Covid-19 Vaccination is Approaching, Why Should You Hesitate? Effect of Disgust, Conspiratorial Belief on Anti-Vaccination Attitude

Ika Herani[1*], Dwi Maimunatul Nadia[1]

[1]*Psychology Department, University Brawijaya, 65145, Indonesia*
Corresponding author's email: herani@ub.ac.id

ABSTRACT
Covid-19 has had a wide influence with the increasing number of sufferers and deaths of Covid-19 patients. The government is trying to reduce the rate of spread by promoting the Covid-19 vaccination program. Many factors affect the success of this Covid-19 vaccination program. This study aims to determine the effect of disgust, conspiratorial belief on antivaccination attitude in college students. Disgust was measured using the Disgust Emotion Scale, conspiratorial belief was measured using the Vaccine Conspiracy Belief Scale, and the Vaccination Attitudes Examination was used to measure Anti Vaccination Attitude. This study involved 150 student respondents with the characteristics of these students not having received or participating in the Covid-19 vaccination program. The results of the multiple regression test showed that there was a simultaneous influence of the three variables on the students' conspiratorial beliefs. The conspiratorial belief variable has a partial relationship to the antivaccination attitude, but the disgust variable does not have a partial relationship to the antivaccination attitude variable.

Keywords: *Anti Vaccination Attitude; Conspiratotial Belief; Disgust*

1. INTRODUCTION

The current situation of the Covid 19 pandemic in the world has entered its second year, and the number of sufferers is increasing day by day in Indonesia. Data collected on May 24, 2021 which was submitted on https://covid19.co.id. Currently, there are 1.791.221 positive cases of Covid 19. 1.645.263 recovered and 49.771 deaths. This number increased in line with the homecoming behaviour carried out by residents during the Eid al-Fitr holiday. Indonesia is one of the countries with the highest Covid-19 cases in the world, and in Southeast Asia. The government immediately took sigma action to provide preventive and curative measures to the community in addition to work from home, physical and social distancing, staying at home and limiting any activities that have the potential to become new clusters of spread such as clustering in public places, gathering with friends [1]. Another preventive measure is the provision of vaccinations that have been carried out since the end of 2020.

Several types of COVID-19 vaccine products have been approved by Indonesia as vaccines to be distributed to the public, such as Moderna, Bio Farma, Oxford/ AstraZeneca, Sinovac, Sinopharm, Pfizer/BioNTech and Novavax Vaccines [2]. Of the several types of vaccines that will be distributed in Indonesia, there are vaccine types that have received certainty and commitment, namely the Sinovac vaccine type. Pros and cons among the community. The government runs a vaccination program as an effort to deal with the COVID-19 pandemic in four stages, the first stage is the target of COVID-19 vaccination is health workers, assistant health workers, support staff and students undergoing medical professional education who work in health service facilities, the second stage is health workers. public services such as the TNI, law enforcement officers, airport/terminal/station and port officers, the third stage is the vulnerable community from geospatial, social and economic aspects, while for the last stage is the general public with a cluster approach according to the availability of vaccines.

A preliminary study was conducted by researchers using a google form which was distributed to 40 respondents regarding attitudes towards vaccines that would be disseminated in Indonesia. The questions asked were about their attitude towards the COVID-19 vaccine. Of the 40 respondents with an average of students filling

Z. B. Pambuko et al. (Eds.): BIS-HSS 2021, ASSEHR 667, pp. 547–554, 2023.
https://doi.org/10.2991/978-2-494069-49-7_90

out the questions provided in the google form, 29 respondents stated that they would accept the vaccination. respondents who received stated that they accepted the vaccination for the sake of public health, obeyed government regulations, believed in the government for seeking vaccines and others. Factors that influence 40 respondents who received the vaccine, namely the study of internet literature and journals. As many as 11 of the 40 respondents who filled out the google form questions stated that they refused to have a COVID-19 vaccine, they rejected the vaccine on the grounds that the vaccine seemed rushed, did not believe in the existence of a vaccine, and was afraid of the impact after being vaccinated. Factors that influence respondents in refusing vaccines are social media and news.

Based on a survey of vaccine acceptance in Indonesia conducted by the Ministry of Health in collaboration with UNICEF, ITAGA, and WHO [3] it was stated that from a survey conducted in 34 provinces, 65% of respondents said they were ready to vaccinate, 8% of them refused, while the remaining 27% expressed doubts. hesitate to vaccinate. This illustrates that there are still Indonesian people who are not ready to welcome the vaccine. Self-doubt in doing something is one of the causes of individuals being driven to distrust [4]. Based on the survey from the Ministry of Health, it is also known that the public has concerns about vaccines regarding their safety (30%) and effectiveness (22%) and states that they do not believe in vaccines (13%) and others (35%). Young people also refuse to get vaccinated. Quoted from BBC Indonesia, according to a survey of Indonesian political indicators, 54.9% of the age of 22- to 25-year-old group said they refused to vaccinate and a survey from the Centre for Strategic and International Studies (CSIS) stated that 63.6% of young people in Jakarta aged 17-24. 22 years have no or less confidence in vaccines. Based on these data, it is sufficient to explain that people in Indonesia have an anti-vaccine attitude.

Based on a survey of vaccine acceptance in Indonesia conducted by the Ministry of Health in collaboration with UNICEF, ITAGA, and WHO it was stated that from a survey conducted in 34 provinces, 65% of respondents said they were ready to vaccinate, 8% of them refused, while the remaining 27% expressed doubts. hesitate to vaccinate. This illustrates that there are still Indonesian people who are not ready to welcome the vaccine. Self-doubt in doing something is one of the causes of individuals being driven to distrust. Quoted from BBC Indonesia, according to a survey of Indonesian political indicators, 54.9% of the 22 to 25-year age group said they refused to vaccinate and a survey from the Centre for Strategic and International Studies (CSIS) stated that 63.6% of young people in Jakarta aged 17-24. 22 years have no/less confidence in vaccines [3]. Based on these data, it is sufficient to explain that people in Indonesia have an anti-vaccine attitude. The Populi Centre Institute revealed the results of a survey conducted on 1000 respondents in 100 regencies/cities spread across the globe proportional in 34 provinces in mid-December 2020, where 40% of the population stated that they were not willing to be given vaccines by the government, one of the reasons for this refusal among others are fear of needles [5]. According to the attitude roots model, clinical fears and phobias can lead to antiscientific beliefs, such as some people having an increased sense of disgust at needles, hospitals, and blood. People who experience this increasing sense of disgust may tend to cultivate attitudes that allow them to avoid triggers of the disgust, such as rejection of medical technology interventions, suspicion of vaccination [7]. There are individual differences in the tendency to experience a sharper disgust reaction to certain objects or under certain situations. Descriptive research and experimental research showed a clear positive significance between disgust sensitivity and phobia of injection, blood, and injury [8]. This is in line with research [7] that antivaccination attitudes have a high positive relationship with disgust towards blood and needles.

The existence of problems that occur will result in an attitude of accepting or refusing the public to be vaccinated, this happens because the news conveyed by the media or celebrities who have different attitudes towards vaccines is a consideration for the community. The numbers of news about celebrities who refuse vaccination is the main factor that people will have an anti-vaccine attitude that fails to vaccinate themselves, their children and their families. Hornsey et., al stated that another cause of antivaccination attitude is conspiratorial belief. Douglas et al stated that conspiratorial belief is an individual's belief in the existence of an explanation of one social and political event or phenomenon which is believed to have a secret plot controlled by two or more people [9]. On the other hand, social and political sectors there are still many sectors that can be touched by conspiracy theories, until now regarding the health sector, namely vaccines [10]. In real life, conspiration belief which is disseminated through internet social media has caused severe social effects, especially regarding vaccination. Internet social media has made conspiration belief famous, which has hampered vaccination programs in several countries, including Indonesia. Immunization and vaccine conspiracies are included in hoaxes spread on social media with a percentage of 31.08 percent. Research in Indonesia on religious conspiracy theories and vaccination behaviour has been carried out by Zein et al [11]. The results of his research show that the association of the conspiracy regarding the Jews with the conspiracy regarding the vaccine looks very strong, and can indirectly lead to the rejection of the vaccine. Individuals who hate Jews are seen to be more likely to refuse to receive vaccinations for themselves and their families. This also shows that Muslim acceptance of information related to Jews has high competence but is received less

well. There is concern in the body's system because the content of the vaccine has resulted in the emergence of various conspiracy theories related to political issues and drug interests [12]. Individuals who hate Jews are seen to be more likely to refuse to receive vaccinations for themselves and their families. This also shows that Muslim acceptance of information related to Jews has high competence but is received less well. There is concern in the body's system because the content of the vaccine has resulted in the emergence of various conspiracy theories related to political issues and drug interests. Individuals who hate Jews are seen to be more likely to refuse to receive vaccinations for themselves and their families. This also shows that Muslim acceptance of information related to Jews has high competence but is received less well.

Based on the description above, it is important to do further research related to belief in conspiracies, disgust towards individual anti-vaccine attitudes, especially among students, because students are a large group and not all of them have received the vaccination process, as well as the possibility of face-to-face learning to be held in the 2021/2022 school year.

From the results of this study, it is hoped that this research can enrich knowledge in psychology, especially in the field of health psychology. Able to provide an overview of the influence conspiratorial belief, disgust towards anti vaccination attitude students in the midst of the COVID-19 pandemic.

2. METHOD

This study was conducted to prove whether there is an effect of the Disgust variable, the conspiratorial belief variable on the antivaccination attitude variable in students. The research method used in this study is a quantitative regression method as measured by multiple regression.

The population in this study is active students who are Indonesian citizens, while the sample in this study is active students who are Indonesian citizens who have never been vaccinated against Covid-19. Researchers used the help of the G*power 3.1.9 application to determine the number of samples with effect size = 0.3 and = 0.05 and power of 0.95, resulting in a minimum number of samples of 115 subjects. This research uses purposive sampling technique in sampling method. According to Sugiyono the purposive sampling technique possessed by the population needed by researchers must be based on special criteria. Specific criteria that must be possessed by the population to be used in this study include: (1) Male Female, (2) Active student, (3) Indonesian citizens, and (4) Not yet vaccinated against Covid-19.

The research that will be conducted by researchers uses a Likert scale form. The process of collecting data in this study used questionnaires, namely through online questionnaires using google form media. The following is the form of answer choices and scores that will be used by researchers on a Likert scale.

Table 1 Answer Options and Scores Used on the Likert Scale

Item Type	Answer options Celebrity Admiration	Conspiratorial Belief	Anti-Vaccination Attitude	Score
Favourable (Positive Statement)	Strongly agree	Strongly agree	Strongly agree	6
	Agree	Agree	Agree	5
	Neutral or Uncertain	Neutral or Uncertain	Slightly Agree	4
	Do not agree	Do not agree	Slightly Disagree	3
	Strongly agree	Strongly agree	Do not agree	2
			Strongly agree	1

Based on the existing variables, there are three scales that will be used in this study, namely the VAX scale, VCBS scale and DES scale. The following is an explanation of the scale that will be used in the study:

2.1. Anti-Vaccination Attitude Scale

The scale used to measure the antivaccination attitude variable is the Vaccination Attitude Examination (VAX) proposed by Martin & Petrie [13]. This scale has 4 dimensions, namely mistrust of vaccine benefit with Cronbach Alpha of 0.92 in the first study and 0.91 in the second study, worries about unforeseen future effects of 0.89 in the first study and 0.77 in the second study, concerns about commercial profiteering of 0.93 in the first study and 0.85 in the second study, the preference for natural immunity with Cronbach's Alpha was 0.86 in the first study and 0.78 in the second study. This scale has 12 items that are answered using a 6-point Likert scale ranging from strongly agree to strongly disagree (Table 2).

2.2. Conspiratorial Belief Scale

The Conspiratorial Belief Scale, also known as the Vaccine Conspiracy Belief Scale, was coined by Saphiro et., al. This scale was created to increase understanding of the impact of conspiracy beliefs on vaccines, which in previous studies had not been very specific in relation to vaccine variables. This scale was developed from various scales, namely, HPV Knowledge Waller, General

Conspiracy Belief, Vaccine Conspiracy Belief [17], Willingness in Vaccinate then Saphiro et al [14] specified it to be 7 items and focuses on one dimension, namely the vaccine conspiracy belief. The researcher chose the Vaccine Conspiracy Belief scale of Shapiro [14] because it has a specific item match between the vaccine variable and conspiracy beliefs, and the item has gone through a better update selection. The scale has a Cronbach alpha of a = 0.82 [15], consisting of 7 items with answers using a 5-point Likert scale starting with the smallest strongly disagree to the largest point strongly agree (Table 3).

2.3. Disgust Emotion Scale

The scale used by researchers to measure the Disgust variable is the "blood and injunction" subscale of the Disgust Emotion Scale (DES) which was coined by Olatunji, Sawchuk, de Jong, & Lohr [16]. This scale has 6 items that are answered using a 5-point Likert scale ranging from 0 = "not disgusted or nauseous at all" to 4 = "extremely disgusting or very nauseous feeling". This scale has a Cronbach alpha of a = 0.90, and was last used by Hornsey et., al [7] to measure disgust (Table 4).

2.4. Reliability test

The reliability test carried out by the researcher was assisted by using SPSS 26 for windows using the Cronbach Alpha technique. The reliability of the measuring instrument will be considered high if it is close to the number 1, and considered low if it is getting closer to the number 0.

Table 2 Vaccination Attitude Examination (VAX) Scale Distribution Blueprint

Dimension	F	UF	Amount	Item number
Mistrust of vaccine benefits	-	3	3	*1,*2,*3
Worries about unforeseen future effect	3	-	3	4, 5,6
Concerns about commercial profiteering	3	-	3	7, 8, 9
Preference of natural immunity	3	-	3	10, 11, 12
Total number	**12**			

*) Unfavourable items

Table 3 Vaccine Conspiracy Belief Scale (VCBS) Distribution Blueprint

Dimension	F	UF	Amount	Item number
Vaccine Conspiracy Belief	7	-	7	1, 2, 3, 4, 5, 6, 7
Total number	**7**			

Table 4 Disgust Emotion Scale (DES) Distribution Blueprint

Dimension	F	UF	Amount	Item number
Blood and Induction	6	-	6	1, 2, 3, 4, 5, 6

Table 5 Scale Reliability Results.

Coefficient Scale	Cronbach Alpha	Description
Disgust Emotion Scale	0.880	Reliable
Vaccine Conspiracy Belief Scale	0.908	Reliable
Vaccination Attitude Examination	0.875	Reliable

3. RESULT AND DISCUSSION

The distribution of the scale distributed through social media to prospective respondents according to the research criteria aims to collect respondent data. The criteria included in the research respondents are active students who are Indonesian citizens and have not been vaccinated against Covid-19. The minimum number of respondents obtained by calculations using the G*Power application version 3.1.9.4 is 111 subjects. Data collection was taken from May 25, 2021 to June 26, 2021 and data were obtained as many as 163 respondents, but there were 13 data that could not be used due to multiple respondent data so that the subject data that could be used in this study were 150 respondents.

there are 48 male students with a percentage of 32.00%. in the category of female students of 102 which has the largest percentage of 68.00%. In the column from province, East Java has the highest number and percentage, namely 97 students with a percentage of 64.67% and Central Java as many as 17 with a percentage of 11.33%. Provinces of origin for students with the lowest percentages and numbers are occupied by several provinces, namely Aceh, South Kalimantan, Central Kalimantan, DI Yogyakarta, North Maluku, South

Sumatra, West Sumatra and Bali with each numbering 1 and having a percentage of 0.67%. Meanwhile, in the column of origin of the university, it is known that the origin of the university from Brawijaya University has the highest number and percentage, namely 61 students with a percentage of 40.67%.

3.1. Data Description

The table 6 of hypothetical score and empirical score for the variables disgust, conspiratorial belief, antivaccination attitude

Table 6 Hypothetical Score and Empirical Score

Variable	Statistics	Hypothetical	Empirical
Disgust	Minimum Score	0	0
	Maximum Score	24	22
	mean	12	7.4
	Standard Deviation	4.8	5.8
Conspiratorial Belief	Minimum Score	7	11
	Maximum Score	35	25
	mean	21	19.5
	Standard Deviation	4.6	2.6
Anti-Vaccination Attitude	Minimum Score	10	18
	Maximum Score	50	60
	mean	30	34
	Standard Deviation	6.6	7.8

Through the calculation of the hypothetical score and the empirical score, it is obtained empirical mean(μ) on the celebrity admiration variable of 22 and the standard deviation (SD) of 5.8, on the conspiratorial belief variable, the empirical mean (μ) is 19.5 and the standard deviation (SD) is 2.6, while for the antivaccination attitude variable, the empirical mean (μ) is obtained.) is 34 and the standard deviation (SD) is 7.8. In the celebrity admiration variable, the hypothetical mean (μ) is 69 and the standard deviation (SD) is 15.3, in the conspiratorial belief variable, the hypothetical mean (μ) is 21 and the standard deviation (SD) is 4.6, while the antivaccination attitude variable is the mean. hypothetical (μ) of 30 and standard deviation (SD) of 6.6 (Table 7).

Table 7 Categorization of subjects

Variable	Decision Area Value	Category	Number of Subjects	Percentage
Disgust	X<7.2	Lo	87	58.00%
	7.2 ≤ X 16.8	Medium	47	31.33%
	16.8≤ X	High	16	10.67%
Conspiratorial Belief	X < 30.4	Low	150	100.00%
	30.4≤ 39.6	Medium	-	-
	39.6 ≤ X	High	-	-
Anti-Vaccination Attitude	X < 23.4	Low	9	6.0%
	23.4 ≤X 43.2	Medium	116	77.33%
	43.2 ≤ X	High	25	16.67%
Total			150	100%

Based on the results of the categorization that has been carried out on the three variables described in the table above, the variable Disgust shows that there are 16 people with a percentage of 10.67% who fall into the high category. In the medium category there are 47 people with a percentage of 31.33% and the low category of 87 people with a percentage of 58.00%. Based on the results of the categorization that has been carried out on the three variables described in the table above, the variable conspiratorial belief shows that there are no people who fall into the high category. In the medium category, there are no people who enter and the low category is 150 people with a percentage of 100.00%. It can be concluded that there are no people who fall into the medium and high categories. While the variable anti-vaccination attitude shows that there are 9 people with a percentage of 6% who fall into the low category, 116 people with a percentage of 77.33% who fall into the medium category and 25 people with a percentage of 16.67% who fall into the high category.

From the results on Table 8, it is obtained data that VAX and CES have a linear relationship while VAX and Disgust do not have a linear relationship. Then from the results on Table 9, it concluded that there is a

simultaneous effect of the three independent variables on antivaccination attitude.

Afterwards, from the table 10, it means the conspiratorial belief variable has a partial relationship to the antivaccination attitude variable.

Table 8 Linearity Test Results

Variable	Significance	Description
Anti-Vaccination Attitude * Conspiratorial Belief	0.000	Linear
Anti-Vaccination Attitude * Disgust	0.169	Not Linear

Table 9 F Test Result

Model	Mean Square	F	Sig.
Regression	2099.578	62.465	.000b
Residual	33.612		

Table 10 T Test Results

Model	t	Sig.
CONS	11.020	.000
DISGUST	-357	.722

3.2. Discussion

Based on the hypothesis test that has been done, there is an effect of conspiratorial belief and disgust on antivaccination attitude. Conspiratorial belief has a partial relationship to the antivaccination attitude variable. Disgust does not have a partial relationship with the antivaccination attitude variable. These results are in line with the research of Jolley & Douglas; Roberts et.,al ; Berman et., al [17] where conspiracy belief correlates with fear of making a profit on vaccines. This may lead many students to think that vaccines will make a lot of money for certain people without helping ordinary people.

Conspiratorial belief is correlated with concern about making a profit on vaccine production Jolly & Douglas, Roberts et.al.; Berman et.al, [17]. This may lead many students to think that vaccines will make a lot of money for certain people without helping ordinary people. Students who believe in conspiracy theories of belief will likely also agree that information about events provided by the authorities always hides the truth from people. Research conducted by Allington et al.,

Freeman & Bentall [19] found that conspiracy theories usually have four general characteristics, namely the belief that the ruling parties are hiding something, the theory is only accepted by a minority, events that occur are considered not as they appear, the theory is not supported by evidence. Research conducted by Freeman et al., [15] explains that the conspiracy beliefs that one believes in will be connected to other distrust, besides that student who believe in conspiracy theories tend to have less attitude in complying with government guidelines and a greater reluctance to take a COVID-19 test.

Disgust does not have a significant effect on anti-vaccine attitudes, especially students because this is considered not a big problem and is more influenced by gender. Pre-search conducted by Clifford on 174 students, that disgust does not have a significant effect on anti-vaccine attitudes in adolescents, especially students, this is because students think this topic is not a big problem. One of the other causal factors that influence the absence of a relationship between disgust and antivaccination attitude is gender, women have a greater impact on men regarding disgust, especially disgust with air and water regulations.

The government's program in terms of the Covid-19 vaccination campaign in Indonesia has received several rejections from the public. One of the reasons for the rejection of the vaccine is disgust or fear of blood and needles. This is in line with the research conducted by Luzz et., al [20] which found that disgust had an indirect negative relationship to vaccine behaviour, but other results from the study also found that disgust also had a direct positive effect on vaccine implementation

4. CONCLUSION

From this study, it was found that there was a simultaneous effect of the three independent variables on antivaccination attitude. the conspiratorial belief variable has a partial relationship to the antivaccination attitude variable. The disgust variable does not have a partial relationship with the antivaccination attitude variable.

This study is expected to provide an overview to the public, especially how the attitude towards vaccines in students is viewed from the disgust and conspiratorial belief variables. Limitations in the study include the spread time which is not long enough so that the number

of respondents is still limited, further research is expected to race against time if the theme taken is quite up-to-date.

ACKNOWLEDGMENT

The research was conducted with internal grant funding from FISIP Universitas Brawijaya. Thank you for the cooperation of the students for the very nimble data collection process.

REFERENCES

[1] Tuwu, D. "Kebijakan pemerintah dalam penanganan pandemi COVID-19". *Journal Publicuho*, Vol. 3(2), 267 -278, 2020. DOI:10.35817/jpu.v3i2.12535.

[2] Azanella, L. A. *5 perkembangan terkini vaksinasi Covid-19 di Indonesia*. Retrieved from KOMPAS.com, 2021: https://www.kompas.com/tren/read/2021/01/03/091400265/5-perkembangan-terkini-vaksinasi-covid-19-di-indonesia?page=all

[3] World Health Organizaton. "WHO statement regarding cluster of pneumonia cases in wuhan, china". Retrieved from World Health Organization, 2020. https://www.who.int/china/news/detail/09-01-2020-who-statement-regarding-cluster-of-pneumonia-cases-in-wuhan-china

[4] Zhang, J., Zeng, H., Gu, J., Li, H., Zheng, L., & Zou, Q. "Progress and prospects on vaccine development against SARS-CoV-2." *Vaccines*, Vol. 8, 153, 2020 DOI:10.3390/vaccines8020153

[5] BBC News. Penolak vaksin Covid-19 kena sanksi, epidemiolog: "Pemaksaan tidak akan berhasil.", 2021. https://www.bbc.com/indonesia/indonesia-56061572\

[6] Olatunji, B. O., Ebesutani, C., & Reise, S. P. "A Bifactor Model of Disgust Proneness: Examination of the Disgust Emotion Scale". *Assessment*, 22(2), 248–262, 2015.

[7] Hornsey, M. J., Harris, A. E., & Fielding, K. S. "The psychological roots of anti-vaccination attitudes: A 24-nation investigation". *Health Psychology*, Vol. 28 (4), 307-315, 2018. https://doi.org/10.1037/hea0000586.

[8] Olatunji, B. O., Sawchuk, C. N., De Jong, P. J., & Lohr, J. M. "Disgust sensitivity and anxiety disorder symptoms: Psychometric properties of the disgust emotion scale". *Journal of Psychopathology and Behavioral Assessment*, 29(2), 115–124, 2002. https://doi.org/10.1007/s10862-006-9027-8

[9] Douglas, K. M. "Understanding conspiracy theories". *Political Psychology*, 40(Suppl 1), 3–35, 2019. https://doi.org/10.1111/pops.12568.

[10] Van Prooijen, J.-W. &. "Belief in conspiracy theories: basic principles of an emerging research domain". *Journal of Social Psychology*, 48(7): 897–908, 2018. doi:10.1002/ejsp.2530

[11] Zein, R. A. Zein, R. A., Rikardi, A. A., & Arinda, M. F. "Belief in Jewish conspiracy theories indirectly affected vaccination decisions", 2020. Retrieved from OSF: https://osf.io/2gdwn/

[12] Poland, C. M. "The need for a multi-disciplinary perspective on vaccine hesitancy and acceptance". *Vaccine*, 33(2), 277–279, 2015. doi:10.1016/j.vaccine.2014.11.022.

[13] Martin, L. R. "Understanding the dimensions of anti-vaccination attitudes: the vaccination attitudes examination (VAX)". *Annals of Behavioral Medicine*, Vol. 51(5), 652-660, 2017. DOI 10.1007/s12160-017-9888-y.

[14] Shapiro, G. K. "Validation of the vaccine conspiracy beliefs scale". *Papillomavirus Research*, 2, 167–172, 2016. doi:10.1016/j.pvr.2016.09.001

[15] Freeman, D., Waite, F., Rosebrock, L., Petit, A., Causier, C., East, A., . Lambe, S. "Coronavirus conspiracy beliefs, mistrust, and compliance with government guidelines in england". *Psychological Medicine*, 1–30., 2020. doi:10.1017/s0033291720001890.

[16] Olatunji, B. O., Sawchuk, C. N., De Jong, P. J., & Lohr, J. M. "Disgust sensitivity and anxiety disorder symptoms: Psychometric properties of the disgust emotion scale". *Journal of Psychopathology and Behavioral Assessment*, 29(2), 115–124, 2007. https://doi.org/10.1007/s10862-006-9027-8

[17] Jolley, D., & Douglas, K. M. "The effects of anti-vaccine conspirasi theories on vaccination intentions". *PLos ONE*, Vol. 9 (2), e89177, 2014. doi:10.1371/journal.pone.0089177.

[18] Berman, L. M., McCutcheon, L., & Huynh, H. P. "Is the worship of celebrities associated with resistance to vaccinations? relationship between celebrity admiration, anti-vaccination attitudes, and belief in conspiracy". *Psychology, Health & Medicine*, 1-10., 2020. DOI: 10.1080/13548506.2020.1778754.

[19] Freeman, D. &. "The concomitants of conspiracy concerns". *Social Psychiatry and Psychiatric Epidemiology*, 52(5), 595–604, 2017. doi:10.1007/s00127-017-1354-4 .

[20] Luz, P. M., Brown, H. E., & Struchiner, C. J. "Disgust as an emotional driver of vaccine attitudes and uptake? A mediation analysis". *Epidemiology and Infection*, 147, 2019. https://doi.org/10.1017/S0950268819000517