including a control group with a non-COVID-related protocol, a group focused on the live virus paradox, a group focused on the long-run testing paradox, and a group exposed to both paradoxes.
The study involved completing an online questionnaire before and after the interventions, comparing the individuals who received some type of treatment with those in the control group.

What are the possible benefits and risks of participating?
The benefits of participating in this study include a better understanding of the development and effectiveness of COVID-19 vaccines. There were no expected risks associated with participating in this online study.

Where is the study run from?
The University of Nottingham (UK)

When is the study starting and how long is it expected to run for?
October 2021 to February 2022

Who is funding the study?
The British Academy (UK)

Who is the main contact?
Seung-Keun Martinez, Seung-Keun.Martinez@nottingham.ac.uk

Contact information

Type(s)
Principal investigator

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Dr Seung-Keun Martinez

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Additional identifiers

Protocol serial number
AEARCTR-0008909

Study information

Scientific Title
Securing the goalposts on vaccine hesitancy

Study objectives
The study had two primary hypotheses. The first was that viewing informational videos on COVID vaccines designed to fill informational gaps in individual's understanding of mRNA vaccine technology could improve vaccine uptake. The second was that a “paradoxical reasoning” protocol that engages respondents with reductio-ad-absurdum arguments should soften the positions on COVID vaccination of the treated compared to those who did not receive any intervention.

Ethics approval required
Old ethics approval format

Ethics approval(s)

Approved 12/12/2021, Nottingham School of Economics Research Ethics Committee (School of Economics, University of Nottingham, Sir Clive Granger Building, Nottingham, NG7 2QX, UK; +44 (0)115 951 5151; NSE-REC@nottingham.ac.uk), ref: 20211212

Primary study design
Interventional

Study design
Single-centre interventional double-blinded randomized controlled trial with multiple arms

Study type(s)
Other

Health condition(s) or problem(s) studied
Reluctance to vaccinate against COVID-19 and negative perceptions of COVID-19 vaccines in unvaccinated participants

Interventions
This study was previously registered before any participants were randomly assigned to an intervention or control at The American Economic Association's registry for Randomized Controlled Trials (AEARCTR) on 27/01/2022.

We used qualtrics' survey randomization software to assign participants to treatments. In the first wave of recruitment, the randomization software evenly cross-randomized (uniform distribution allocation) between our three informational-video treatments (including control) and between our four paradoxical reasoning treatments (including control) until we reached 3999 completed surveys. In the second wave, the randomization software evenly cross-randomized between the video-required and video-control treatment and between our both-paradoxes and no-paradox control until we reached an additional 3091 completed surveys. The pre-registered targets were 4000 in the first wave and 3000 in the second wave.

The first intervention is the viewing of tailored informational videos on COVID vaccines designed to fill informational gaps in people’s understanding of mRNA vaccines. The second intervention is a "paradoxical reasoning'' protocol that asks respondents to engage with reductio-ad-absurdum arguments to soften their positions on COVID vaccination.

Video Intervention:
The researchers have designed four custom videos to address information gaps in the communications about COVID-19 vaccines. These videos are listed below:
1. Vaccine Technology: describes the mRNA technology behind COVID-19 vaccines.
2. Vaccine Development: explains how the COVID-19 vaccines were researched and developed. It also compares the rapid development of COVID-19 vaccines to the more time-consuming development of older, more traditional vaccines, and discusses how potential variant-specific boosters would be made.
3. Vaccine Testing: explains how COVID-19 vaccines were tested for FDA review and how this process was accelerated in comparison to how new drugs and vaccines are normally tested.
4. Side Effects: explains why side effects arise and discusses the prospects of long-term side effects and serious adverse events.

The researchers randomly and evenly assigned subjects to the following three video treatments:
1. Video Control Condition (VC):
In this treatment, subjects did not have access to the video interventions. Instead, they watched a placebo video that is the same length and made in the same style as the intervention. The placebo video covered how to solve a simple logic puzzle.
2. Video Optional Condition (V1):
In this treatment, subjects watched the same placebo video from (VC) but had access to the video interventions. After watching the placebo video, they were given the choice to select any of the four informational videos to watch. They were able to watch as many of the four videos as they like or they could not watch any informational videos at all.
3. Video Required Condition (V2):
In this treatment, subjects watched the Technology video. After watching this video, they were given the choice to select any of the four informational videos to watch. They were able to watch as many of the three remaining informational videos as they like or they could not watch any additional videos at all.

Paradoxical Reasoning Intervention
These interventions required subjects to engage with a protocol that prompts responses to increasingly extreme viewpoints through an approach similar to a reductio-ad-absurdum argument. This type of intervention has been shown to soften views towards intractable conflicts such as the Israeli-Palestinian conflict. Our intervention featured one of the two protocols:
1. Live Virus Paradox: This asked respondents to consider whether or not achieving natural immunity through deliberately catching COVID-19 is a good idea.
2. Long-Run Testing: This asked respondents to consider whether 18 months of data on a vaccine is enough or if we should not approve any vaccine until it has undergone long enough testing to last the majority of a recipient's lifetime.

The recruitment was done in 2 waves. The first wave (4000 participants targeted, 3999 recruited) was evenly assigned subjects to the following four paradox treatments:
1. Paradox Control Condition (PC):
In this condition, our subjects interacted with a placebo protocol that asked the same number of questions in the same progressive manner as the paradoxical reasoning intervention but did not relate to COVID-19 vaccines.
2. Live Virus Paradox (PLV):
In this condition, our subjects interacted with the Live Virus Paradox protocol.
3. Long-Run Paradox (PLR):
In this condition, our subjects interacted with the Long-Run Testing Paradox protocol.
4. Both Paradoxes (PB):
In this condition, our subjects interacted with both the Live Virus Paradox and the Long-Run Testing Paradox protocols.
And evenly cross-randomized into the following three video-information treatments:
1. Video Control Condition (VC)
2. Video Optional Condition (V1)
3. Video Required Condition (V2)

The second wave focused on the effects of our two most intensive interventions. This wave targeted 3000 subjects (recruited 3091) who had not previously participated. We randomly and evenly assigned the subjects to the following two paradox treatments:
1. Paradox Control Condition (PC)
2. Both Paradoxes (PB)
We also randomly and evenly cross-randomized our new 3000 subjects to the following two

video treatments:
1. Video Control Condition (VC)
2. Video Required (V2)

Intervention Type
Behavioural

Primary outcome(s)
The researchers elicit responses to the following ten questions on perceptions about COVID-19 and COVID-19 vaccines. These responses are all elicited on a scale of 0 to 100. The elicitation for all ten questions was presented to respondents after the intervention.
1. Perception about the effectiveness of vaccines in preventing infections from COVID-19
2. Perception about the effectiveness of vaccines in preventing severe illness from COVID-19
3. Intention to develop “natural immunity” by getting infected with the live COVID-19 virus
4. Perception that a COVID-19 infection (or reinfection) would pose a significant risk to their health
5. Concern about being exposed to COVID-19
6. Intention to get vaccinated against COVID-19
7. Concern about side effects of the COVID-19 vaccine
8. Perception of trust in information from doctors
9. Perception of trust in information about COVID-19 vaccination from the Food and Drug Administration's (FDA)
10. Perception of trust in information about COVID-19 vaccination from the Centers for Disease Control and Prevention (CDC)

The primary outcome variables were derived from the COVID-19 Perceptions. The researchers used these to construct three primary indices for evaluating perceptions. These are listed below in descending order of importance:
1. Perception 1: Vaccination intentions and concerns: (5, 6)
2. Perception 2: Vaccination efficacy: (1, 2)
3. Perception 3: Vaccination side effects: (7)
Each index was constructed by taking the mean of the relevant variables and then standardizing this mean value across subjects. The indices had a mean of 0 and a standard deviation of 1.
Perception 1 – Perception 3 were the primary analysis.
Perception 1 is the most important outcome. Vaccination intentions and concerns are the primary policy-relevant concerns. The researchers influenced beliefs about vaccine efficacy (Perception 2) primarily with the hope that it encouraged greater vaccine take-up. Concerns about the side effects of vaccination (Perception 3) are a second-order concern but important in how they may limit vaccination efforts.
The researchers excluded certain perception questions from these indices because they may result in ambiguous predictions. For example, for item (3), a subject may become less concerned about the severity of COVID-19 because they have become convinced of the effectiveness of COVID-19 vaccines.

Key secondary outcome(s)
Compared to the previous outcomes, the researchers also explored a fourth index:
1. Perception 4: Trust in institutions: (8, 9, 10 of the previous ten perceptions questions about COVID-19 and COVID-19 vaccines presented in the primary outcome measure section). This index also was constructed by taking the mean of the relevant variables and then standardizing this mean value across subjects. This index has a mean of 0 and a standard deviation of 1.

The researchers were also interested in the information-seeking behaviors of the subjects. To capture this, two of our video treatments (V1 and V2) allowed subjects to elect to watch additional videos after their first mandatory video. The researchers measured “information-seeking” as the number of subsequent videos watched. As a secondary measure, they also analyzed the amount of time spent watching those videos.
1. Seeking 1: Number of additional videos watched (0 to 4)
2. Seeking 2: Time spent watching additional videos (supplementary)

Completion date
25/02/2022

Eligibility

Key inclusion criteria
1. Living in the United States
2. Aged 18 years or older
3. Participation limited to those who report never having received a COVID-19 vaccine dose

Participant type(s)
Other

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 Years

Upper age limit
100 Years

Sex
All

Total final enrolment
7090

Key exclusion criteria
Does not meet the inclusion criteria

Date of first enrolment
27/01/2022

Date of final enrolment
25/02/2022

Locations

Countries of recruitment
United Kingdom

England

United States of America

Study participating centre
University of Nottingham
University Park
Nottingham
England
NG7 2RD

Sponsor information

Organisation
University of Nottingham

ROR
https://ror.org/01ee9ar58

Funder(s)

Funder type
University/education

Funder Name
British Academy

Alternative Name(s)
BA British Academy, The British Academy, BA

Funding Body Type
Private sector organisation

Funding Body Subtype
Universities (academic only)

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated and analysed during the current study will be available upon request from Seung-Keun Martinez (seung-keun.martinez@nottingham.ac.uk).
The data will consist of individual level observations with outcome variables, treatment assignment, demographic control variables.
Data will be available for 5 years following ISRCTN registration.
Informed consent was obtained from participants.
No personally identifying information was collected as part of our study. Only generic demographic information was collected.
There are no other legal or ethical constraints to report.

IPD sharing plan summary

Available on request

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Results article		04/11/2025	17/11/2025	Yes	No