PERSONALITY TRAITS AND FEAR OF COVID-19 PREDICTING VACCINE HESITANCY AMONG SELECTED UNIVERSITY STUDENTS IN ABEOKUTA, NIGERIA

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Abstract

Introduction: This cross-sectional survey examined the predictive influence of personality traits and fear of COVID-19 on COVID-19 vaccine hesitancy among undergraduate students in Abeokuta, Nigeria.

Methods: Three hundred and ninety-two participants (267 females and 122 males, mean age ± SD = 20.33 ± 2.55 years) completed a two-section questionnaire collecting data regarding demographic information, personality factors, fear of COVID-19, and vaccine hesitancy. Data were analysed using SPSS v.25.

Results: The results showed significant joint and independent prediction of personality traits on COVID-19 vaccine hesitancy (R^2 = .27; F= (5,386) = 28.957, p<.05). There was a significant difference in the vaccine hesitancy reported by participants who scored high and those low on fear of COVID-19 (t (390) = 2.53, p= <.05). There was a significant difference between male participants compared to the female participants on vaccine hesitancy (t (387) = -2.058, p= <.05). The results on the difference between students in the different schools on COVID-19 vaccine hesitancy showed no significant difference between private university students and public university students (t (390) = -.137, p= >.05). There was a significant difference between Christian participants and the Muslim participants on vaccine hesitancy (t (389) = -3.195, p= <.05).

Conclusion: Personality traits are vital influences associated with COVID-19 vaccine hesitancy among undergraduate students in Ogun State. The study recommends that other studies incorporate more participants from various universities in Nigeria to cut across cultures. This will make for credibility in the generalization of the findings to the general population.

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Introduction

There are regional differences in vaccine hesitancy, as well as between different population segments. For instance, in high-income nations, the patterns of vaccination uptake for COVID-19 did not always correspond to the availability of vaccines and well-established healthcare systems. The psychological features of people who were hesitant to get vaccinated, however, were consistent across socio-demographic differences.

The final individual choice to receive or reject personal or child vaccination results from a complex and dynamic interaction of environmental, sociological, cultural, political, and personal psychological and attitudinal elements.

For the COVID-19 vaccine hesitancy globally, a similar intricate interplay of environmental and personal issues has been reported. Over the years, one of the effective ways of combatting diseases including viral ones such as COVID-19 is through vaccination, especially for preventive intervention. The process of developing a vaccine, to trials and final approval for use on humans, is usually lengthy and difficult. Due to the overwhelming impacts of COVID-19 including economic and social disruptions, and even existential threats, the best of the world's scientists and healthcare personnel of many countries swung into action and came up with the best options vaccine against COVID-19 which later became available to all parts of the world including Nigeria.

Currently, seven COVID-19 vaccines are being utilized in Nigeria: BioNTech/Pfizer vaccine, Johnson & Johnson vaccine, Moderna Spikevax vaccine, Oxford/Zeneca Vaxzeria, Covishield (Oxford/AstraZeneca formulation), Gamaleya Sputnik V vaccine, Sinopharm (Beijing) (VIPER Group COVID-19 Vaccine Tracker Team, 2022).

Extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience are the five main dimensions of the Big Five Theory of Personality, which is a recognized and validated assessment of a person's personality traits and attitudes. It is based on research that defines personality as a hierarchical organization of personality traits across these five dimensions. Extensive research has supported the model's thoroughness and its applicability to different observers and cultural contexts. In fact, studies looking for links between the five component personality traits and hesitation to get the COVID-19 and seasonal flu vaccines have found conflicting results.

This study also investigated the association between fear of COVID-19 and vaccination intention and the impact of psychological factors connected to individual differences as potential mediators, such as existential anxiety and conspiracy theories. The dread of COVID-19 is increasing globally, according to recent research (Knipe et al., 2020), and high levels of fear can contribute to anxiety, sadness, and depression as well as, in more extreme circumstances, suicide (Satici et al., 2021). According to Rogers' (1975) protection motivation theory (PMT), people are more likely to engage in healthy habits when there is a health danger. According to a recent study by Reuken et al. (2020), those who have a greater fear of COVID-19 are more likely to wash their hands more regularly, wear personal protective equipment more frequently, and choose

remote medical consultations. These protective responses might indicate that those with high levels of fear are more likely to receive vaccinations. In fact, Scrima et al. (2022) discovered a positive correlation between fear of COVID-19 and intention to get vaccinated in a recent study.

The present study attempted to investigate the relationship between these personality domains, fear of COVID-19 and vaccine hesitancy in selected students in Abeokuta. Understanding COVID-19 hesitancy and identifying the roles play by the students' personality traits and fear of COVID-19 among young adults, particularly those in the university is important as the knowledge will inform strategic actions such as policies and preventive intervention in tertiary institutions.

The main aim of this study is to investigate the predictive influence of personality traits and fear of COVID-19 on COVID-19 vaccine hesitance among university students. In line with the aim of the study, the following hypotheses guided the study:

• Personality traits will significantly jointly and independently predict COVID-19 vaccine hesitancy among undergraduate students.
• Individuals with low fear of COVID-19 will report significantly higher COVID-19 vaccine hesitancy than their counterparts with high fear of COVID-19.
• There will be a significant difference in the COVID-19 vaccine hesitancy among students of different religious identities (Christians and Muslims).
• Students of the selected private university will report significantly higher COVID-19 vaccine hesitancy than those studying at the selected government university.
• There will be a significant gender difference in COVID-19 vaccine hesitancy among undergraduate students.

Methodology

Study Design

The author utilized a cross-sectional survey design in the analysis of the personality traits and fear of COVID-19 associated with COVID-19 vaccine hesitancy in undergraduate students. The link to the survey was advertised across the social media platforms of the University. The survey was available in English.

Participants

A total of three hundred and ninety-two (392) students from the schools, who were willing, to participate [267 (68.1%) females, 123 (31.4%) males and while 2 (0.5%) of the participants preferred not to say] were purposively selected from Chrisland University (CLU)-250 and Tai Solarin University of Education (TASUED)-142 as participants in this study. Their age ranges from 16-28 years (mean age ± SD = 20.33 ± 2.55 years). With regards to the level of education in the

institution, 109 (27.8%) were in their first year, 103 (26.8%) were in their second year, 79 (20.2%) were in their third year while 101 (25.8%) were in their fourth year.

Measures

The data for the study were collected with the aid of an online questionnaire. Participants' identity was fully anonymous in the survey. Two sections made up the survey: The informed consent and the respondent's information, including gender, level, age, education, marital status, and religion, are included in Section A. Measures on personality traits, fear of COVID-19, and vaccine hesitancy were included in Section B.

Personality Trait

The Big Five Personality Inventory, which was derived from Rammstedt, B. & John, O.P. (2007), was used to gather data regarding the participant's personality qualities. Ten items from a modified Big Five Personality Inventory were used in the administration. The instrument's items are all in the Likert scale format, with the options being strongly disagreed, disagree a little, neither agree nor disagree, agree a little, and agree strongly. To make sure that high scores always represent a high level of the personality trait evaluated, reverse scoring is employed for items 1, 7, 3, 4, and 5.

Fear of COVID-19

The Fear of COVID-19 Scale (Ahorsu et al., 2021) was used to measure one's fear of COVID-19. The questionnaire consists of 7 items that assess the overall fear of COVID-19, such as "When watching news and stories about coronavirus-19 on social media, I become nervous or anxious." In this current study, responses were rated on a 5-point Likert scale, with 1 being "totally disagree" and 5 being "totally agree." High scores indicated a high fear of COVID-19 (Cronbach's alpha = 0.85).

Vaccine Attitude Examination

The Vaccine Attitudes Examination Scale (VAX), a validated instrument for measuring vaccine hesitancy (Martin & Petrie, 2017), was utilized as a component of a composite questionnaire to gauge research participants' attitudes, awareness of, and reticence about, vaccination. The response options include, including I absolutely disagree, I don't agree, Neutral, I'm not sure, I agree, and I absolutely agree. While all other items are scored directly, items 1-3 are scored in reverse.

Procedure

For the ease of access to participants, prevailing circumstances - such as students not in school during the time of data collection, research participants were recruited using the Google Forms link. A computer-generated link containing information about the research and questionnaire

was dispersed to potential participants through various WhatsApp platforms comprising the research target population and also through personal mail for completion.

The questionnaire was also distributed online with the aid of colleagues in the two schools who has access to the target population. The participants' data sheet included information about the purpose of the study, informed consent, confidentiality, the nature of the questions, and how to complete the study. Participants who consented to take part in the research via Google Forms then went on to complete the questionnaire. The questionnaire contained information on participants' socio-demographic characteristics. A questionnaire containing the research measures was given to the participants for completion.

Data analyses were performed with the aid of the SPSS v.25 software. Hypothesis 1 was analysed using Multiple Linear Regression while Hypotheses 2-5 were analysed using Independent Sample T-Test. A 0.05 significance level was used.

Results

Data collected were subjected to descriptive and inferential statistical analyses. Five hypotheses generated were tested. Data were gathered from three hundred and ninety-two (N=392) undergraduate students. The results of the data analysis and interpretations are presented, followed by a discussion of the findings.

Hypothesis one:
Personality traits (Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism) will significantly jointly and independently predict COVID-19 vaccine hesitancy among undergraduate students.

TABLE 1
Multiple Regression Summary Table Showing Results on Personality Traits Predictors of COVID-19 Vaccine Hesitancy

Predictors	B	T	Sig	R	R2	F	P
Openness	.173	3.91	.000				
Conscientiousness	-.373	-8.14	.000				
Extraversion	-.208	-4.48	.000				
				.522	.27	28.957	<.05
Agreeableness	-.139	-3.01	.003				
Neuroticism	-.185	-3.95	.000				

Note: R^2 = .27;　* p < .05.　** p < .01.　*** p < .001

Table 1 shows results on the joint and independent prediction of personality traits (Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism) on COVID-19 vaccine hesitancy. The overall regression showed that personality traits (Openness, Conscientiousness,

Extraversion, Agreeableness and Neuroticism) had a significant joint and independent prediction of COVID-19 vaccine hesitancy ($p < .05$). [$R^2 = .27$; F= (5, 386) = 28.957; p= <.05]. However, Openness shows significant independent prediction on COVID-19 vaccine hesitancy (β = .173; p= <.05). Conscientiousness shows significant independent prediction on COVID-19 vaccine hesitancy (β -.373; p= <.05). Extraversion show significant independent prediction on COVID-19 vaccine hesitancy (β = -.208; p= <.05). Agreeableness show significant independent prediction on COVID-19 vaccine hesitancy (β = -.139; p= <.05). Neuroticism show significant independent prediction on COVID-19 vaccine hesitancy (β = -.183; p= <.05).

Hypothesis two

Undergraduate students low on fear of COVID-19 will be significantly higher on COVID-19 vaccine hesitancy than those high on fear of COVID-19.

TABLE 2

Independent Sample T-Test Showing the Difference Between Schools on COVID-19 Vaccine Hesitancy.

Fear of COVID-19	N	M	Std. Dev.	T	df	P
Low	197	33.06	7.46			
				2.53	390	<.05
High	195	30.32	13.26			

Note: N = number of students; t (390) = 2.53, p= <. 05..   ** p < .01.   *** p < .001

Table 2 shows that there was a significant difference between the 197 participants who scored greater than or equal to 13 (*M*= 33.06, *SD*= 7.46) compared to the 195 participants who scored 12 lesser than 12 (*M*= 30.32, *SD*=13.26), *t* (390) = 2.53, *p*= <.05. People who are low on fear of COVID-19 will be high on COVID-19 vaccine hesitancy.

Hypothesis three

Undergraduate students who were Muslim will significantly be more hesitant toward the COVID-19 vaccine than their Christian counterparts.

TABLE 3

Independent Sample T-Test Showing the Difference Between Genders on COVID-19 Vaccine Hesitancy.

Religion	N	Mean	Std. Deviation	T	df	P
Christian	305	30.79	10.73			
				-3.195	389	<.05
Muslim	86	34.97	10.59			

Note: N = number of students; t (389) = -3.195, p= <.05.   ** p < .01.   *** p < .001

Table 3 shows that there was a significant difference between Muslim participants ($M = 34.97$, $SD= 10.59$) compared to the Christian participants ($M= 30.79$, $SD= 10.73$), $t (389) = -3.195$, $p= <.05$. Muslims are more hesitant towards the COVID-19 vaccine hesitancy.

Hypothesis four

There will be no significant difference between private university students (Chrisland University) and public university students (Tai Solarin University) regarding COVID-19 vaccine hesitancy.

TABLE 4
Independent sample t-test showing the difference between schools on COVID-19 vaccine hesitancy.

School	N	Mean	Std. Deviation	T	Df	P
Private	250	31.64	11.31			
				-.137	390	>.05
Public	142	31.79	9.94			

Note: N = number of students; t (390) = -.137, p= >.05.   ** p < .01.   *** p < .001

Table 4 showed the results on the difference between students in the different schools on COVID-19 vaccine hesitancy. It is shown that private university student participants showed no significant difference compared to public (government) university students $t (390) = -.137$, $p= >.05$. There was no significant difference between the students on COVID-19 vaccine hesitancy.

Hypothesis five

Males will significantly be more hesitant toward the COVID-19 vaccine than their Female counterparts.

TABLE 5
Independent sample t-test showing the difference between genders on COVID-19 vaccine hesitancy.

Gender	N	Mean	Std. Deviation	T	Df	P
Male	122	30.89	11.41			
				-2.058	387	<.05
Female	267	33.32	9.30			

Note: N = number of students; t (387) =-2.058, p= <.05.   ** p < .01.   *** p < .001

Table 5 showed the results on the difference between students in the different schools on COVID-19 vaccine hesitancy. It is shown that Male students ($M= 30.89$, $SD= 11.41$) showed a significant difference compared to Female students ($M= 33.32$, $SD= 9.30$), $t (387) =-2.058$, $p= <.05$.

Male participants are more hesitant towards COVID-19 vaccine hesitancy than their Female counterparts.

Discussion

The overall findings of this study revealed the predictive influence of personality traits and fear of COVID-19 on vaccine hesitancy among university students in Ogun state, Nigeria. The result showed that personality traits (Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism) had significant joint and independent prediction of COVID-19 vaccine hesitancy. This finding is consistent with previous studies such as Halstead, et al. (2022) that stated that personality traits differentially predicted reasons to decline COVID-19 vaccination. For example, participants with neuroticism were worried about the vaccine's effects (presumably more than the virus symptoms), and those with extraversion doubted the level of risk presented by the virus. Similarly, Howard (2022) performed a multiple-wave survey study to determine whether the Big Five, Dark Triad, and Psychological Capital (PsyCap) indirectly relate via vaccine hesitancy to vaccination willingness, vaccination, and vaccine word-of-mouth which backed up the findings and showed the results that conscientiousness, extraversion, narcissism, psychopathy, each influence the outcomes via dimensions of vaccine hesitancy. In another cross-sectional study by Lin and Wang (2020) among a sample of 3276 American citizens who were aged 18 and above, it was found that traits of agreeableness, conscientiousness and emotional stability remain significantly associated with attitude toward vaccination; conscientiousness is significantly associated with support for school vaccination, this supports the findings of this study's first hypothesis.

Our findings also showed that students who reported low fear of COVID-19 reported significantly higher COVID-19 vaccine hesitancy compared with those with high fear of COVID-19. This implies that not being afraid of the infectious disease of COVID-19 makes people have an unfavourable attitude towards getting vaccinated against the disease. will be high on COVID-19 vaccine hesitancy. Contrary to our findings, in a study carried out in Nigeria on fear of COVID-19 and vaccine hesitancy by Chutiyami et al., (2022), the authors reported although individuals who were fearful of COVID-19 were more likely to be vaccinated, none of the fear of COVID-19 did not significantly predict vaccine uptake. The authors further suggested that uptake of the vaccine against COVID-19 in Nigeria can be predicted by factors associated with vaccination refusal, but not by fear of COVID-19. The finding of this study on the influence of fear of COVID-19 on vaccine hesitancy is, however, supported by other previous findings. For instance, Sekizawa et al., (2022) carried out a study on the association between COVID-19 vaccine hesitancy and generalized trust, depression, generalized anxiety, and fear of COVID-19 and reported that participants with low levels of fear of COVID-19 were unwilling or indecisive regarding being vaccinated against COVID-19. In a similar vein, McElfish et al., (2021) concluded that individuals that reported no fear and very little fear of COVID-19 had greater odds of vaccine hesitancy compared to respondents who feared COVID-19 infection to a great extent.

The finding from the third hypothesis of this study showed similarity in the COVID-19 vaccine hesitancy reported by students of private universities and those of government universities. This finding is not surprising due to other shared attributes and similarities in the daily lifestyle

and exposure of the students outside the school environment. For instance, regardless of the differences in the schools and the learning environments, the students could meet in places that hold similar attributes and experiences such as religious gatherings, events, and more importantly the influence of social media which serves as a major tool of acculturation among the students' population.

A significant difference in vaccine hesitancy according to participants' religious beliefs was established in this study. It was found that students of the Islamic religion reported significantly higher vaccine hesitancy than Christian students. This suggests that Muslims are more hesitant to become vaccinated against COVID-19 than Christians. According to Azam and Abdullah (2020), many Muslims' behaviours are guided by Halal certification which in some instances may stand against issues such as vaccination. Although there may be controversy regarding standards such as Halal certification and other Islamic laws, they have a significant influence on the Muslim faithful. For example, the AstraZeneca COVID-19 vaccine was considered Haram by the Indonesian council (Mardian et al., 2021).

Finally, our study showed a significant gender difference in COVID-19 vaccine hesitancy. It was found male students were more hesitant towards the COVID-19 vaccine than females. In line with our findings, Ward et al., (2020) and Green et al., (2021) found a significant gender difference in vaccination attitudes among French and Israelis, respectively. However, their study took place among the general population.

Limitations of the study

Although the study provided important insights into the predictive influence of personality traits and fear of COVID-19 on vaccine hesitancy, some limitations are acknowledged. First, participants of this study were limited to two institutions, which means that generalizing the findings of the study should be cautiously done. Another limitation is that the instruments used were self-report instruments, and one of the disadvantages of self-report measures is that they encourage, or make fake or exaggerated responses from participants' possible- social desirability bias. Finally, at the time of data collection, the tension of the COVID-19 pandemic has reduced, and this may have influenced the responses.

Conclusion

Vaccine hesitancy poses a serious threat to public health all over the world because the high population not vaccinated will cause the pandemic to recur and will cause it to last longer. On a daily basis the epidemic produces substantial losses and drains individuals financially, socially, and mentally. Overall, it is evident from the results from this study and what has been reported elsewhere that there is no simple correlation between personality qualities and views about vaccination. These connections are intricate, occasionally conflicting, and even within the same demographic groupings, they may develop and alter. Furthermore, it is evident that it is crucial to investigate this association using well-designed studies and research questions that are based on what we have learnt so far, both inside and beyond the unique context of the COVID-19 pandemic. Future study designs should take into consideration how social media affects pro- or

anti-vaccination beliefs, as this medium is increasingly influential in shaping public opinion. We can only create intelligent vaccination programs until we are certain that we fully comprehend this intricate interaction. Identifying and understanding it could aid future public health messaging.

A number of psychological disposition such as altruism has also been researched and seen to be related to vaccine hesitancy. Rieger (2020) researched "triggering altruism increases the willingness to get vaccinated against COVID-19". The outcome demonstrated that providing tenable information can boost one's propensity to get immunized and that the information (protection of others) was effective. In order to convince individuals to receive the COVID-19 vaccine, the proposition of vehemence on the altruistic principle of safeguarding others is made.

Recommendations

The findings of this study impact the benefit of understanding the psychological, personality, and socio-demographic influencing COVID-19 vaccine hesitancy considering that the vaccine plays an important role in restoring the affected aspect of life, from work and school to everyday activities, market economy, society, mental health etc. More research backed up information derived and spread could help with the right decisions concerning the vaccine and not rumoured information carried around, which could be a factor used to decrease the level of hesitance following the vaccine.

The outcome of the study is relevant to the following:

> **RESEARCH**: The review builds on current literature to provide greater clarity on how personality traits and fear of COVID-19 can be used to address vaccine hesitancy and increase vaccine confidence and highlights the need for studies to evaluate interventions to address hesitancy and explore the potential of metatheory frameworks to inform the design of interventions. The result could help the future researcher determine what might have not been researched and can be used to support their research.
>
> **INTERVENTION:** Findings of this review could provide guidance for future interventions informed by personality traits and fear of COVID-19 and can be delivered via social media platforms, which could offer an important opportunity for addressing vaccine hesitancy.
>
> **POLICY:** Interventions using social media-informed personality traits and fear of COVID-19 could provide a platform for low-cost and highly efficient policy advocacy opportunities for addressing vaccine hesitancy and increasing vaccine confidence. The respondents of this study also have awareness and information regarding the influence of personality traits and the fear of COVID-19 on vaccine hesitancy. The results of the study could help the parents to give the right guidance to their children since the parents can be an influence towards the decision-making of either taking the vaccine or not.

Conflict Of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Acknowledgement

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