

**A POKE AND PROD INTO THE ATTITUDES OF
COLLEGE-AGED STUDENTS TOWARDS THE
COVID-19 VACCINES**

Honors Thesis

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By
Morgan McCarthy

Dr. Pamela Leong
Dr. Sara Moore
Faculty Advisors
Department of Sociology

Commonwealth Honors Program
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Abstract

This research investigates the attitudes of college-aged students towards the COVID-19 vaccine. The prediction is that vaccine hesitancy towards the COVID-19 vaccines that exists in the college-aged population is due to misinformation, distrust in vaccines, and being uninformed. To test this hypothesis, a survey was conducted collecting information regarding vaccines and the COVID-19 pandemic from Salem State University students. The results could not confirm the hypothesis since no significant relationships were found due to limitations of the study. Although the hypothesis of this research could not be confirmed, this research provides a foundation for future research that may provide further insight into vaccine hesitancy in the college-aged student population.

Keywords: COVID-19, Vaccine, Vaccine hesitancy, Anti-vaccination, Misinformation, College Students

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INTRODUCTION

Vaccine hesitancy is the uncertainty that people have about getting vaccinated against contagious diseases. It is a refusal of vaccines or a delay in getting them. The World Health Organization lists vaccine hesitancy as one of the top ten leading threats to global health (Elflein 2021). Vaccine hesitancy is not a new ideology that influences people's decision to get vaccines. Although it has been around as long as vaccines have, the attitudes as to why people choose to be anti-vaccination have changed dramatically. Since vaccines are now largely associated with corporations and manufacturers, social trust is at an extreme low. People fear the pharmaceutical industrial complex and the idea that vaccines are not 'natural' (Siddiqui 2018). There is a growing fear of manmade vaccines as the positive attitudes towards natural remedies grow. This is deeply rooted in the idea that vaccine side effects may be extreme and possibly lead to lifelong illness.

As vaccine hesitancy increases in the United States, there is a cause for concern about eradicated vaccine-preventable diseases reemerging. More recently, with the COVID-19 pandemic, the biggest concern is herd immunity. A study done by Carnegie Mellon University in collaboration with Facebook found that most people were hesitant about the COVID-19 vaccine because of the possible side effects. Since January 2021, the number of people who are hesitant to get the vaccine has remained at 23% of the over 1.9 million Americans surveyed. This study also found that Black adults have the highest rates of vaccine hesitancy (The Delphi Group). This suggests that vaccine hesitancy is not equal across racial and ethnic groups. This also suggests that there may be differences in vaccine hesitancy based on other identities, such as gender and age group.

There is little research on college-aged student's attitudes and behaviors towards vaccines. Some studies show that vaccine hesitancy does exist in this age group and that it is due to misinformation and lack of education on the subject. One study by public health researchers found that college students were 68% more likely to be pro-vaccine after being educated on vaccines and socializing with someone who has had a vaccine-preventable disease (Johnson 2019). In other words, there appears to be more favorable views of vaccines among people who are educated on them and know someone who had a vaccine-preventable illness. While this may be one of the more prominent factors in determining COVID-19 vaccine attitudes, there are still other factors at play. Educational attainment, for instance, may predict COVID-19 vaccine attitudes. Miller (2021) found lower vaccine hesitancy among adults in the United States who have a college degree. In Miller's study, 76% of Americans who have at least a bachelor's degree reported that they have already gotten or plan to get the COVID-19 vaccine, compared to 56% of Americans without any degree (Miller 2021).

While there is an abundance of research on the impact of COVID-19, this current study will focus on some of the factors that might influence college students' COVID-19 vaccine attitudes. The information gathered in this study will contribute to the knowledge that already exists about vaccines, vaccine hesitancy, and college-aged students. It will address vaccine hesitancy related to the COVID-19 vaccine, which reflects the current atmosphere of college-aged students' attitudes. The COVID-19 pandemic has disproportionately affected specific populations which has led to disparities in vaccine acceptance. By using the Salem State University population, the data collected will represent different demographics and their attitudes will be collected and compared. This study will use students' attitudes towards vaccines, COVID-19, and COVID-19

vaccines to draw conclusions on how their attitudes affect vaccine acceptance. The results of this survey may give insight into the possible solutions to deter vaccine hesitancy in this population.

COVID-19 AND VACCINE HESITANCY

In December of 2019, a number of people in Wuhan, China were admitted to the hospital with unknown cases of viral pneumonia. This was later confirmed to be coronavirus, also known as COVID-19, 2019-nCoV, and SARS-CoV. This virus has rapid human-to-human transmission and had a reported death rate of about 16% in 2020 (Ali 2020). As COVID-19 effectively spread to other countries with cases skyrocketing in Europe and soon after the United States, mass isolation and preventative policies were put in place. People were legally confined to their homes, prevented from mass gatherings, and did work and school from home. However, most of these were only a temporary mitigation. According to the World Health Organization, there have been 261,435,768 confirmed cases and 5,207,634 deaths reported globally since December 2019 (WHO 2021). Thankfully, the daily cases reported has significantly decreased with the creation of COVID-19 vaccines.

On December 11, 2020, the FDA granted emergency use authorization for the Pfizer-BioNTech COVID-19 vaccine (Immunize 2021). However, some of the general public was not immediately open to receiving a vaccine that had not gone through the full FDA approval process. While some of the concerns centered on the possible side effects and other safety issues, other concerns focused more on perceived overreach by local, state, and federal government. The latter concerns are politically based and resulted in a slew of misinformation.

Anti-vaccination and vaccine hesitancy, therefore, represent two entirely different positions. People who are vaccine-hesitant can delay, be reluctant but still accept, or refuse some or all vaccines (Annual Review of Public Health 2021: 177). This is a form of having doubts, questions, and concerns about vaccines and decisions regarding them. Vaccine hesitancy should not be viewed as anti-science or irrational. It refers to the behaviors and attitudes towards vaccines that people have which can exist on a spectrum. In contrast, being anti-vaccine is the active advocacy against any vaccination (Annual Review of Public Health 2021: 177). The anti-vaccination movement appears to be a political response to a distrust of the government and governmental agencies such as the FDA and CDC.

Vaccine hesitancy is not a new challenge in the field of public health. People have perceived vaccines as unsafe for decades and the influence of anti-vaccination movements has only increased the vaccine hesitant population. As a study done by the Annual Review of Public Health states, “From 1796 through to the present day, the principle of vaccination has been rejected by proponents of a wide variety of medical philosophies (in high-, middle-, and low-income settings)” (2021). Medical philosophies have been a main factor in vaccine critique and growing alternative health practices are the newest medical philosophy contributing to anti-vaccine ideologies. The belief in these alternative health practices, such as “homeopathy, Christian Science, chiropractic, hydrotherapy, and crystal healing, among others,” is increasing (Annual Review of Public Health 2021: 177).

There has been a long standing belief originating from the 1700’s that diseases are a result of imbalance in higher forces. From there, the belief in the unnaturalness of vaccines was a driving factor of hesitancy and later anti-vaccination movements. At this time, there was not a

full understanding of the biological mechanisms of how vaccines work, public administration did not have the capacity to produce reliable statistics on efficacy and effects, and the hygiene of storage and production of vaccines was questionable (Annual Review of Public Health 2021: 179). The information on efficacy and effects and sanitary concerns were not able to be addressed until the 19th century. Today, with this information now easily accessible, the questions of unnaturalness, efficacy, safety, and hygienic practices are still used as a common defense in the protest of vaccines by anti-vaccination movements. This is where the difference between hesitancy and anti-vaccination is an important distinction. Vaccine hesitancy is derived from a lack of knowledge about vaccines whereas anti-vaccination attitudes are largely influenced by ideology and politics. The anti-vaccination movements rarely produce new arguments against vaccines and continue to hold these century old views despite the scientific information that exists disproving them.

A common claim by the anti-vaccination movement is that vaccines are associated with autism spectrum disorder, given the uptick of autism spectrum disorder diagnoses in the past decade. This has fueled vaccine hesitancy in parents while providing a new defense to the anti-vaccination movement. In a study by Alicia Bazzano (2012), 189 parents of children with autism spectrum disorder were surveyed on their attitudes towards the belief that autism spectrum disorder is associated with vaccines. These parents had children who were enrolled in a state-funded program for children with autism spectrum disorder. Bazzano found that “thirty-two percent (32%) of parents believed that vaccines did contribute to their children’s ASD and 17% believed that vaccines possibly contributed” (Bazzano 2012: 236). She found that these parents, who possibly or do believe that vaccines had an effect on their child's autism spectrum disorder, were

more likely to not vaccinate their other children and were more likely to change the vaccination schedule for their already vaccinated child with autism spectrum disorder.

A study by the Statistica Research Department found that 77% of families that refused vaccinations for their children reported that their main reasoning was their fear of vaccines being connected to autism spectrum disorder (2016). Although this belief has been disputed by reputable scientific information multiple times, it continues to contribute to vaccine hesitancy and anti-vaccination. This shows that questioning vaccines safety and efficacy is not uncommon, even in the face of hard scientific evidence.

Anti-vaccination movements are not the only groups involved in questioning the safety of vaccines. Medical directives regarding COVID-19 are intertwined with politics. In particular, those affiliated with federal government agencies such as the NIH, CDC, and FDA are questioned and undermined. That includes leading medical experts such as Dr. Anthony Fauci, who has come under attack by those in the anti-vaccination movement.

Political agendas related to vaccines often target communities that are more likely to be vaccine hesitant. People in low- and middle-income areas are found to be vaccine hesitant as a result of distrust in the medical field and public health. This is due to the association of vaccine refusal with religion, traditions, and unmet community needs. In a study from January to May of 2021, King (2021) examined the population differences related to vaccine hesitancy. The study found that construction and extraction and farming, fishing, and forestry were among the top two occupational industries with the highest levels of extreme vaccine hesitancy. This trend is striking, as these industries have a disproportionate number of people of color, and people with limited education levels. In contrast, the occupational industry with the lowest level of vaccine hesi-

tancy were those working in computer and mathematical occupations. In addition, King found that the most common concern across occupations were side effect concerns.

African Americans and other people of color are more likely to distrust the healthcare system, given generations of mistreatment and racism at the hands of medical and other scientific professionals. The health care system has foundations of structural racism which results in discrimination and systemic racism that affects patients of color today (Kennedy and Mathis 2007). The mistrust stems from historical events that include the Tuskegee syphilis experiment. The mistrust is further reinforced by continued healthcare barriers and discrimination in the course of healthcare services. It therefore is not a surprise that African Americans may be distrustful of any vaccine, including the COVID-19 vaccine.

The disparities that exist for these communities of color has become especially apparent and exacerbated during the COVID-19 pandemic. Structural racism that exists in the public health and medical field contributes to the health disparities that minority communities have faced and are especially facing now during the COVID-19 pandemic. Minority communities make up the highest percentages of poverty rates, “before the pandemic and associated economic fallout, poverty rates in the United States were 24% for Native Americans, 22% for African Americans, and 19% for Hispanics, compared to 9% for Whites” (Don Bambino Geno Tai 2020). Higher poverty rates in these communities result in specific living conditions. Communities with higher minority populations have higher housing density, housing insecurity, and less access to portable water. These conditions create an environment where the likelihood of contracting COVID-19 is much higher. Minority communities are also more susceptible to chronic disease and malnutrition which are leading factors of death related to the COVID-19 illness. The impor-

tance of health equity has been made especially clear through the COVID-19 pandemic with prominent statistics that distinctly reveal how marginalized communities are experiencing negative health outcomes as a result of health inequity.

As a result of health inequity, the negative health outcomes that communities of color, especially the Black community, are facing related to the COVID-19 pandemic are life threatening. It is reported that these communities are experiencing higher death rates when contracting COVID-19. As a study done by Italo Brown states, “Black Americans represent 13% of the US population but account for one third of COVID-19 cases and are twice as likely to die from this disease” (Brown 2020). This disparity is related to other oppressive outcomes that people of color face in society, such as the fact that Black communities make up most of the low income class and the majority of the homeless population. The Bureau of Statistics reports that during the COVID-19 pandemic “...only 20% of African American workers have the privilege of working from home compared to 30% of Whites. A report by New York City’s comptroller showed that 75% of frontline workers in the city are people of color. African Americans make up 40% of the transit workers” (Don Bambino Geno Tai 2020). Many people in marginalized populations are employed in low paying and frontline jobs which put them at an already higher risk of contracting COVID-19 than those in other positions which are not considered high-risk. As a result of being employed in these low paying and high risk positions, many people who are minorities do not have access to healthcare and benefits. They also do not have access to the proper education or information related to vaccines, specifically the COVID-19 vaccine. This is a result of language barriers, educational barriers, and accessibility barriers, “Minority groups are more likely to have communication gaps due to issues of health literacy, socioeconomic disadvantage, and

limited English language proficiency” (Don Bambino Geno Tai 2020). Considering much of the misinformation on vaccines and the pandemic has been spread through mass media and social media, this could be a major barrier in receiving proper information on important topics which influences decision making towards vaccines. Marginalized communities making up the majority of frontline jobs, low-income housing, and experiencing disproportionate access to healthcare has resulted in negative health outcomes for people of color during the COVID-19 pandemic. This will continue if the vaccine hesitancy in this community is not directly addressed.

As of January 2021, the United States had one of the lowest vaccine acceptance rates with an acceptance rate of only 56.9% (Sallam 2021). In January of 2021 the United States had been through 22 months of the COVID-19 pandemic and vaccine hesitancy was and still is prominent throughout the U.S. population. COVID-19 vaccine hesitancy is found even among college students. In a review of 27 research studies of college students from non-health related colleges and universities in over 17 countries, Khubchandani (2021), in a letter to the editors of the journal *Brain Behavior and Immunity*, reveals preliminary findings that “the overall rate of COVID-19 vaccination refusal among 31,948 college/university students around the world was 22% (95%CI = 18.5–26.1)” (Khubchandani 2021). This study found that many of these students shared concerns about the COVID-19 vaccines relating to side effects, safety, and efficacy. Khubchandani found that misinformation was also a leading factor in students’ decision making, specifically, “Social media has emerged as a unique influencer worldwide, especially in this college student population, and should be harnessed to promote COVID-19 vaccinations along with efforts to curb misinformation” (Khubchandani 2021).

Since college-age students are heavy users of social media, studying trends in how they access COVID-19 related information and the relationship between their primary sources of information and their COVID-19 attitudes may be revealing. The purpose of this current study, therefore, is to assess college students' COVID-19 vaccine attitudes, and to discern what might be contributing to such attitudes (for instance, the source of information, level of distrust in science, level of distrust in the government.). In addition, the current study seeks to address whether there are group differences patterns in the COVID-19 vaccine attitudes (whether by race, social class, gender, or another social status).

While primarily exploratory, findings from this study may shed light on patterns and trends among COVID-19 vaccine misinformation among college students. In addition, this study may reveal strategies to address COVID-19 (mis)information among college students. If, for instance, the primary source of college students' COVID-19-related information is through social media (such as Facebook, Twitter, etc.), such a trend may suggest that strategies to combat misinformation need to occur through those means. Given the serious consequences of COVID-19 transmission on individuals, groups, and the public at large, it is crucial that the public not rely on unsubstantiated, if not false, claims advanced by lay people, political factions, and advocacy groups. Rather, college students (and others in the general public) need to assess the credibility and authoritativeness of their sources of COVID-19 information and directives.

METHODS

Sampling:

A survey was administered to undergraduate students at Salem State University. Convenience sampling was used, as the author is a student at the university and had ready access to Salem State undergraduate students. Research participants were recruited through an online Salem State University Facebook class groups. The survey was distributed online through a link included in a post asking for willing participants. Some college faculty also distributed the survey link to students. At the end of the survey, a message was included that prompted participants to share the survey link with other Salem State University students. The survey was also distributed in select sociology courses.

Between November 2021 and December 2021, participants were asked to answer questions related to vaccines and the COVID-19 pandemic. The survey was administered through SurveyMonkey. The survey is 31 questions and takes about 9 minutes to complete. Students were given the option at the end of the survey to volunteer to participate in a focus group session. Students were prompted to go to another survey through SurveyMonkey where they could submit their information to be entered into a raffle as an incentive for completing the survey. Here, they were also prompted to enter information if they were interested in participating in the focus group. This was to ensure anonymity in the survey data collection. The focus groups were no longer necessary after the initial survey data collection and were not used for data collection.

VARIABLES

Key Demographic Variables:

The Key demographic variables included gender, race, and first-generation student status.

Dependent Variables:

The key dependent variables in this study include: confidence in the ability of the COVID-19 vaccine to help people develop immunity, extent of feeling protected by the COVID-19 vaccine, and outlook on vaccines in general.

Independent Variables:

The key independent variables included source of COVID-19 information and level of trust in the Centers for Disease Control (CDC).

An index that measured overall trust in the CDC guidelines with respect to the COVID-19 pandemic was created (CDCTRUST) using the 6 variables below. Scores on this index ranged from 0 to 16, with higher scores indicating greater trust in the CDC pandemic guidelines. The CDC Trust index was created by summing up scores on the following six questions:

1. To what extent do you feel the recommended CDC mask wearing guidelines reduce the emissions of the virus that causes COVID-19? This question had a 3 point scale with higher values indicating greater trust in CDC mask-wearing guidelines. The response options for this question were strongly trust, moderately trust, somewhat trust, do not trust, other, and prefer not to answer.

2. To what extent do you feel the recommended CDC social distancing guidelines reduce the risk of spreading the COVID-19 virus? This question had a 3 point scale with higher values indicating greater trust in CDC social distancing guidelines. The response options for this question were strongly trust, moderately trust, somewhat trust, do not trust, other, and prefer not to answer.

3. To what extent do you feel you followed the recommended CDC mask wearing guidelines related to the COVID-19 pandemic? This question had a 3 point scale with higher values indicating stronger tendency to follow CDC mask-wearing guidelines. The response options were strongly followed guidelines, moderately followed guidelines, somewhat followed guidelines, rarely followed guidelines, did not follow guidelines, other, and prefer not to answer.

4. To what extent do you feel you follow the recommended CDC social distancing guidelines related to the COVID-19 pandemic? This question had a 3 point scale with higher values indicating stronger tendency to follow CDC social distancing guidelines. The response options were strongly followed guidelines, moderately followed guidelines, somewhat followed guidelines, rarely followed guidelines, did not follow guidelines, other, and prefer not to answer.

5. To what extent do you feel the CDC guidelines (Ex. Mask wearing in public, Social distancing, etc.) mitigate the COVID-19 pandemic? This question had a 2 point scale with higher values indicating positively mitigating the pandemic. The response options were positively mitigat-

ed the pandemic, somewhat mitigated the pandemic, they did not mitigate the pandemic, other, and prefer not to answer.

6. Do CDC guidelines related to the COVID-19 pandemic (Ex. Mask wearing in public, Social distancing, etc.) make you feel more protected against contracting COVID-19? This question had a 2 point scale with higher values indicating feeling more protected. The response options were fully protected, moderately protected, somewhat protected, not protected, and prefer not to answer.

The six items together yielded a cronbach's alpha of .824, indicating that the above six items together reliably measure trust in the CDC.

RESULTS AND DISCUSSION

The following analyses were conducted through SPSS: correlations, cross-tabulations, testing the difference between the means, and analysis of variance.

A total of 103 undergraduate students from Salem State University were surveyed. Of this sample, 80.8% of respondents were female, 11.1% of respondents were male, and 8.1% of respondents selected themselves as other. The sample was 84% White, 4% Black or African American, 1% Asian, 1% American Indian or Alaska Native, 1% Native Hawaiian or Pacific Islander, and 6% other. The sample consisted of 36% of respondents who reported being a first generation student. The mean age of respondents was 20.92.

Participants responded to questions about their feelings, outlooks, and confidence towards vaccines in general. Participants reported their outlook on vaccines with 85.7% reporting

having a positive outlook and 14.3% reporting having an indecisive outlook. Therefore, most students have a positive outlook on general vaccines. Similar attitudes are shown towards confidence in vaccines to help develop immunity with 86.7% feeling confident and 6.1% not feeling confident. The most common concerns students had that caused them to be hesitant in getting vaccines in general were side effect concerns, 52.4%, followed by lack of adequate testing concerns, 21.4% , and lack of information concerns, 19.4%.

Respondents attitudes varied as they were asked questions specifically about the COVID-19 vaccine. They were asked how informed they felt on the COVID-19 vaccine, 3.3% of students reported feeling not informed, 15.4% reported feeling somewhat informed, 44% felt moderately informed, and 37.4% felt very informed. Most students felt moderately to very informed on the COVID-19 vaccines. Students reported using news sources the most to gather their information about the COVID-19 vaccines with 70.9% using this source followed by social media at 66% and family at 61.2%. Respondents had much less confidence in the COVID-19 vaccine than they did in general vaccines. 46.7% of students reported feeling strongly confident in the COVID-19 vaccine to help develop immunity followed by 33.7% feeling moderately confident, 14.% somewhat confident, and 5.4% feeling not confident. Students were asked how protected they felt from COVID-19 by the vaccine. Most students felt somewhat to moderately protected by the vaccine, 56% reported feeling moderately protected, 20.9% felt somewhat protected, 19.8% felt fully protected, and 3.3% felt not protected.

Respondents were asked about their trust in the CDC guidelines related to COVID-19. The CDCTRUST index scores ranged from 0 to 16. Higher scores signify greater overall trust in the CDC COVID-19 guidelines. The mean CDCTRUST score is 12.7976 and the median is 14

out of 16. This suggests there is generally a high trust in the CDC when it comes to the guidelines.

A cross tabulation analysis of the extent the participant feels confident about the ability of the COVID-19 vaccine to help develop immunity to the virus that causes COVID-19 and gender was done. The chi-square test resulted in a .624 significance value. This indicates that the relationship between gender and confidence in the ability of the COVID-19 vaccine to help develop immunity is not significant. Assessing whether gender played a role in whether the respondents felt the COVID-19 vaccine protected them from contracting the virus, the cross tabulation indicates a larger percentage of females than males feel “fully protected” by the COVID-19 vaccine (18.3% of females vs. 9.1% of males), but half of all respondents (50%) identifying as “other” gender feel “fully protected.” However, the relationship between gender and feeling protected by the vaccine is not significant based on the the .241 significance.

CV_PRT2 * gender2 Crosstabulation

		gender2			Total	
		female	male	other		
CV_PRT2	Not protected	Count	2	1	0	3
		% within gender2	2.8%	9.1%	0.0%	3.3%
	Somewhat protected	Count	17	2	0	19
		% within gender2	23.9%	18.2%	0.0%	21.1%
	Moderately protected	Count	39	7	4	50
		% within gender2	54.9%	63.6%	50.0%	55.6%
	Fully protected	Count	13	1	4	18
		% within gender2	18.3%	9.1%	50.0%	20.0%
Total		Count	71	11	8	90
		% within gender2	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.956 ^a	6	.241
Likelihood Ratio	8.649	6	.194
Linear-by-Linear Association	2.653	1	.103
N of Valid Cases	90		

a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .27.

While those who used social media as a source of COVID-19 vaccine information were only slightly less likely to believe they are “fully protected” from the virus, a cross tabulation did not reveal this relationship to be statistically significant based on the .467 significance. Similarly, in this sample, relying on social media as source of COVID-19 vaccine information did not seem to determine confidence level in the vaccine. 54.2% of those who do NOT use social media as a source of COVID-19 vaccine information indicated that they are “strongly confident” with respect to the COVID-19 vaccine, compared to 44.1% of those who do use social media as a source of their COVID-19 information. However, the relationship between social media as a

source of COVID-19 vaccine information and confidence level in the vaccine is not statistically significant (sig. = .188).

CV_PRT2 * socialmedia Crosstabulation

		socialmedia		Total	
		No, social media is not a source of COVID19 vaccine info.	Yes, social media is a source of COVID19 vaccine info.		
CV_PRT2	Not protected	Count	1	2	3
		% within socialmedia	4.2%	3.0%	3.3%
	Somewhat protected	Count	3	16	19
		% within socialmedia	12.5%	23.9%	20.9%
	Moderately protected	Count	15	36	51
		% within socialmedia	62.5%	53.7%	56.0%
	Fully protected	Count	5	13	18
		% within socialmedia	20.8%	19.4%	19.8%
Total		Count	24	67	91
		% within socialmedia	100.0%	100.0%	100.0%

Symmetric Measures

		Value	Asymptotic Standard Error ^a	Approximate T ^b	Approximate Significance
Ordinal by Ordinal	Gamma	-.146	.199	-.727	.467
N of Valid Cases		91			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

CV_CON2 * socialmedia Crosstabulation

		socialmedia		Total	
		No, social media is not a source of COVID19 vaccine info.	Yes, social media is a source of COVID19 vaccine info.		
CV_CON2	Not confident	Count	1	4	5
		% within socialmedia	4.2%	5.9%	5.4%
	Somewhat confident	Count	1	12	13
		% within socialmedia	4.2%	17.6%	14.1%
	Moderately confident	Count	9	22	31
		% within socialmedia	37.5%	32.4%	33.7%
	Strongly confident	Count	13	30	43
		% within socialmedia	54.2%	44.1%	46.7%
Total	Count	24	68	92	
	% within socialmedia	100.0%	100.0%	100.0%	

Symmetric Measures

		Value	Asymptotic Standard Error ^a	Approximate T ^b	Approximate Significance
Ordinal by Ordinal	Gamma	-.249	.188	-1.317	.188
N of Valid Cases		92			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

Based on a comparison of the means, those who use social media as a source of COVID-19 information had a mean CDCTRUST score of 12.7377 vs. 12.9565 for those who do not use social media as a source of COVID information. This suggests that those who do NOT use social media as a source of COVID-19 vaccine information are only slightly more likely to trust the CDC guidelines. The significance value of .733, however, indicates that the relationship between CDC trust and social media as a source of information is not significant.

Group Statistics

Social media as a source of COVID-19 vaccine info.		N	Mean	Std. Deviation	Std. Error Mean
CDCTRUST	No, social media not as a source of info.	23	12.9565	3.67397	.75607
	Yes, social media as a source of info.	61	12.7377	2.85133	.35507

Independent Samples Test

		Levene's Test for Equality of Variances					t-Test for Equality of Means		95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
CDCTRUST	Equal variances assumed	.419	.520	.289	82	.773	.21892	.75606	-1.26792	1.22465
	Equal variances not assumed			.298	82.562	.738	.21892	.84884	-1.30899	1.24912

Independent Samples Effect Sizes

		Standardize ^a	Point Estimate	95% Confidence Interval	
				Lower	Upper
CDCTRUST	Cohen's d	3.09359	.071	-.409	.552
	Hedges' correction	3.12224	.070	-.406	.545
	Glass's delta	2.85133	.077	.403	.555

a. The denominator used in estimating the effect sizes.
 Cohen's d uses the pooled standard deviation.
 Hedges' correction uses the pooled standard deviation, plus a correction factor.
 Glass's delta uses the sample standard deviation of the control group.

Running an analysis of variance, a comparison of the means indicates that those who indicate that they are “Other” are most trusting of the CDC COVID-19 guidelines. Female and male respondents were relatively equal when it came to trust in CDC guidelines. However, this relationship between gender and trust in the CDC guidelines proves to be not significant based on the significance value of .216.

Report

CCCTRUST			
gender2	Mean	N	Std. Deviation
female	12.5000	95	3.19081
male	12.9000	10	2.92309
Other	14.6250	8	1.68602
Total	12.8313	93	3.07951

ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
CCCTRUST * gender2	Between Groups (Combined)	26.264	2	14.532	1.564	.216
	Within Groups	716.376	90	8.265		
	Total	772.639	92			

An analysis of variance, suggests that those who are ‘Other’ races have the most trust in the CDC COVID-19 guidelines. This is followed by African American participants, 13.6667, and Asian participants, 13.000. American Indians and Native Hawaiian or Pacific Islander participants reported being the least trusting of the CDC guidelines. The relationship between race and trust of the CDC guidelines is not significant with a significance value of .122. It should be noted that only 81 participants responded to the race question. In addition, much of the “Other” category were Latinx.

Report

ODCTRUST			
Please specify your race	Mean	N	Std. Deviation
Other (please specify)	14.2500	4	2.87228
American Indian or Alaska Native	7.0000	1	.
Asian	13.0000	1	.
Black or African American	13.6667	3	3.21455
Native Hawaiian or Pacific Islander	7.0000	1	.
White	12.9859	71	2.95921
Total	12.9259	81	3.03635

ANOVA Table

			Sum of Squares	df	Mean Square	F	Sig.
ODCTRUST * Please specify your race:	Between Groups	(Combined)	79.153	5	15.831	1.803	.122
	Within Groups		658.409	75	8.779		
	Total		737.562	80			

Additional multiple bivariate analyses were generated, but all analyses yielded relationships that were not statistically significant. This is likely attributed to the small sample size, the use of convenience sampling, and additional methodological issues.

LIMITATIONS

This study resulted in multiple limitations that are essential to address. The most impactful limitation is the small sample size of 103 respondents, rendering the findings not generalizable. This sample has an under-representation of the college-aged student population. This sample was collected through convenience sampling of students at a single institution, Salem State University. The survey was distributed through class Facebook pages and sociology courses, creating additional sources of bias. No significant relationships were found in any of the analyses, including when the analysis included social media as a source of COVID-19 information.

CONCLUSION:

This research aimed to confirm the hypothesis that vaccine hesitancy towards the COVID-19 vaccines that exists in the college-aged population is due to misinformation, distrust in vaccines, and being uninformed. However, this could not be confirmed due to research limitations including sampling strategy used, sample size, and other methodological issues. Although the hypothesis of this research could not be confirmed, this research provides a foundation for future research. In addition to addressing the methodological issues present in this study, future research should consider revising some of the survey questions, while adding additional survey questions. A question about political party affiliation might be helpful in this study. The frequency in which respondents use social media might also reveal essential information. Additional survey questions that consider the respondent's social class also are essential.

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