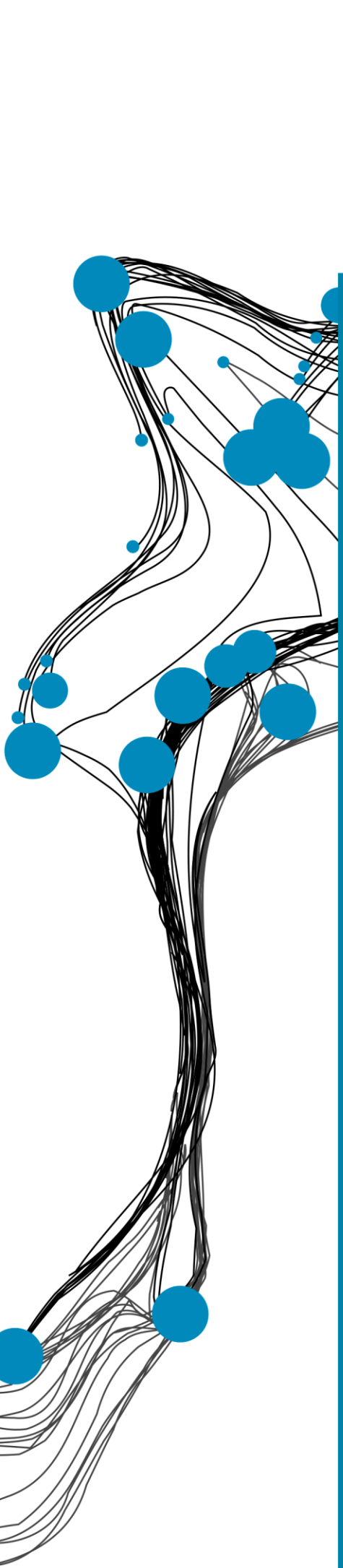

Responding to Anti-Vaxxer Posts on Facebook using the WHO Best Practice Guidance

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Abstract

Vaccination is one of the most successful general health interventions of the current time. It saves millions of lives each year. Nevertheless, there is a movement becoming more and more popular over the last years, the anti-vaccine movement. Supporters of this movement claim, that vaccines are dangerous and can cause a lot of harm. They support their statements with misinformation drawn from fraud research papers and spread them via (social) media channels. The WHO declared the anti-vaccine movement as one of the greatest public health threats of the current time. To counter this movement, the WHO developed a best practice guideline on 'how to respond to vocal vaccine deniers in public', which focuses on media interviews. However, the anti-vaccine movement is also represented on other media platforms like social media channels. In this study the WHO guidance was applied to Facebook, in order to investigate, whether the stepwise response advice is also applicable to social media context. An anti-vaxxer post was taken as basis and a response to that post was constructed applying the WHO guidance, as well as a health-related-comment. The participants were assigned to one of three groups, either the only-post condition, the post-and-WHO-based-comment condition or the post-and-health-related-comment condition, to check whether the WHO-based-comment had an impact on the participants risk perception, benefit perception, trust and intention towards vaccines. They had to fill out a questionnaire after being presented to one of the three versions of the post. The study showed no impact of the post-and-comment combinations on the risk perception, benefit perception, trust and intention of the participants in any of the groups.

Introduction

The anti-vaccine movement became more and more popular during the last years. It is a movement, which fights against vaccinations, because they belief that vaccines can cause a lot of harm and are not effective. The anti-vaxxers, how activists of the movement are called, base their beliefs on wrong information and try to convince other people by spreading these misinformation, for example via social media platforms. Lately, the World Health Organisation (WHO) declared the anti-vaccine movement as one of the three greatest threats for the general public health (WHO, 2019). Vaccines are one of the most successful public health interventions ever and saved millions of lives over decades (WHO, 2017; Dubé, Vivion & MacDonald, 2014). The anti-vaccine movement endangers this success for the general public health, by appealing the people not to vaccinate. The WHO developed a guideline on how to react to an anti-vaxxer in a media interview (WHO, 2017). However, anti-vaxxers are represented almost everywhere, among other things on social media platforms like Facebook. Therefore, this study aims at testing whether a reaction to an anti-vaxxer-post, created based on the guideline of the WHO, has an impact on the risk perception, benefit perception, trust and intention towards vaccines.

The Anti-Vaccine Movement

Vaccines were invented to control the spread of potentially fatal diseases and infections and aimed to eradicate them (Krishna, 2017). Since the invention of vaccines 2-3 millions of lives were saved every year. Another 1,5 million deaths can be prevented if the global coverage of vaccinations increases. Additionally, vaccination is the most cost-effective health measure to prevent diseases (WHO, 2019). Besides these benefits, there are still some people, who cannot receive vaccines, because of age or other health issues. Therefore, it is very important, that the people in their environment are vaccinated, so that they are protected from catching the vaccine-preventable diseases. An immunization rate of 95% is required to create the so-called herd immunity, which also ensures protection for people, who cannot get vaccinated (Krishna, 2017). Despite the great success of vaccines, there has always been a group of people, who hold concerns against vaccines (Dubé, et al., 2014). Since the invention of vaccines people started to doubt its efficiency and safety, because for health care measures a 100% certainty can never be guaranteed and new inventions are always doubted more than the ones people are used to and hold trust in.

Trust in several institutions, like the government, health care providers and vaccination-programs, is a very important factor that influences the attitude towards vaccines. Therefore, it is important for several institutions to gain the trust of the general public, to ensure the general public health by high immunization rates. As a reaction to the decreasing immunization rates, governments all over the world reconsider their vaccination policies and think about inventing vaccine duty to ensure the required 95% immunization rate. However, some people think that the government takes their free choice, which decreases their trust in the government. The lower vaccination intention results from knowledge deficiency and vaccine hesitancy (Krishna, 2017). To gain a higher vaccination intention it is important to correct misinformation, which anti-vaxxers often use to support their arguments. Despite all the concerns and safety issues often raised by anti-vaxxers, vaccinations are still a widely accepted public health intervention. In the USA around one third are vaccine hesitants and only 5% are total vaccine refusers (Dubé, et al., 2014).

Recently, the number of people being critical towards vaccines increased, since Andrew Wakefield published a fraud research paper which links a vaccine to autism (Dubé, et al., 2014; Krishna, 2017). This paper received a lot of attention in the media and raised public concerns regarding safety, effectiveness and trust of vaccines. Especially the wide reach of the internet is a threat to the spread of misinformation. It provides anti-vaccination activists with a platform, where they can easily spread their anti-vaccine content. They can address a broad audience very fast, which results in an increase of vaccine hesitancy and refusal (Dubé, et al., 2014). Due to the fears and safety issues that are spread about vaccines, the immunization rates in developed countries decrease, which can endanger the necessary 95% rate for herd immunity. However, what is striking is, that the immunization rates in developing countries increases and the people, who hold vaccine negative attitudes are well educated and of high-income. These vaccine negative attitudes are rooted in unscientific, discredited pieces of data. The lack of factual knowledge about vaccines makes people belief the unfactual information, which raises a negative attitude towards vaccines (Krishna, 2017).

As mentioned before, the rise of the internet gave anti-vaxxers a bigger platform to share their content. It serves as an important health information source for a broad public. Unfortunately, public vaccination debates on the internet reinforce shifts to extremer opinions about vaccines. Anti-vaccine related content, especially on social media channels, is of highly variable quality and the amount of inaccurate information is enormous. Additionally, emotive anecdotes about vaccination damage, which are often used by anti-vaxxers to support their

attitude, are more powerful than evidence-based statements on statistics and probabilities about vaccine-preventable diseases and possible risks of vaccines (Dubé, et al., 2014). Consequently, the emotional anti-vaccination content has greater impact, especially on vulnerable target groups, like parents, who have to decide whether their child gets vaccinated or not, than factual pro-vaccination content.

A study by Betsch, Renkewitz, Betsch and Ulshofer (2010) also found out, that negative believes are increased by viewing anti-vaccination websites, while viewing pro-vaccination websites only has a minimal effect on the believes. That is why it is easy for anti-vaxxers to instrumentalize social media for the purpose to spread their message and convince a huge audience, even though they use wrong information to support their opinion. This can also be explained by a psychological concept called negativity bias (Bachleda, Neuner, Soroka, Guggenheim, Fournier & Naurin, 2019). Negativity bias means that people are often more attracted to negative information and therefore often base their decisions on negative information instead of positive information. Scientific studies that report a health risk are more trusted than scientific studies reporting no health risk (Siegrist & Cvetkovich, 2001). Therefore, not only the spokesperson is important to create trustworthiness, but also the content of the message is considered to judge its trustworthiness. Appling this to the case of the anti-vaccine movement, it means that people have more trust in the striking information and stories about vaccine risks and damage than in the scientific papers proving that there are no great risks related to vaccines. Because of the great impact and the decrease in immunization rates and the resulting increase in vaccine-preventable disease outbreaks and epidemics, the WHO declared vaccine hesitancy as one of the top ten global threats (WHO, 2019). The WHO also requests for better, more scientific information about vaccines especially provided by trustworthy health workers.

Furthermore, the internet and especially social media channels do not only offer an opportunity for the anti-vaccine movement. They also offer great possibilities for true public health information too. Public health providers can use these channels in the same way to spread their message based on true factual information (Dubé, et al., 2014). Consequently, it is important to develop response strategies to counter the arguments and comments of the anti-vaccine movement. The WHO developed a strategy on how to respond to vocal vaccine deniers in public media interviews.

The WHO Best Practice Guidance

The best practice guidance on ‘how to respond to vocal vaccine deniers in public’ was developed by the WHO (2017) as a guidance for everyone who wants to represent the scientific consensus in a public media debate with a vocal vaccine denier. It provides the possible speaker with information and strategies for the discussion. It is based on two rules and a goal. The goal of the discussion should be to make the public more resilient against anti-vaccine statements and stories and assist vaccine hesitants with their vaccine acceptance decision. While striving for this goal, the two rules should always be considered. Rule one specifies the general public audience (especially vaccine hesitants) as the target audience and not the vocal vaccine denier, since he is very unlikely to change his mind anyways. The second rule says that it is important to unmask the techniques vocal vaccine deniers use to support their arguments and correct the wrong content the vocal vaccine denier tries to propagate. For vaccine hesitant individuals the probability of a change of mind is rather high, therefore, it is wise to address them instead of addressing the stubborn vaccine deniers (WHO, 2019).

Vaccine deniers undertake several actions to spread their message. The most common ones are ‘skewing the science’, which means that they reject scientific evidence or misinterpret it in a way that it supports their opinion (Kata, 2012). The second one is ‘shifting hypothesis’, which means that they simply change the topic if they fear to lose a discussion or just claim any hypothesis that seems to support their argument. Another one is ‘censorship’, which includes shutting down any voice of critics, avoiding open discussions and delete or ban any contrary comments on communication platforms. The last one is ‘Attacking the opposition’, which describes acts of personal insults as well as legal actions against pro-vaccination representatives (Kata, 2012).

There are also some psychological concepts which work in favour of the anti-vaccine movement and contribute to the acceptance of misinformation, that need to be considered. The first one is the negativity bias, which describes the previously described phenomenon, that people have more trust in negative information than in positive information (Siegrist & Cvetkovich, 2001). The narrative bias represents the distortion of rational thinking through narratives (Betsch, Haase, Renkewitz, & Schmid, 2015). People tend to relate more to the emotional aspects of a story than the factual information of scientific papers. The third bias is the confirmation bias, which means that people prefer the information that confirm their own perspective (Nickerson, 1998).The last concept is the backfire effect of familiarity. When people want to debunk misconceptions, they often tend to repeat them a lot. This has the effect,

that people tend to recognize these misconceptions as false knowledge. They get familiar to those misconceptions and therefore think they are likely to be true, even though the speaker wanted to debunk them. Therefore, it is important when debunking misinformation, that the speaker provides explanations why these information is incorrect (Skurnik, Yoon, Park, & Schwarz, 2005; Swire, Ecker, & Lewandowsky, 2017).

Additionally, the speaker should state a clear key message, that needs to be well grounded. One has to decide what one wants the audience to know, explain what has already been achieved and always tell the truth, because lies are not necessary when the arguments are based on scientific evidence, which makes them even more trustworthy. Additionally, the key message needs to be simple, so that everybody understands it and should stress the safety and efficacy of vaccines, since these are the most severe concerns of vaccine hesitants. It is also very important to convince the audience from the importance of herd immunity (WHO, 2017).

During the discussion one should counter anti-vaccine content by following three steps. The first step is to identify the strategy the vocal vaccine denier is using to misinform the public. The public audience needs to know, that they are deceived at the moment with a common technique. The second step is to figure out the core points of the opponent's argument and address each of them separately, so that every point is well explained, and the audience understands why it is wrong (WHO, 2017). The last step is to respond with an evidence-based message, which has to make the importance of vaccination clear and provides the audience with scientific information. One should also stress the importance of a scientific approach to this topic and use knowledge and facts opposed to feelings and assumptions. Additionally, one should always be aware of fake experts, which are often used by vocal vaccine deniers to support their statements, however, these fake experts write misinformation and are often just invented to support anti-vaccine opinions, which should also be made clear to the audience (WHO, 2017).

All in all, the WHO sees public media as an opportunity, not a threat and wants to use them to counter anti-vaccine content. This study uses this guidance of the WHO and applies it to another media channel, the social media network 'Facebook'. Facebook is a platform, where people can share posts, pictures and videos with their friends. They can chat and like, share and comment the posts of other users. It is often used as a platform for public discussion, also about vaccines. Anti-vaxxers founded groups and sites where they share and discuss their opinion. However, they often make use of censorship to prevent people debunking their spread of

misinformation. They delete pro-vaccination comments and block vaccine supporters from their groups and sites (Wong, 2019). As a result, they have a greater impact, because no contrary opinion is presented.

The COM-B Model

A model that the WHO used to explain vaccination behaviour is the Capability, Motivation, Opportunity-Behaviour model (COM-B), developed by Michie, van Stralen and West (2011) to explain any kind of behaviour. According to the model the three factors capability, motivation and opportunity need to be in line for any health behaviour to occur. Capability and motivation are individual determinants, while opportunity is a context determinant. The motivation of an individual is influenced by capability factors as well as opportunity factors and all three kinds of factors influence the individuals' behaviour. The behaviour in reverse also influences each of the three factors, because prior behaviour can predict later behaviour (Michie, van Stralen & West 2011).

The COM-B model was adapted to vaccination behaviour by the WHO Regional Office for Europe (Habersaat & Jackson, 2019). They investigated a correlation of risk perception with vaccine behaviour as well as the knowledge level and the personal ability to follow intentions, which are all determinants related to capability and can serve either as drivers or barriers to vaccination, dependent on how the individual rates these capabilities for himself. Social norms and processes also influence the vaccination behaviour. In this case the impact of the anti-vaccine movement would decrease the vaccine acceptance by their vaccine negative norms. A vaccine positive response, like the WHO guideline addresses, would increase vaccine acceptance by presenting vaccine positive norms. Considering the vaccine safety by weighing the individuals own capabilities and opportunities will lead to a reflective and automatic motivation to either willingness to vaccinate or not and all factors together will result in the final vaccination behaviour (Habersaat & Jackson, 2019).

Based on this model the dependent variables risk perception, benefit perception, trust and intention were selected for the study, because Habersaat and Jackson (2019) found them to be important individual determinants. They are expected to influence the vaccination behaviour of the participants in interaction with the context determinant of the Social Media context of the manipulation, which provides either only vaccine negative norms or both, vaccine negative and positive norms. The prior attitude is also measured, because Michie, van Stralen and West

(2011) investigated the reverse impact of the behaviour on the three factors, so it is expected, that the scores on risk perception, benefit perception, trust and intention can be predicted by the prior attitude.

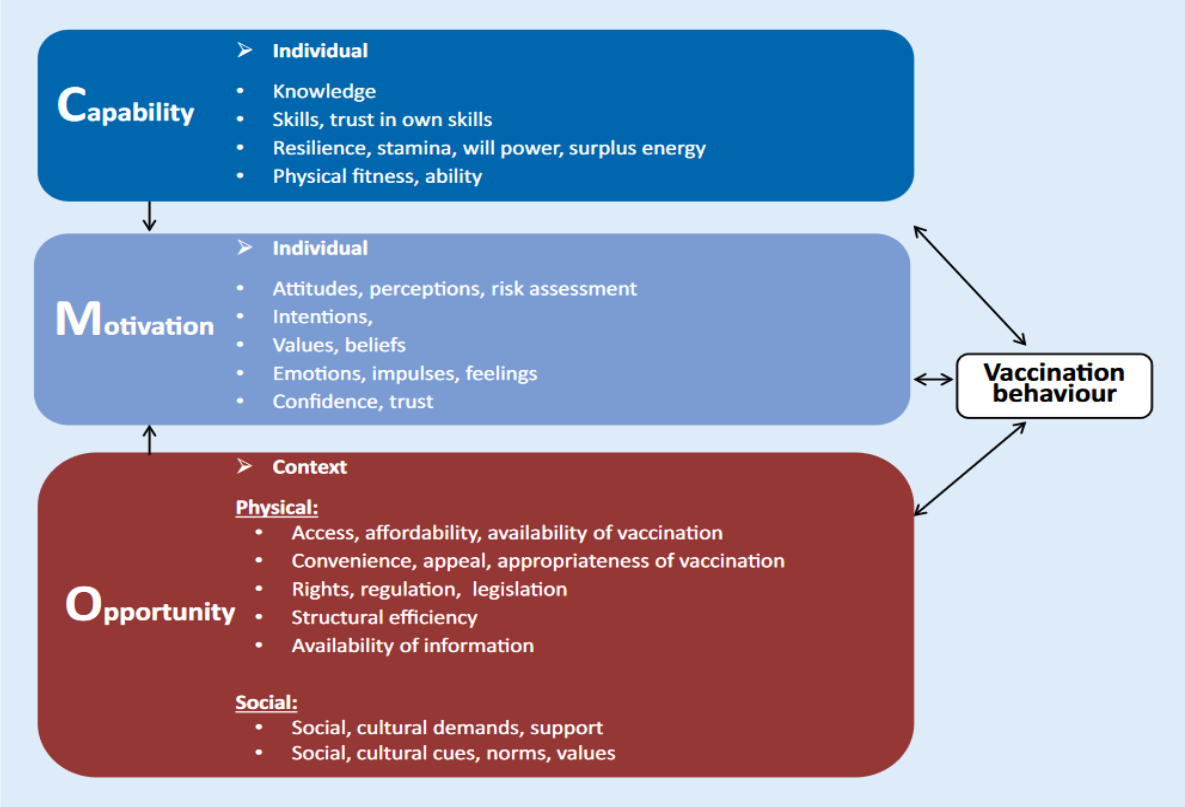


Figure 1. The COM-B model applied to vaccination behaviour by the WHO Regional Office for Europe. (Habersaat & Jackson, 2019).

Current research

In this study, the participants will be presented to a Facebook post of an anti-vaxxer and a comment that is constructed under consideration of the WHO guidance to counter the ant-vaccine message of the post. The aim of the study is to test whether the comment has an impact on the public risk perception, benefit perception, trust and intention towards vaccines. Therefore, the research question is 'Can the WHO best practice guidance on how to respond to vocal vaccine deniers in public, effectively applied to the Social media channel Facebook?'. To answer this question, the following hypothesis will be investigated.

H1= The comment to an anti-vaxxer post, constructed based on the WHO guidance, has an impact on the risk perception, benefit perception, trust and intention of the participants towards vaccines.

Methods

Participants

The participants were recruited from the personal network of the researcher and participated voluntarily. In this study 183 people participated, of those 144 completed the whole questionnaire, the rest dropped out during the process. The mean age of the participants was around 26 (*SD* = 10.5, *MIN* = 15, *MAX*=63). 70 participants (38.3%) were male and 113 participants (61.7%) were female. The requirements the participants had to fulfil were having experience with the social media channel Facebook and be German speaking. 32 participants stopped the study after being presented to the manipulation and consequently could not be included in the further analysis. 35 participants answered one of the questions of the manipulation check wrong, but it was decided to keep them in the analysis, due to the small dataset.

The participants were assigned randomly to one of the three conditions via the randomization function of Qualtrics. The participants did not know until the debriefing that different conditions existed. The randomization was successful, since the randomization check showed no significant difference between the three conditions for the independent variables age ($F = 1.33$, $df = 36$, $p = .12$), gender ($X^2 = 4.61$, $df = 2$, $p = .10$), vaccination status in childhood ($X^2 = 1.55$, $df = 4$, $p = .82$), Facebook experience ($X^2 = 2.68$, $df = 4$, $p = .61$) and Facebook use frequency ($X^2 = 10.03$, $df = 8$, $p = .26$). The only independent variable that showed a significant difference ($X^2 = 9.63$, $df = 4$, $p = .05$) was vaccination status updated.

Design

The study was designed as a true-experimental posttest-only-design. The independent variable in this study was the manipulation (see Appendix B) (three versions of a screenshot of a Facebook-post, only-post condition: being presented to the post of Larry Cook without any comment, post-and-WHO-comment condition: being presented to the post of Larry Cook and a comment to the post. The comment of the experiment condition was constructed applying the WHO guidance as a reaction to the post of Larry Cook, post-and-health-related-comment condition: being presented to the post of Larry Cook in addition of a health-topic related comment) and the dependent variables were the risk-perception, benefit-perception, trust and intention.

In the only-post condition, the participants were presented to a post by the Anti-Vaxxer Larry Cook. This condition served as a control condition. The two other conditions also saw a comment to the post. The comment of the experiment condition (post-and-WHO-comment condition) was constructed applying the WHO guidance as a reaction to the post of Larry Cook. The other condition saw a fictional comment about healthy eating, which was completely unrelated to the post of Larry Cook. This condition served as a second control condition, to check whether it was the content of the comment that had an effect or just the fact that there was a comment. From the screenshot every unnecessary information, except the post and the comments was cut out, to avoid distraction of the participants by irrelevant information. All groups had to answer a questionnaire after being presented to the manipulation.

Materials

The screenshot of the Facebook-post, the participants were presented to, was an original post from the anti-vaxxer Larry Cook. It was shortened, because a link to a video was included, which was crossed out, and translated into German. An original post of Larry Cook was selected, because he is a famous, influential anti-vaxxer in the USA with a lot of supporters (Wong, 2019). He runs a Facebook page with around 33.500 followers to spread anti-vaccine content daily (Larry Cook, 2019). As described before, also he uses censorship for his page, to ban every user and content that is in favour of vaccines. He also spreads misinformation and shares vaccine damage stories, especially of mothers losing their children supposedly due to vaccine damages. Therefore, one of his posts was selected, because it could be an authentic situation to come across with one of his posts, which have great influence on vaccine hesitants.

For the comment constructed according to the WHO guidance, first the strategy of Larry Cook was identified, which is impossible expectations. He expects health treatments to be 100% safe, but 100% safety can never be guaranteed. After that, the misinformation he spread is corrected and scientific evidence for the correction is mentioned. Additionally, the importance of vaccines and their great success is stressed and emphasised as a take home message.

Instruments

To figure out the attitude towards vaccines, an online questionnaire (see Appendix A) was created and conducted via the online survey platform Qualtrics and consisted of 47 questions. The questionnaire was constructed based on the items of the Vaccine Hesitancy Scale

(Shapiro, Tatar, Dube, Amsel, Knauper, Naz, Perez & Rosberger, 2018) and a revised version of a questionnaire on nanotechnology in food (Kuttschreuter & Hilverda, 2019). The questionnaire was translated into German.

First there were five questions about background information, including age, gender, vaccination status and Facebook experience. Then four questions about the prior attitude of the participants towards vaccines were asked. Furthermore, the questionnaire asked for prior attitude towards vaccination. After being exposed to the manipulation, the participants were asked one or two questions to check whether they understood the manipulation correctly and four to eight questions on how they experienced the post and the comment in order to evaluate the affect caused by the manipulation. At the end of the study there were two questions about the Facebook use behaviour of the participants.

There were 26 items measuring the participants risk perception, benefit perception, trust and intention towards vaccines in total. The items were phrased in form of statements and the participants had to indicate with a five-point-Likert-scale, ranging from fully agree (5) to fully disagree (1), to which extend they agree.

Risk perception: Nine of the items measured the dependent variable 'risk perception' The scale for risk perception was found to be strongly reliable (*Cronbach's α* = .71). However, the reliability could be improved further by deleting items 8 and 9 (*Cronbach's α* = .82).

Benefit perception: The dependent variable 'benefit perception' was measured by eight items and the reliability of its scale was found to be very high (*Cronbach's α* = .93).

Trust: The scale for the dependent variable 'trust' contained five items and was highly reliable (*Cronbach's α* = .88).

Intention: Four items measured the dependent variable ' intention'. The scale for intention was not found to be reliable (*Cronbach's α* = .53). The reliability of this scale could be improved by deleting the second item of the scale to make it more reliable (*Cronbach's α* = .64). Consequently, it was decided to leave the item out of the further analysis.

Prior attitude: 'Prior attitude' was included as an independent variable to measure the participants' attitude before being exposed to the manipulation. Its scale consisted of four items.

Procedure

The online study was conducted in German and approved by the BMS Ethics Committee of the University of Twente and all participants had to agree with an online informed consent. At first, the participants had to click on a link that directed them to the online survey. On the first page, the participants were presented to some general information about the study and had to agree to the informed consent. After that they had to answer some demographic questions and some questions about their prior attitude towards vaccines. Participants indicating no Facebook experience were immediately directed to the end of the survey and excluded from the data collection, because they did not fulfil the requirements to belong to the target group. Then the participants were instructed to read the Facebook post, which will follow on the next page carefully. At next they were presented to either one of the three screenshot versions of the post, depending on which condition they were assigned to. After that they all had to answer five questions for the manipulation check and evaluation of the post. The participants of Post-and-WHO-comment condition or 3 also had to answer these five questions for the comment. Then 26 questions addressing the risk perception, benefit perception, trust and intention towards vaccines followed. After that, there were two questions regarding the Facebook use behaviour of the participants. At the end of the study, the participants were presented to another text, serving as a debriefing. In this text the participants were thanked for their participation and debriefed about the study. Additionally, the researcher's e-mail address was provided, giving participants the opportunity to ask questions. The time to fill out the questionnaire was about ten to fifteen minutes.

Data Analysis

For the analysis revised items were recoded and average scores for the four variables were computed. First a chi-square was conducted to check whether the data is distributed equally over the conditions, which served as a randomization check. After that, to test the internal consistency of the items, a reliability analysis was conducted. To answer the question if the comment constructed according to the WHO guidance had an impact on the risk perception, benefit perception, trust and intention towards vaccines of the participants, a univariate ANOVA was conducted to compare the means of the three conditions. As a further exploration a regression analysis was conducted between the independent variables prior attitude and condition and the interaction of prior attitude and condition for each of the dependent variables.

Results

Descriptive statistics

Average scores on the variables risk perception, benefit perception, trust and intention were computed for all of the approximately 146 participants. As shown in Table 1. the respondents scored in the middle of the scale in risk perception (M = 2.40, SD = .80) and had rather high scores for the other three variables benefit perception (M = 4.37, SD = .69), trust (M = 3.83, SD = .86) and intention (M = 4.23, SD = .70). The minimal reached score for the variable risk perception was 1.22 and the maximal reached score 5. For the variable benefit perception, the minimum score was 1.38 and the maximum 5. For the variable trust the scores ranged from 1 to 5 and for intention from 2 to 5. The prior attitude was also assessed, and the scores were rather high (M = 3.75, SD = .81).

Table 1.

Descriptive Statistics.

	Only-post Condition (N=39)		**Post-and-WHO-comment Condition (N=52*)**		**Post-and-health-related-comment Condition (N=56**)**		**Total**				
Construct	***M***	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***	***F***	***df***	***p****
Risk perception	2.38	.75	2.55	.90	2.28	.72	2.40	.80	1.49	2	.23
Benefit perception	4.41	.63	4.36	.77	4.34	.65	4.37	.69	.12	2	.89
Trust	3.83	.72	3.79	.97	3.87	.86	3.83	.86	.12	2	.88
Intention	4.30	.59	4.17	.79	4.23	.69	4.23	.70	.36	2	.70
Prior attitude	3.70	.59	3.68	.62	3.84	.56	3.75	.81			

a. Only-post Condition = Condition 1, post without comment, post-and-WHO-comment Condition = Condition 2 post and comment according to WHO guideline, post-and-health-related-comment Condition = Condition 3, post and comment related to a health topic.

b. note: *M = mean; SD* = standard deviation.

*. N for risk perception and benefit perception = 51.

**. N for risk perception and benefit perception = 54.

***. The scores did also show no significant difference, if the participants, who answered the manipulation check wrong, were excluded from the analysis (N= 117; Risk perception: F = 1.05, df = 2, p = .35; Benefit perception: F = .08, df = 2, p = .92; Trust: F = .81, df = 2, p = .45; Intention: F = .43, df = 2, p = .65).

Inferential Statistics

To test the hypothesis a univariate ANOVA was conducted. No significant difference in risk perception was found between the three conditions (F = 1.49, df = 2, p = .23). That means, that neither of the conditions, the participants were assigned to, had an impact on the risk perception of the participants. There was also no significant evidence for a difference in benefit perception between the three conditions (F = .12, df = 2, p = .89), which means that the conditions also had no impact on the participants' benefit perception. Moreover, no significant difference was found for the trust of the participants (F = .12, df = 2, p = .88). As a result, the conditions also did not affect the level of trust of the participants. Additionally, also intention did not significantly differ in scores (F = .36, df = 2, p = .70), so the conditions also had no impact on the intention of the participants. All in all, no significant difference was found for any of the variables. Therefore, the conditions did not affect the risk perception, benefit perception, trust and intention of the participants in a positive way as hypothesised. Consequently, the hypothesis needs to be rejected.

Further Exploration

To investigate whether the interaction effect between the condition and the prior attitude of the participants had an impact on the variables, the total score for the prior attitude was calculated and a univariate ANOVA was conducted.

In general, the prior attitude of the participants was rather positive (M = 3.75, SD = .81). It was no interaction effect found (see table 2.) on *risk perception* (t = .16, p = .88), which means, that the condition paired with the prior attitude had no effect on the score of risk perception. The main effect of the prior attitude was found to be significant (t = -9.89, p = .00), which means that one can predict the score of risk perception based on the prior attitude. A positive prior attitude will indicate a low score on risk perception. The main effect of the condition was not significant (t = -.29, p = .77), which means, that the condition itself had no effect on risk perception.

For *benefit perception* also was no significant interaction effect found (t = -.11, p = .91), so there was also no effect of the interaction between condition and prior attitude on benefit perception. However, the main effect of the prior attitude was found to be significant for benefit perception (t = 12.95, p = .00). A high score on the prior attitude would predict a high score on benefit perception. Contrary, the main effect of the condition was not found to be significant (t = -1.52, p = .13), so the condition had no impact on the participants' benefit perception.

The interaction effect for the variable *trust* was not significant (t = 1.08, p = .28), so there was no effect of condition interacting with the prior attitude on trust. The main effect of the prior attitude on trust was significant (t = 11.07, p = .00), which means that a positive prior attitude will predict a high score on trust. The main effect of the condition in contrast was not significant (t = -.37, p = .71). Consequently, the condition had no effect on the trust of the participants.

For the last variable, *intention*, the interaction effect of condition and prior attitude also was not significant (t = -.31, p = .76), so there was no effect of the interaction on intention. Contrary, the main effect of prior attitude was found to be significant (t = 6.98, p = .00), so a high score on the prior attitude means a high score on intention. For the condition the main effect was not significant (t = -.84, p = .40), so the condition also had no impact on the participants' intention.

Table 2.

Interaction effect.

	Risk perception		**Benefit perception**		**Trust**		**Intention**	
Construct	***t***	***p***	***t***	***p***	***t***	***p***	***t***	***p***
Prior attitude	-9.89	.00	12.95	.00	11.07	.00	6.98	.00
Condition	-.29	.77	-1.52	.13	-.37	.71	-.84	.40
Interaction (prior attitude*condition)	.16	.88	-.11	.91	1.08	.28	-.31	.76

Discussion

Summary

The anti-vaccine-movement got more and more present in the public and endangers the general public health by sharing a negative attitude towards vaccines and supporting this with misinformation. The WHO rated this problem as very severe and developed a guidance on how to best respond to an anti-vaxxer in a media interview. Furthermore, anti-vaxxers are present on all media channels, social media channels as well. Therefore, this study aimed to investigate whether it is effectively possible to use the WHO guidance also to create efficient responses to anti-vaxxer posts on social media platforms, in this case on Facebook. The participants had to fill out a questionnaire after being exposed to an anti-vaxxer post. There were three conditions in the study. One group saw only the anti-vaxxer post, while the other two groups additionally saw a comment to the post. One of the comment-groups saw a comment that was created by applying the WHO guidance and the other group saw a completely unrelated comment. The study investigated whether the comment created based on the WHO guidance had an impact on the risk perception, benefit perception, trust and intention of the participants towards vaccines. After the study was conducted, the hypothesis had to be rejected, because no difference between the scores of the groups was found. Consequently, the comment constructed according to the WHO guidance had no positive impact on the risk perception, benefit perception, trust and intention of the participants. As an answer to the research question, whether the WHO guidance can be effectively applied to Social media, it can be concluded that it did not work out to apply the WHO guidance for Social media in an effective way in this study.

Explanation of Results

This can have several reasons. The first thing to consider is, that the manipulation possibly was not sufficient enough to have the intended effect. Some participants reported that the picture of the manipulation was really small on the mobile version of the questionnaire and it was not possible to zoom on some smartphones. Therefore, for some of them the manipulation was not readable at all, so they had to quit the study or just guess the answers of the manipulation check, which lead to missing or wrong responses. Others reported that it was very hard to read the manipulation, because it was displayed that small, but they tried their best to figure it out. Both cases could have influenced and reduced the intended impact of the manipulation, because the poor readability could have reduced the concentration and attention

of the participants, so that they did not answer the questions that carefully and conscientiously anymore.

Furthermore, concerning the manipulation, the construction of the comment needs to be considered. The WHO guidance was constructed for a public discussion in the media, which is a face to face talk. It is explicitly stressed that one needs to address the general audience (WHO, 2017). The WHO used a lot of (risk) communication theories as a basis for the practice they describe in the guidance. The importance of good communication skills, to inform the public and correct misinformation, is stressed (Covello, Sandman, & Slovic, 1988). Communication skills include oratory techniques, verbal as well as non-verbal, (Antonakis, Fenley, & Liechti, 2012) and listening skills (Brownell, 2010). The Audience of the public discussion will judge how convincing a speaker is based on all his communication skills (Brownell, 1994). Therefore, it is important to make good use of the communication skills in a public discussion to convince the audience.

The comment constructed according to this WHO guidance, contrary to a face to face discussion was a written response to an anti-vaxxer statement. Consequently, during the construction the three steps on how to phrase the response could be considered, but the use of communication skills was not possible. Since it is a written statement, no non-verbal communication techniques like gestures or intonation could be used. Only exclamation marks or variation in font can be used to stress specific parts. This makes the written response more unpersonal and less strong and meaningful than a face to face talk, because it is more difficult to create a personal relationship to the audience in written form. Moreover, face to face talks create more proximity between the conversation partners and it is easier to solve problems and make agreements face to face (Storper & Venables, 2004). Additionally, the listening skills cannot be applied to a written post. One can stress the points the opponent stated, but one cannot show active listening behaviour, which is important to create a personal interaction and be a convincing discussion opponent to the audience (Warren & Fassett, 2014).

The audience is also an important difference between face to face public discussions and post and comment discussions on Social Media. In a public discussion, the audience is present and actively decided to join the discussion. They watch the discussion, because they are curious about the topic and interested in gaining new insights or seeing different perspectives. On Social Media Channels instead, people are presented to posts of a diversity of topics. They can choose what they want to read and skip a post, when they are not interested in the topic.

Moreover, it is not the main function of Social Media platforms like Facebook to provide information about serious topics of society. Many people use it just for fun activities, like chatting or sharing thoughts or pictures with their friends (Whiting & Williams, 2013).

It is much more difficult to convince an audience, that might be not that interested in either the topic or in getting new perspectives on the topic, as it is the case for Facebook users, which are the audience to the post and comment discussion scenario, as simulated in this study, than to convince an audience that is more curious about a topic and more open to change their mind, as in the public media discussion scenario, the WHO intended the guidance for. Furthermore, the personal distance towards the authors of the posts and comments on Facebook, created by the missing non-verbal behaviour and listening skills and the anonymity of Social Media platforms, is a difference towards a public discussion, where it is important to build a personal relationship with the audience. All these differences between the face-to-face discussion and the post-comment-written-online discussion can be factors that explain why the manipulation had no impact on the risk perception, benefit perception, trust and intention towards vaccines of the participants.

Another point to consider is the methodology. The scales were highly reliable, except for the scale of 'intention'. Some items needed to be deleted from the scale of risk perception as well as intention, because they lowered the reliability, but after that the reliability of every scale was sufficient. Furthermore, the sample size was sufficient, and the participants were distributed equally over the conditions, so the randomization was successful. Henceforth, the results of the sample are generalisable. Consequently, it is more likely, that the readability of the manipulation or the differences between a face-to-face discussion and a written-online discussion are the reason, that the comment had no impact to the participants' risk perception, benefit perception, trust and intention towards vaccines.

Besides these findings, the further exploration did not find an interaction between the condition and the prior attitude, which was assumed based on the COM-B model (Habersaat & Jackson, 2019). However, the participants' scores on the four dependent variables could be predicted based on the prior attitude of the participants, which is in line with the COM-B model (Michie, van Stralen & West 2011).

Generalizability

The sample size was sufficient, and the amount of female and male participants was almost balanced. The mean age was rather low (around 26) but had a broad range from 15 to 63. All participants were German speaking and had experience with Facebook. The distribution of the participants across the three conditions was also sufficient. Hence, it can be said, that the results of this study can be generalized to the younger German population aged around 26.

The manipulation was translated from English to German, since the study was conducted in Germany. This could have led to some mistakes or could have weakened the authenticity of the authors and the strength of the message conveyed by either the post or the comment. Due to the translation, some words could have lost their intensity or strength or become stronger and more intense, which could cause a slight shift of focus for the post or comment, so that the participants might experience the post and comment different in different languages. Therefore, the generalizability of the results cannot be guaranteed for different languages.

As mentioned before, the intention of Facebook users is different than the intention of a public discussion audience. In the most cases, they do not read posts, because they explicitly searched for it, they do it rather, because it was presented to them and seemed to be interesting. In the case of this study it is different, because the participants were imposed to read the post, since it was part of the study and they were instructed to read it. So, the context is different in this study, which negatively affects the generalizability of the results slightly.

On Facebook almost every topic is discussed and for every topic there are groups spreading positive norms and groups spreading negative norms. These norms can influence the context determinants according to the COM-B model (Michie, van Stralen & West, 2011) either positive or negative, which will have an impact on the motivation of the individual. Together with the capability of the individual the three factors will impact the behaviour. This model holds for vaccines in the same as for other topics, therefore it is possible to generalize the results of this study to other topics.

What does it mean for Health Agencies

The anti-vaccine movement poses a great danger to the general public health. They also use Social media channels like Facebook as a platform to share and spread their message. Therefore, it is important for health agencies and vaccine-risk communication organisations to

be aware of the impact the anti-vaccine movement has via Facebook. Even though this study found no impact of the anti-vaccine-countering comment on the participants' risk perception, benefit perception, trust and intention, it is still important to correct the misinformation that are spread by anti-vaxxers via Social Media. In the WHO guidance, it is stressed, that misinformation need to be corrected to prevent the manifestation of these wrong facts in the minds of the public. Therefore, health agencies and specifically vaccine-risk communication organisations should try to increase the awareness that anti-vaxxer-networks are present on social media channels and train to detect misinformation spread by them.

Henceforth, based on the findings of this study they should keep in mind, that the people are not that willing to change their mind. The results of the further explorations show that the participants most of the time stick to their prior attitude on vaccines after being exposed to the manipulation. The attitude after being exposed to the manipulation can be predicted by the prior attitude. A positive prior attitude predicts a low risk perception and high benefit perception, trust and intention. This means for the risk communicators that people with a manifested prior attitude are not likely to be influenced by all the anti-vaccine contend they are presented to on Social Media. However, people that are still critical and vaccine hesitant could still be influenced by the misinformation provided by anti-vaxxers (WHO, 2017). As a consequence, risk communicators should not overestimate the impact of anti-vaxxer posts, but still be aware that there are small more vulnerable groups, that are likely to be influenced by anti-vaccine content.

Suggestions For Further Research

The application of the WHO guidance to social media context was successful, because it was possible to create a response comment to an anti-vaxxer post by applying the three steps mentioned in the guidance. Apparently, the comment had no impact on the participants' risk perception, benefit perception, trust and intention towards vaccines, which could be caused among other things by the poor readability of the manipulation on mobile devices. Based on that, it can be advised to replicate the study with an improved version of the manipulation.

Another suggestion would be to apply the study to another topic than vaccines. The WHO guidance was designed specifically to counter anti-vaxxers, but it was grounded on a lot of theories on (risk) communication in general. Hence, it would be interesting to investigate whether and to what extend it can also be applied to any other topic or context.

Literature

Antonakis, J., Fenley, M., & Liechti, S. (2012). Learning charisma. Transform yourself into the person others want to follow. *Harvard business review*, *90*(6), 127-30.

Bachleda, S., Neuner, F., Soroka, S., Guggenheim, L., Fournier, P., & Naurin, E. (2019). Individual-level differences in negativity biases in news selection. *Personality And Individual Differences*, *155*, 109675. doi: 10.1016/j.paid.2019.109675

Betsch, C., Haase, N., Renkewitz, F., & Schmid, P. (2015). The narrative bias revisited: What drives the biasing influence of narrative information on risk perceptions?. *Judgment and Decision Making*, *10*(3), 241.

Betsch C, Renkewitz F, Betsch T, & Ulshofer C. (2010). The Influence of Vaccine-Critical Websites on Perceiving Vaccination Risks. *J Health Psychol*, *15*(3), 446-55.

Brownell, J. (2010). The Skills of Listening-Centered Communication. Listening and Human Communication in the 21st Century. Ed. Andrew D. Wolvin. West Sussex, UK: *Blackwell Publishing*, 2010. 141-57.

Brownell, J. (1994). Teaching listening: Some thoughts on behavioral approaches. *Business Communication Quarterly*, *57*(4), 19-24.

Covello, V. T., Sandman, P. M., & Slovic, P. (1988). Risk communication, risk statistics, and risk comparisons: A manual for plant managers. Washington, DC: *Chemical Manufacturers Association*, 1-57.

Dubé, E., Vivion, M., & MacDonald, N. (2014). Vaccine hesitancy, vaccine refusal and the anti-vaccine movement: influence, impact and implications. *Expert Review Of Vaccines*, *14*(1), 99-117. doi: 10.1586/14760584.2015.964212

Habersaat, K., & Jackson, C. (2019). Understanding vaccine acceptance and demand—and ways to increase them. *Bundesgesundheitsblatt – Gesundheitsforschung Gesundheitsschutz*, *63*(1), 32-39. doi: 10.1007/s00103-019-03063-0

Larry Cook (2019, September 16). WATCH HERE. [Facebook update] https://www.facebook.com/LarryCook333. Retrieved 8 October 2019, from https://www.facebook.com/LarryCook333

Michie, S., van Stralen, M., & West, R. (2011). The behaviour change wheel: A new method for characterising and designing behaviour change interventions. *Implementation Science, 6*(1). doi: 10.1186/1748-5908-6-42

Kata, A. (2012). Anti-vaccine activists, Web 2.0, and the postmodern paradigm–An overview of tactics and tropes used online by the anti-vaccination movement. *Vaccine, 30*(25), 3778-3789.

Krishna, A. (2017). Poison or Prevention? Understanding the Linkages between Vaccine-Negative Individuals' Knowledge Deficiency, Motivations, and Active Communication Behaviors. *Health Communication, 33*(9), 1088-1096. doi:10.1080/10410236.2017.1331307

Kuttschreuter, M., & Hilverda, F. (2019). Risk and benefit perceptions of human enhancement technologies: The effects of Facebook comments on the acceptance of nanodesigned food. *Human Behavior And Emerging Technologies*, *1*(4), 341-360. doi:10.1002/hbe2.177

Nickerson, R. S. (1998). Confirmation bias: A ubiquitous phenomenon in many guises. *Review of general psychology, 2*(2), 175.

Siegrist, M., & Cvetkovich, G. (2001). Better negative than positive? Evidence of a bias for negative information about possible health dangers. *Risk Analysis, 21*(1), 199-206.

Shapiro, G., Tatar, O., Dube, E., Amsel, R., Knauper, B., & Naz, A. et al. (2018). The vaccine hesitancy scale: Psychometric properties and validation. *Vaccine, 36*(5), 660-667. doi:10.1016/j.vaccine.2017.12.043

Skurnik, I., Yoon, C., Park, D. C., & Schwarz, N. (2005). How warnings about false claims become recommendations. *Journal of ConsumerResearch, 31*, 713–724.

Storper, M., & Venables, A. (2004). Buzz: face-to-face contact and the urban economy. *Journal Of Economic Geography*, *4*(4), 351-370. doi: 10.1093/jnlecg/lbh027

Swire, B., Ecker, U. K., & Lewandowsky, S. (2017). The role of familiarity in correcting inaccurate information. *Journal of experimental psychology: learning, memory, and cognition.*

Warren, J. T., & Fassett, D. L. (2014). Communication: A Critical/Cultural Introduction. Thousand Oaks: SAGE. *SAGE Publications.*

Whiting, A., & Williams, D. (2013). Why people use social media: a uses and gratifications approach. *Qualitative Market Research: An International Journal*, *16*(4), 362-369. doi: 10.1108/qmr-06-2013-0041

Wong, J. (2019). Anti-vaxx 'mobs': doctors face harassment campaigns on Facebook. Retrieved 16 November 2019, from https://www.theguardian.com/technology/2019/feb/27/facebook-anti-vaxx harassment-campaigns-doctors-fight-back

World Health Organization (2017). How to respond to vocal vaccine deniers in public: Best practice guidance. WHO, 2017. http://www.euro.who.int/__data/assets/pdf_file/0005/315761/Best practice-guidance respond-vocal-vaccine-deniers-public.pdf

World Health Organization (2019). Ten health issues WHO will tackle this year. WHO, 2019. Retrieved 16. December 2019, from https://www.who.int/emergencies/ten-threats-to-global-health-in-2019

Appendix A

Questionnaire

English Version.

Demographics:

1. Age: ____
2. Male or Female:
3. Have you received all your childhood vaccinations? Yes No
4. Have you updated your childhood vaccinations according to the schedule? Yes No
5. What are your experiences with Facebook?
    - I currently have an own account
    - I had an own account in the past
    - I used the account of a friend
    - I have no experience with Facebook

Prior Attitude:

6. Being vaccinated is important for my health.
   Strongly disagree 5 4 3 2 1 Strongly agree

7. Vaccination protects me against diseases.
   Strongly disagree 5 4 3 2 1 Strongly agree

8. Vaccines can carry risks.
   Strongly disagree 5 4 3 2 1 Strongly agree

9. Overall, I perceive the side effects of vaccines as…
   Neglegible 5 4 3 2 1 Very serious

Manipulation/ POST

On the next side you will see a Facebook post. Please, read the post carefully and try to understand the message it conveys.

Manipulation

Manipulation check:

10. Which opinion holds the author of the post (Larry Cook) towards vaccines?
    - He is in favour of vaccines
    - He is against vaccines
    - He does not state his opinion towards vaccines

(Only Post-and-WHO-comment condition & 3):

There is a reply to the post by Larry Cook.

11. What is the opinion of this person (Dr. Frank Bertmann) towards vaccines?

- He is in favour of vaccines
- He is against vaccines
- He does not state his opinion towards vaccines

Trustworthiness of the two authors:

How did you perceive the author of the post (Larry Cook)?

12. Very trustworthy 1 2 3 4 5 Very untrustworthy

13. Very informed 1 2 3 4 5 Very uninformed

14. Very authentic 1 2 3 4 5 Very unauthentic

15. What do you think about the Facebook post by Larry Cook?
    - I perceive the statements in the post to be clear
    - I consider the post to be emotionally laden
    - I can use his statements to advise a friend on this topic
    - In my opinion, the post comes across as being biased

How did you perceive the author of the comment to the post (Dr Frank Bertmann)?

16. Very trustworthy 1 2 3 4 5 Very untrustworthy

17. Very informed 1 2 3 4 5 Very uninformed

18. Very authentic 1 2 3 4 5 Very unauthentic

19. What do you think about the reply by Dr Frank Bertmann to the Facebook post?
    - I perceive the statements in the comment to be clear
    - I consider the comment to be emotionally laden
    - I can use this comment to advise a friend on this topic
    - In my opinion, the comment comes across as being biased

Dependent variables:

Indicate for every question how much you agree with the each of the following statement on vaccinations?:

Risk Perception:

What do you think about childhood vaccines and their application?

20. I think that childhood vaccines are bad for my health.
    Strongly agree 5 4 3 2 1 Strongly disagree

21. I think that there are many risks attached to childhood vaccines.
    Strongly agree 5 4 3 2 1 Strongly disagree

22. I think childhood vaccines have many downsides/ side effects.
    Strongly agree 5 4 3 2 1 Strongly disagree

23. I think that childhood vaccines are hazardous to my health.
    Strongly agree 5 4 3 2 1 Strongly disagree

24. New vaccines carry more risks than older vaccines.
    Strongly agree 5 4 3 2 1 Strongly disagree

25. I am concerned about serious adverse effects of vaccines.
    Strongly agree 5 4 3 2 1 Strongly disagree

26. Vaccination does not eradicate diseases.
    Strongly agree 5 4 3 2 1 Strongly disagree

27. Vaccine-preventable diseases can cause severe health issues.
    Strongly agree 5 4 3 2 1 Strongly disagree

28. Vaccine-preventable diseases can lead to death in the worst case.

Strongly agree 5 4 3 2 1 Strongly disagree

Benefit perception:

What do you think about childhood vaccines and their application?

29. I think that childhood vaccines have many benefits

Strongly disagree 5 4 3 2 1 Strongly agree

30. I think that childhood vaccines are good for my health

Strongly disagree 5 4 3 2 1 Strongly agree

31. I think that childhood vaccines are beneficial to my health

Strongly disagree 5 4 3 2 1 Strongly agree

32. I think that there are many benefits attached childhood vaccines.

Strongly disagree 5 4 3 2 1 Strongly agree

33. I think that childhood vaccines are important for my health.

Strongly disagree 5 4 3 2 1 Strongly agree

34. I think that childhood vaccines are effective.

Strongly disagree 5 4 3 2 1 Strongly agree

35. I think that being vaccinated is important for the health of others in my community.

Strongly disagree 5 4 3 2 1 Strongly agree

36. I think that getting vaccines is a good way to protect me from disease.

Strongly disagree 5 4 3 2 1 Strongly agree

Trust:

To what extent do you think health care workers can handle the risks attached to vaccines?

37. I can rely on it that all childhood vaccines that are offered are adequately safety tested.
    Strongly disagree 5 4 3 2 1 Strongly agree

38. I have complete confidence in the safety of the childhood vaccines that are offered.
    Strongly disagree 5 4 3 2 1 Strongly agree

39. All childhood vaccines offered by the government program in my community are safe.
    Strongly disagree 5 4 3 2 1 Strongly agree

40. All childhood vaccines offered by the government program in my community are beneficial.
    Strongly disagree 5 4 3 2 1 Strongly agree

41. The information I receive about vaccines from the vaccine program is reliable and trustworthy.
    Strongly disagree 5 4 3 2 1 Strongly agree

Intention/ Willingness:

42. Generally, I do what my doctor or health care provider recommends about vaccines for me.
    Strongly disagree 5 4 3 2 1 Strongly agree

43. I do not need vaccines for diseases that are not common anymore.
    Strongly agree 5 4 3 2 1 Strongly disagree

44. Updating my childhood vaccines according to the schedule is important.
    Strongly disagree 5 4 3 2 1 Strongly agree

45. Vaccination is necessary to prevent getting childhood diseases.
    Strongly disagree 5 4 3 2 1 Strongly agree

Social media use:

46. How often do you use Facebook?

- Every day
- 2-4 times a week
- Once a week
- Once a month
- Less than once a month

47. For which purpose do you use Facebook? (more than one answer possible)

- To chat with friends
- To exchange with people about topics that interest me
- To read/ watch funny posts
- To tag my friends in funny memes
- To read interesting, informative posts
- To stay up to date about the latest news
- To share photos and thoughts with other people
- To avoid being bored
- Other_____

Debriefing:

All participants were randomly assigned to one of three groups. An original Facebook post from the anti-vaxxer Larry Cook was presented to each group. He used misinformation to support his statements against vaccines. Two of the groups also saw a fictional comment to that post. One group saw a post that was a direct response to the message of the post. This response was created by applying an advice of the World Health Organisation (WHO) on how to respond to an anti-vaxxer. The WHO developed this advice, because the anti-vaccine movement poses a great risk to the general public health. Vaccinations save millions of lives and are important to ensure the personal as well as general public health. The second group saw a comment that was completely unrelated to the content of the post. The aim of the study was to find out whether the comment created according to the WHO advice had a positive impact on the attitude towards vaccination.

German Version.

Fragebogen

Informed consent:

Herzlich Willkommen!
Ich bin Psychologie Studentin an der University of Twente.
Im Rahmen meiner Bachelorarbeit führe ich eine Studie zum Thema Impfstoffe und Social Media durch. Impfungen sind ein in den Medien häufig diskutiertes Thema. Sie werden zu Ihrer persönlichen Einstellung zu diesem Thema befragt.
Vorab hier noch einige Informationen zur Studie:
Ich bin an ihrer persönlichen Meinung interessiert. Das heißt, es gibt keine richtigen oder falschen Antworten.
Das Ausfüllen des Fragebogens dauert ca. 10 Minuten.
Alle Daten werden anonymisiert und vertraulich behandelt, sodass der Datenschutz gewährleistet ist und die Daten keiner Person zugeordnet werden können.
Die Ergebnisse werden ausschließlich für meine Bachelorarbeit verwendet.
Die Teilnahme an dieser Studie erfolgt freiwillig.
Sie können die Studie jederzeit, ohne jegliche Folgen oder Konsequenzen für Sie und ohne Gründe dafür zu nennen, abbrechen.

Mit dem Klicken zur nächsten Seite bestätigen Sie, dass Sie die Informationen gelesen haben und mit der Teilnahme an dieser Studie einverstanden sind.

Demografisches:

1. Alter
2. Geschlecht: männlich/ weiblich
3. Haben Sie alle Kinderimpfungen bekommen? Ja/ Nein
4. Haben Sie die Kinderimpfungen dem Zeitplan entsprechend auffrischen lassen? Ja/ Nein
5. Was sind Ihre Erfahrungen mit Facebook?
    - Ich habe derzeit einen eigenen Account.
    - Ich hatte in der Vergangenheit einen eigenen Account.
    - Ich habe schonmal den Account eines Freundes/ von jemand anderem benutzt.

- Ich habe keine Erfahrungen mit Facebook. -> Dankeseite

Vorherige Einstellung:

Wie stehen Sie zu Impfungen? Geben Sie für jede Aussage an inwiefern Sie zustimmen.

6. Geimpft zu sein ist wichtig für meine Gesundheit.
   Ich stimme gar nicht zu 1 2 3 4 5 Ich stimme voll zu

7. Impfungen schützen mich vor Krankheiten.
   Ich stimme gar nicht zu 1 2 3 4 5 Ich stimme voll zu

8. Impfstoffe können Risiken bergen.
   Ich stimme gar nicht zu 1 2 3 4 5 Ich stimme voll zu

9. Insgesamt empfinde ich die Nebenwirkungen von Impfstoffen als
   Vernachlässigbar 1 2 3 4 5 sehr ernst

Auf der nächsten Seite werden Sie einen Facebook-Beitrag sehen. Bitte lesen Sie den Beitrag aufmerksam und versuchen Sie die Aussagen zu verstehen. Es wird Ihnen im weiteren Verlauf der Studie nicht möglich sein zu dieser Seite zurück zu kehren.

Manipulation

Manipulation check:

Die folgenden Fragen beziehen sich auf den zuvor gezeigten Facebook-Beitrag. Bitte beantworten Sie diese entsprechend den Informationen, die Sie aus dem Beitrag entnommen haben.

10. Welche Einstellung vertritt der Autor des Beitrags (Larry Cook) gegenüber Impfstoffen?
    - Er ist für Impfstoffe
    - Er ist gegen Impfstoffe
    - Er äußert seine Einstellung zu Impfstoffen nicht

Wie haben Sie den Autor des Beitrags (Larry Cook) wahrgenommen?

11. Sehr vertrauenswürdig 5 4 3 2 1 sehr unvertrauenswürdig

12. Sehr informiert 5 4 3 2 1 sehr uninformiert
13. Sehr authentisch 5 4 3 2 1 sehr unauthentisch

14. Was denken Sie über den Beitrag von Larry Cook?
    - Ich habe die Aussagen im Beitrag als verständlich wahrgenommen.
    - Ich betrachte den Beitrag als emotional geladen.
    - Ich kann seine Aussagen verwenden, um einen Freund zu diesem Thema zu beraten.

Es gab eine Antwort auf den Beitrag von Larry Cook.

15. Welche Einstellung vertritt diese Person (Dr. Frank Bertmann) gegenüber Impfstoffen?
    - Er ist für Impfstoffe
    - Er ist gegen Impfstoffe
    - Er äußert seine Einstellung zu Impfstoffen nicht

Wie haben Sie den Autor des Kommentars zum Beitrag (Dr. Frank Bertmann) wahrgenommen?

16. Sehr vertrauenswürdig 5 4 3 2 1 sehr unvertrauenswürdig
17. Sehr informiert 5 4 3 2 1 sehr uninformiert
18. Sehr authentisch 5 4 3 2 1 sehr unauthentisch

19. Was denken Sie über die Antwort von Dr. Frank Bertmann zum Facebook-Beitrag?
    - Ich habe die Aussagen im Beitrag als verständlich wahrgenommen.
    - Ich betrachte den Beitrag als emotional geladen.
    - Ich kann seine Aussagen verwenden, um einen Freund zu diesem Thema zu beraten.

Im Folgenden werden Sie zu Ihrer Einstellung gegenüber Impfstoffen und deren Anwendung befragt. Geben Sie für jede Frage an, inwiefern Sie jeder der folgenden Aussagen zustimmen:

Was denken Sie über Kindheitsimpfstoffe und ihre Anwendung?

20. Ich denke, dass Kindheitsimpfstoffe schlecht für meine Gesundheit sind. RP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

21. Ich denke, dass Impfstoffe viele Vorteile haben. BP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

22. Ich kann mich darauf verlassen, dass alle angebotenen Impfstoffe ausreichend sicherheitsgeprüft sind. T
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

23. Allgemein tue ich, was mein Arzt mir zu Impfstoffen empfiehlt. I
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

24. Ich glaube, dass viele Risiken mit Impfstoffen verbunden sind. RP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

25. Ich glaube, dass Impfstoffe gut für meine Gesundheit sind. BP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

26. Ich habe volles Vertrauen in die Sicherheit der angebotenen Impfstoffe. T
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

27. Ich brauche keine Impfstoffe für Krankheiten, die nicht mehr verbreitet sind. I
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu !! Negative Item!!

28. Ich denke, dass Impfstoffe viele Nachteile/ Nebenwirkungen haben. RP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

29. Ich denke, dass Impfstoffe vorteilhaft für meine Gesundheit sind. BP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

30. Alle Impfstoffe, die vom Regierungsprogramm (meiner Gemeinde) angeboten werden, sind sicher. T
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

31. Meine Kindheitsimpfungen dem Zeitplan entsprechend aufzufrischen ist wichtig. I
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

32. Ich glaube, dass Impfstoffe schädlich für meine Gesundheit sind. RP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

33. Ich denke, dass viele Vorteile mit Impfstoffen verbunden sind. BP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

34. Alle Impfstoffe, die vom Regierungsprogramm (meiner Gemeinde) angeboten werden, sind vorteilhaft. T
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

35. Impfungen sind notwendig, um zu verhindern Kinderkrankheiten zu bekommen. I
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

36. Neue Impfstoffe bergen mehr Risiken als alte Impfstoffe. RP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

37. Ich glaube, dass Impfstoffe wichtig für meine Gesundheit sind. BP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

38. Die Informationen, die ich vom Impfprogramm über Impfungen erhalte, sind zuverlässig und vertrauenswürdig. T
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

39. Ich bin über ernsthafte negative Auswirkungen von Impfstoffen besorgt. RP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

40. Ich denke, dass Impfstoffe effektiv sind. BP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

41. Impfungen rotten keine Krankheiten aus. RP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

42. Ich glaube, dass geimpft sein wichtig für die Gesundheit anderer in meiner Gesellschaft ist. BP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

43. Durch Impfungen vermeidbare Krankheiten können schwere gesundheitliche Probleme verursachen. RP -> neg. Item?
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

44. Ich denke, dass Impfungen eine gute Maßnahme sind, um mich vor Krankheiten zu schützen. BP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

45. Durch Impfungen vermeidbare Krankheiten können im schlimmsten Fall zum Tode führen. RP
    Ich stimme voll zu 5 4 3 2 1 Ich stimme gar nicht zu

Social Media Nutzung:

Abschließend werden Sie noch zu Ihrer Social Media Nutzung von Facebook befragt.

46. Wie oft nutzen Sie Facebook?
    - Täglich
    - 2-4 mal die Woche
    - Einmal die Woche
    - Einmal im Monat
    - Weniger als einmal im Monat

47. Zu welchem Zweck nutzen Sie Facebook?
    - Um mit Freunden zu schreiben
    - Um mich mit Leuten über Themen auszutauschen, die mich interessieren
    - Um unterhaltsame Beiträge zu lesen/ anzuschauen
    - Um meine Freunde unter witzigen Memes zu markieren
    - Um interessante, informative Beiträge zu lesen
    - Um auf dem neusten Stand aktueller Neuigkeiten zu sein
    - Um Bilder und Gedanken mit anderen Leuten zu teilen

- Um Langeweile zu vermeiden
- Andere:_____

Debriefing:

Alle Teilnehmer wurden zufällig einer von drei Gruppen zugeteilt. Jede Gruppe hat einen (gekürzten, ins Deutsche übersetzten) originalen Facebook-Beitrag des Impfgegners Larry Cook gesehen. Dieser hat Fehlinformationen benutzt, um seine Argumente gegen Impfstoffe zu stützen. Zwei der Gruppen haben zusätzlich einen fiktiven Kommentar zu diesem Beitrag gezeigt bekommen.

Eine Gruppe hat einen Kommentar gesehen, der eine direkte Reaktion auf die Aussagen des Beitrags von Larry Cook war. Diese Antwort wurde unter Berücksichtigung eines Ratschlags der Weltgesundheitsorganisation (WHO), wie auf Impfgegner zu reagieren sei, verfasst. Die WHO entwickelte diesen Ratschlag, da die Anti-Impfbewegung ein sehr großes Risiko für die allgemeine öffentliche Gesundheit darstellt. Impfungen retten Millionen von Leben und sind wichtig, um sowohl die persönliche als auch die allgemeine öffentliche Gesundheit zu gewährleisten.

Die zweite Gruppe hat einen Kommentar gesehen, der völlig unabhängig zum Inhalt des Beitrags von Cook war.

Das Ziel dieser Studie ist herauszufinden, ob ein Kommentar, der unter Berücksichtigung des Ratschlags der WHO verfasst wurde, einen positiven Einfluss auf die Einstellung gegenüber Impfungen hat.

Vielen Danke für Ihre Teilnahme an dieser Studie.

Für Fragen oder Anmerkungen stehe ich Ihnen gerne zur Verfügung.

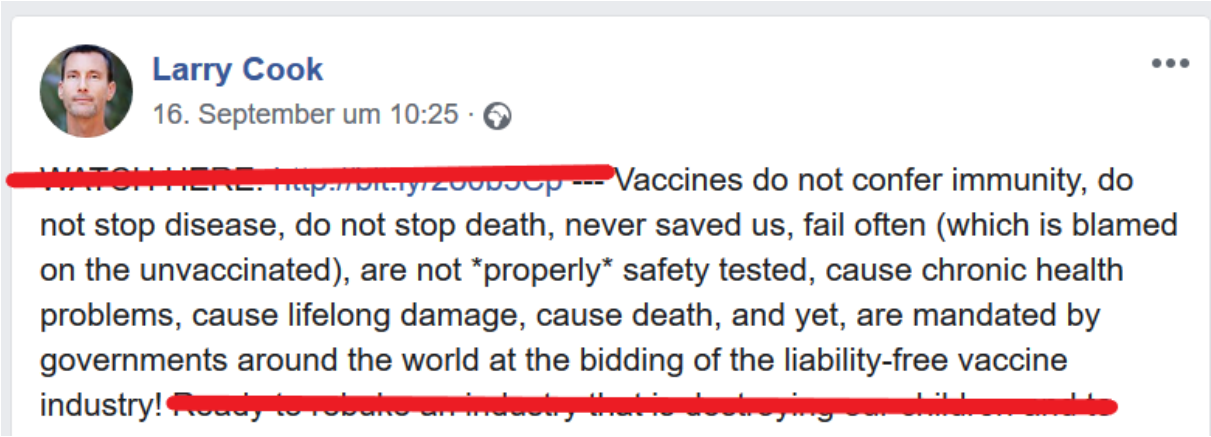
Chiara Wüller

Appendix B

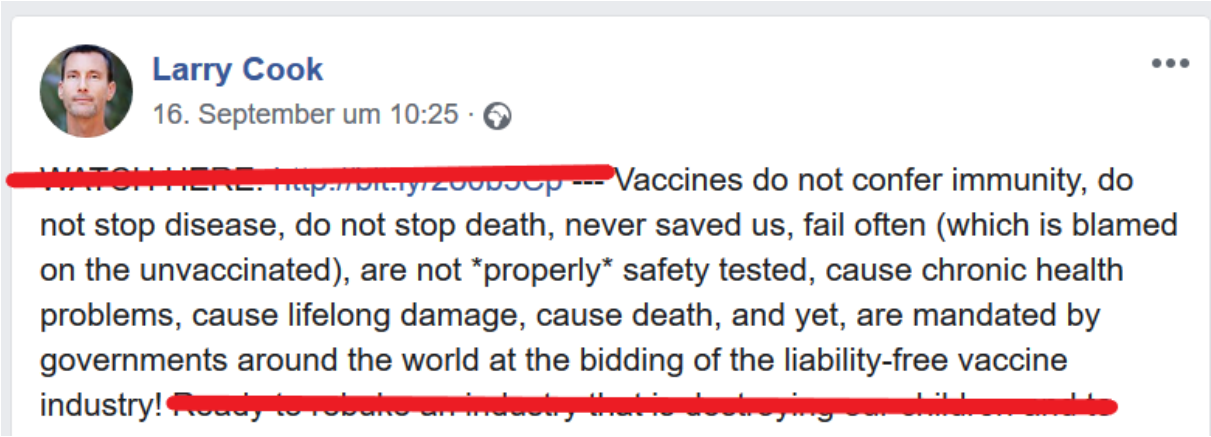
Manipulation

English Version.

Only-post condition:

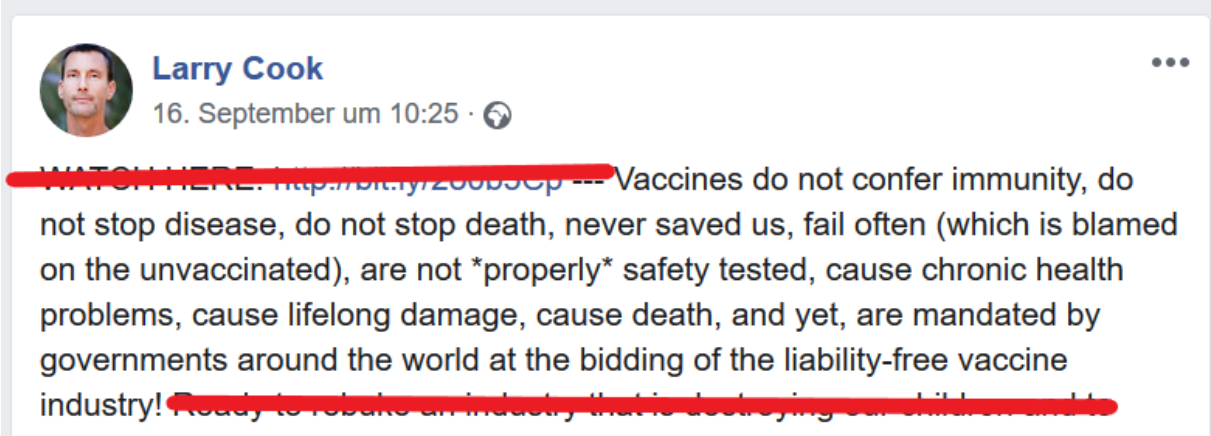


Post-and-WHO-comment condition:



Response: You are holding impossible expectations. Expecting 100% safety is unrealistic and cannot be guaranteed for no medical product or intervention. No drug treatment and no surgery can ever be guaranteed 100% safe. There is enormous scientific evidence proving that vaccination has saved millions of lives (more than 20 million people) and is one of the most successful public health interventions ever. Of course, vaccines also have a negative side and can cause some side effects. However, anti-vaxxers often present side effects of vaccines, that have never been proven to be related to vaccination, like autism and SIDS. The most important fact is, that the risks posed by vaccines are far outweighed by the risks of vaccine-preventable diseases, which kill in the worst cases.

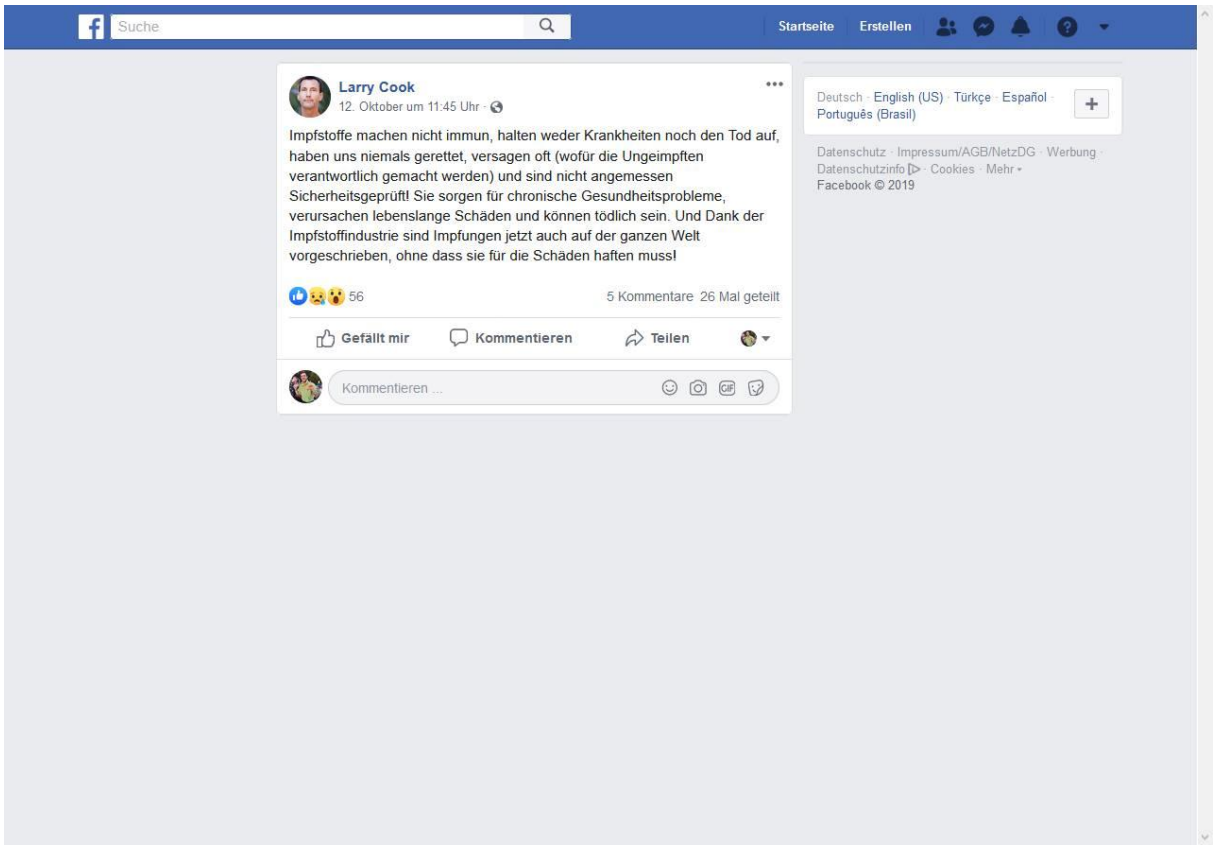
Post-and-health-related-comment condition:



Response: Many people eat unhealthy! Unhealthy diet can lead to overweight. Around 15% of the people in Germany are overweight. This can cause severe health issues, like hypertension and diabetes. One should absolutely pay attention to a healthy and balanced diet to prevent the consequences. Additionally, it is important to do sports to prevent overweight. People have to become aware of the consequences of obesity. More healthy alternatives for fast food should be offered. And the awareness for the consequences of obesity should be increased.

German Version.

Only-post condition:



Post-and-WHO-comment condition:

Post-and-health-related-comment condition: