Fragebogen

1 General_Instruction [Seiten-ID: 4902167] [L]

Dear participant,

thank you very much for your participation in this psychological experiment.

We guarantee that your data will be treated anonymously and used exclusively for scientific purposes. If you have any questions or comments, please don't hesitate to contact Simon Stephan (simon.stephan@psych.uni-goettingen.de).

Please note: In this study, we investigate how people think. In particular, we want to find out how people think about a fundamental thing, *causality*. So, we really want you to *think* about the things we will show you and we would like to ask you not to hastily rush through the study.

It is very important for us that you *read all the instructions thoroughly* and that you *fully understand the scenario* that we will introduce on the next screens. The scenario you will see is fictitious and was constructed such that you can intuitively understand the relevant aspects. Please assume that everything is exactly as described in the scenario, irrespective of how plausible it sounds to you.

Again, thank you very much for your help in this research project.

This research is conducted under the scientific direction of:
Dr. Simon Stephan
Department of Cognitive Psychology and Decision Making,
University of Göttingen, Germany.

Before you start, please:

- maximize your browser window;

- switch off phone/e-mail/music & anything else distracting

- and please enter your Prolific ID:

2 Attention_confirmation [Seiten-ID: 4902168] [L]

For the scientific utility of the results, it is very important that you provide complete and careful responses.

How seriously will you take your participation in the study?

- ◯ I confirm that I will take my participation in this study seriously.
- ◯ I confirm that I will not take my participation in this study seriously.

3 Instruction_part1 [Seiten-ID: 4902169] [L]

Please read the following fictitious scenario:

Biologists have discovered a new type of bacteria that can cause a deadly disease. The researchers also discovered that different strains of this new bacterium exist, which may or may not differ in their lethality.

In a series of laboratory studies with mice, the scientists have tested the effectiveness of a newly developed vaccine against the various strains of bacteria. In each study, they took two random samples of laboratory mice. Each sample consisted of 120 mice. One random sample, the "vaccination group", was vaccinated, while the other sample remained untreated, serving as a "control group". This control group was included because it is possible that some mice may stay healthy when infected with the bacteria even without vaccination. Both mice samples then were exposed to one of the different bacterial strains. To learn about the effectiveness of the vaccine, the scientists then observed and compared how many mice died from the disease in each group.

In each study the vaccine was tested with a different bacterial strain. For each study, different random samples of mice were used.

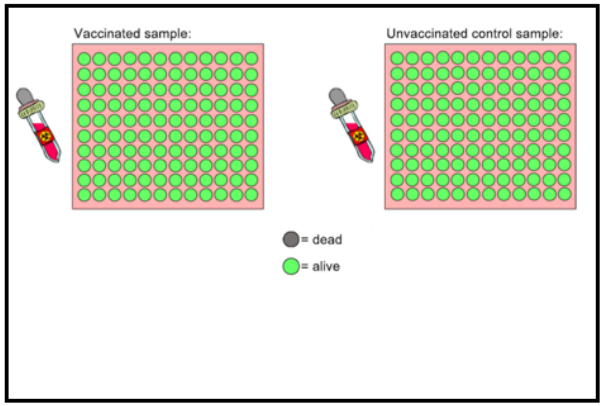
Please click "Continue" to learn more.

4 Instruction_part2 [Seiten-ID: 4902170] [L]

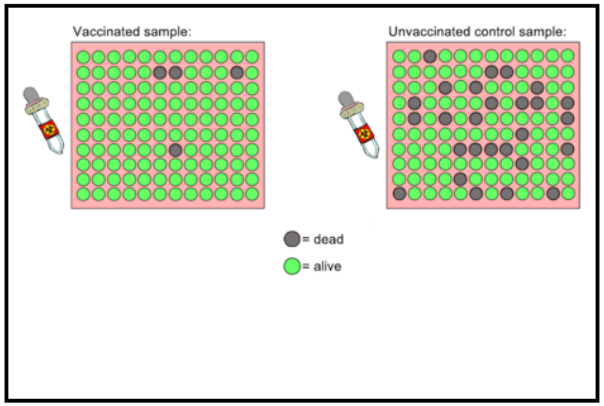
On the following screens, we will show you the results of the biologists' different experiments one after the other. The results of each study will be displayed with short animations depicting the events in fast motion. An illustration is shown below. You will first see a static screen (1) showing the two samples of mice. The mice are depicted as circles. Green circles indicate individuals that are living, and grey circles indicate mice that have died. The left sample contains the mice that were vaccinated. The right sample contains the unvaccinated control mice. As you can see, all mice will be living in the beginning. A green "Start" button will be displayed that you must press to start the animation. Having pressed the "Start" button, (2) you will observe both mice samples being simultaneously exposed to the same strain of the bacteria (indicated by the pipettes and the reddish background colour). You will then (3) observe how many mice have died in the two groups over time. The animation will stop once the bacteria have unfolded their fatal effect.

1)

2)



3)



Please click "Continue" to learn more.

5 Filter sufficient_preventer [Filter-ID: 4903178]

	c_0001 condition	Benutzerdefinierte Variable - condition (von Seite : System)	größer gleich	1
and	c_0001 condition	Benutzerdefinierte Variable - condition (von Seite : System)	kleiner gleich	2

5.1 Filter Query: Power [Filter-ID: 4902227]

c_0001 condition Benutzerdefinierte Variable - condition (von Seite : System) gleich 1

5.1.1 Instruction_part3 [Seiten-ID: 4902248] [L]

For each of the biologists' experiment, we will ask you the same question.

We will ask you to indicate, based on what you have learned, how effectively the vaccine can be expected to prevent the mice from dying from the particular tested strain of bacteria.

To give your answer, we will ask you to imagine a new sample of 100 mice who all died from the disease after having been exposed to the strain of bacteria. We will then ask you to indicate how many of these mice you think would have been rescued if they had been vaccinated.

If you have understood everything accurately and feel prepared to start, click "Continue" to see the results of the first of the biologists' experiments.

5.1.2.1 a) 0_120_120_0 [Seiten-ID: 4902174] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

how effectively does the vaccine prevent mice from dying from the disease that can be caused the investigated strain of bacteria? To rate the vaccine's effectivity, imagine a new group of 100 unvaccinated mice who all died from the disease caused by the studied strain of bacteria. Based on what you have learned, if these 100 mice had been vaccinated how many do you think would have survived?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

5.1.2.1.1 next_study_prompt [Seiten-ID: 4902318] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

5.1.2.2 b) 0_120_90_30 [Seiten-ID: 4902319] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

how effectively does the vaccine prevent mice from dying from the disease that can be caused by the investigated strain of bacteria? To rate the vaccine's effectivity, imagine a new group of 100 unvaccinated mice who all died from the disease caused by the studied strain of bacteria. Based on what you have learned, if these 100 mice had been vaccinated how many do you think would have survived?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

5.1.2.2.1 next_study_prompt [Seiten-ID: 4902320] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

5.1.2.3 c) 0_120_60_60 [Seiten-ID: 4902322] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

how effectively does the vaccine prevent mice from dying from the disease that can be caused by the investigated strain of bacteria? To rate the vaccine's effectivity, imagine a new group of 100 unvaccinated mice who all died from the disease caused by the studied strain of bacteria. Based on what you have learned, if these 100 mice had been vaccinated how many do you think would have survived?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

5.1.2.3.1 next_study_prompt [Seiten-ID: 4902323] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

5.1.2.4 d) 0_120_30_90 [Seiten-ID: 4902327] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

how effectively does the vaccine prevent mice from dying from the disease that can be caused by the investigated strain of bacteria? To rate the vaccine's effectivity, imagine a new group of 100 unvaccinated mice who all died from the disease caused by the studied strain of bacteria. Based on what you have learned, if these 100 mice had been vaccinated how many do you think would have survived?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

5.1.2.4.1 next_study_prompt [Seiten-ID: 4902328] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

5.1.3 End_of_Observations [Seiten-ID: 4902367] [L]

You have seen the results of all experiments. Please click "Continue".

5.2 Filter Query: Singular [Filter-ID: 4902373]

c_0001 condition Benutzerdefinierte Variable - condition (von Seite : System) gleich 2

5.2.1 Instruction_part3 [Seiten-ID: 4902374] [L]

For each of the biologists' experiment, we will ask you the same question.

The question will refer to a randomly selected mouse from the vaccination group that has survived the exposure to the studied strain of bacteria.

We will ask you to indicate how confident you are that it actually was the vaccination that prevented this mouse from dying from the disease.

If you have understood everything accurately and feel prepared to start, click "Continue" to see the results of the first of the biologists' experiments.

5.2.2.1 a) 0_120_120_0 [Seiten-ID: 4902376] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

Imagine one of the living mice is randomly selected from the vaccination group. Based on what you have learned, how confident are you that it actually was the vaccination that prevented this mouse from dying from the disease that can be caused by the studied strain of bacteria?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

5.2.2.1.1 next_study_prompt [Seiten-ID: 4902377] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

5.2.2.2 b) 0_120_90_30 [Seiten-ID: 4902378] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

Imagine one of the living mice is randomly selected from the vaccination group. Based on what you have learned, how confident are you that it actually was the vaccination that prevented this mouse from dying from the disease that can be caused by the studied strain of bacteria?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

5.2.2.2.1 next_study_prompt [Seiten-ID: 4902379] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

5.2.2.3 c) 0_120_60_60 [Seiten-ID: 4902380] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

Imagine one of the living mice is randomly selected from the vaccination group. Based on what you have learned, how confident are you that it actually was the vaccination that prevented this mouse from dying from the disease that can be caused by the studied strain of bacteria?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

5.2.2.3.1 next_study_prompt [Seiten-ID: 4902381] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

5.2.2.4 d) 0_120_30_90 [Seiten-ID: 4902382] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

Imagine one of the living mice is randomly selected from the vaccination group. Based on what you have learned, how confident are you that it actually was the vaccination that prevented this mouse from dying from the disease that can be caused by the studied strain of bacteria?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

5.2.2.4.1 next_study_prompt [Seiten-ID: 4902383] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

5.2.3 End_of_Observations [Seiten-ID: 4902384] [L]

You have seen the results of all experiments. Please click "Continue".

6 Filter necessary_preventer [Filter-ID: 4903180]

	c_0001 condition	Benutzerdefinierte Variable - condition (von Seite : System)	größer gleich	3
and	c_0001 condition	Benutzerdefinierte Variable - condition (von Seite : System)	kleiner gleich	4

6.1 Filter Query: Power [Filter-ID: 4903181]

c_0001 condition Benutzerdefinierte Variable - condition (von Seite : System) gleich 3

6.1.1 Instruction_part3 [Seiten-ID: 4903182] [L]

For each of the biologists' experiment, we will ask you the same question.

We will ask you to indicate, based on what you have learned, how effectively the vaccine can be expected to prevent the mice from dying from the particular tested strain of bacteria.

To give your answer, we will ask you to imagine a new sample of 100 mice who all died from the disease after having been exposed to the strain of bacteria. We will then ask you to indicate how many of these mice you think would have been rescued if they had been vaccinated.

If you have understood everything accurately and feel prepared to start, click "Continue" to see the results of the first of the biologists' experiments.

6.1.2.1 a) 0_120_120_0 [Seiten-ID: 4903184] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

how effectively does the vaccine prevent mice from dying from the disease that can be caused the investigated strain of bacteria? To rate the vaccine's effectivity, imagine a new group of 100 unvaccinated mice who all died from the disease caused by the studied strain of bacteria. Based on what you have learned, if these 100 mice had been vaccinated how many do you think would have survived?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

6.1.2.1.1 next_study_prompt [Seiten-ID: 4903185] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

6.1.2.2 b) 90_30_120_0 [Seiten-ID: 4903186] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

how effectively does the vaccine prevent mice from dying from the disease that can be caused by the investigated strain of bacteria? To rate the vaccine's effectivity, imagine a new group of 100 unvaccinated mice who all died from the disease caused by the studied strain of bacteria. Based on what you have learned, if these 100 mice had been vaccinated how many do you think would have survived?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

6.1.2.2.1 next_study_prompt [Seiten-ID: 4903187] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

6.1.2.3 c) 60_60_120_0 [Seiten-ID: 4903188] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

how effectively does the vaccine prevent mice from dying from the disease that can be caused by the investigated strain of bacteria? To rate the vaccine's effectivity, imagine a new group of 100 unvaccinated mice who all died from the disease caused by the studied strain of bacteria. Based on what you have learned, if these 100 mice had been vaccinated how many do you think would have survived?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

6.1.2.3.1 next_study_prompt [Seiten-ID: 4903189] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

6.1.2.4 d) 30_90_120_0 [Seiten-ID: 4903190] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

how effectively does the vaccine prevent mice from dying from the disease that can be caused by the investigated strain of bacteria? To rate the vaccine's effectivity, imagine a new group of 100 unvaccinated mice who all died from the disease caused by the studied strain of bacteria. Based on what you have learned, if these 100 mice had been vaccinated how many do you think would have survived?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

6.1.2.4.1 next_study_prompt [Seiten-ID: 4903191] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

6.1.3 End_of_Observations [Seiten-ID: 4903192] [L]

You have seen the results of all experiments. Please click "Continue".

6.2 Filter Query: Singular [Filter-ID: 4903193]

c_0001 condition Benutzerdefinierte Variable - condition (von Seite : System) gleich 4

6.2.1 Instruction_part3 [Seiten-ID: 4903194] [L]

For each of the biologists' experiment, we will ask you the same question.

The question will refer to a randomly selected mouse from the vaccination group that has survived the exposure to the studied strain of bacteria.

We will ask you to indicate how confident you are that it actually was the vaccination that prevented this mouse from dying from the disease.

If you have understood everything accurately and feel prepared to start, click "Continue" to see the results of the first of the biologists' experiments.

6.2.2.1 a) 0_120_120_0 [Seiten-ID: 4903196] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

Imagine one of the living mice is randomly selected from the vaccination group. Based on what you have learned, how confident are you that it actually was the vaccination that prevented this mouse from dying from the disease that can be caused by the studied strain of bacteria?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

6.2.2.1.1 next_study_prompt [Seiten-ID: 4903197] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

6.2.2.2 b) 90_30_120_0 [Seiten-ID: 4903198] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

Imagine one of the living mice is randomly selected from the vaccination group. Based on what you have learned, how confident are you that it actually was the vaccination that prevented this mouse from dying from the disease that can be caused by the studied strain of bacteria?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

6.2.2.2.1 next_study_prompt [Seiten-ID: 4903199] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

6.2.2.3 c) 60_60_120_0 [Seiten-ID: 4903200] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

Imagine one of the living mice is randomly selected from the vaccination group. Based on what you have learned, how confident are you that it actually was the vaccination that prevented this mouse from dying from the disease that can be caused by the studied strain of bacteria?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

6.2.2.3.1 next_study_prompt [Seiten-ID: 4903201] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

6.2.2.4 d) 30_90_120_0 [Seiten-ID: 4903202] [L]

Below you see the animation with which you can learn about the results of the experiment. Please click "Start" and observe thoroughly what happened.

404 - NOT FOUND

If you thoroughly observed what happened in this experiment, please answer the question below:

Based on what you have learned:

Imagine one of the living mice is randomly selected from the vaccination group. Based on what you have learned, how confident are you that it actually was the vaccination that prevented this mouse from dying from the disease that can be caused by the studied strain of bacteria?

Please use the following slider to provide your answer. You first have to click on the scale. You can then move the slider to the position you want.

We'd like to know a little bit more about why you came to this conclusion. Please give a short explanation for your rating.

6.2.2.4.1 next_study_prompt [Seiten-ID: 4903203] [L]

We next show you the results of the next experiment, in which the biologists tested how effective the vaccine is against a different strain of the bacteria.

Please click "Continue" to proceed.

6.2.3 End_of_Observations [Seiten-ID: 4903204] [L]

You have seen the results of all experiments. Please click "Continue".

7 Demographie [Seiten-ID: 4902213] [L]

Thank you very much for your effort, you are almost done with the survey. Please provide the following additional information:

Please indicate with which gender you identify.

- ◯ male
- ◯ female
- ◯ other
- ◯ prefer not to say

How old are you?

If any technical issues occured in the course of the study, please give a short description.

8 Endseite [Seiten-ID: 4902214] [L]

Thank you for taking part in this study!

The aim of this experiment is to find out more about how people reason about preventive causality. If you are interested in further details or if you have any questions or comments concerning the experiment, feel free to contact me (Simon Stephan) under sstepha1@uni-goettingen.de

To ensure you receive your reward, please click on the following link to return to the Prolific website:

Link to Prolific