

THE COVID-19 PANDEMIC'S IMPACT ON COLLEGE STUDENTS'  
VACCINATION RISK PERCEPTIONS  
AND DECISION-MAKING

by

Tierney Proffit, B.S.

A thesis submitted to the Graduate Council of  
Texas State University in partial fulfillment  
of the requirements for the degree of Master of Science  
with a Major in Cultural Anthropology  
May 2022

Committee Members:

Emily Brunson

R. Jon McGee

Nicole Taylor

**COPYRIGHT**

by

Tierney Proffit

2022

## **FAIR USE AND AUTHOR'S PERMISSION STATEMENT**

### **Fair Use**

This work is protected by the Copyright Laws of the United States (Public Law 94-553, section 107). Consistent with fair use as defined in the Copyright Laws, brief quotations from this material are allowed with proper acknowledgement. Use of this material for financial gain without the author's express written permission is not allowed.

### **Duplication Permission**

As the copyright holder of this work I, Tierney Proffit, authorize duplication of this work, in whole or in part, for educational or scholarly purposes only.

## **DEDICATION**

I am dedicating this thesis to my dad, who has been a constant source of support and encouragement through not only the challenges of graduate school, but also life in general. He has taught me to work hard for what I believe in and to believe in myself. Dad, I am truly thankful to have you in my life and would not be where I am today without your unconditional love and support.

I also dedicate this thesis to everyone who has helped me accomplish this, from those that were willing to participate in this study to those that offered their support both logistically and emotionally as I carried out this research and completed this degree.

## **ACKNOWLEDGEMENTS**

Throughout the development and writing of this thesis I have received a great deal of valuable assistance and support.

First, I would like to thank my advisor, Dr. Emily Brunson, whose expertise and support was invaluable for the development of this research. Your insights, help, and patience through this whole process has greatly helped to sharpen my skills and has brought my work to a much higher standard. Thank you for taking a chance on me!

I would also like to acknowledge my other committee members, Dr. R. Jon McGee and Dr. Nicole Taylor, for their continuous support and insights that have also helped to better this research and my skills. I would specifically like to single out Dr. McGee, I want to thank you for your advice and unwavering support. Without you I would have never realized I wanted to pursue this degree in the first place and would have missed out on so many incredible opportunities that have now shaped who I am.

I would also like to thank Eric Gauldin for all his help conducting this research and all the advice along the way. Thank you, Eric, for all your support and helping me to think one step ahead during this whole process.

I also want to thank my cohort. Without them there would have been many lonely nights, but thanks to their support and friendship this research is now complete, and I am still sane.

In addition, I would like to thank my family, especially my parents, for their support and sympathetic ear. They have been there for me throughout all my studies and always offered their help, advice, and unconditional love.

Finally, I would like to thank my partner, Sunshyne, for his continuous support and love that has been there in the darkest and the brightest days. Thank you for always listening to me ramble and helping accomplish this in any and every way you could.

## TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS .....	v
LIST OF ABBREVIATIONS .....	viii
ABSTRACT .....	ix
CHAPTER	
I. INTRODUCTION .....	1
II. BACKGROUND.....	4
Liminality of College Students’ Health Decisions and The Pandemic’s Effects .....	4
Vaccine Decision-Making Influencers .....	6
Risk and Vaccination .....	9
III. METHODS .....	11
Recruitment and Sample .....	11
Data Collection and Analysis .....	12
A Note about Context .....	12
IV. FINDINGS.....	14
Formulating SARS-CoV-2 Risk Perceptions.....	15
Perceptions of Seriousness.....	15
Perceptions of Susceptibility .....	17
Assessing Perceived Risks and Benefits of Vaccination .....	18
Assessing Speed of Development and Unknown Long-Term Side Effects .....	18
Perceived Severity of Short-Term Side Effects .....	19
Navigating Societal Pressures and Impact on Others .....	20
Concerns About Impacting Others.....	20
Societal Pressures and Norms .....	21
Burdens of Responsible Consumerism .....	22

Differences in Risk Perceptions and Information Sources by Year in School .....	24
V. DISCUSSION AND CONCLUSION.....	27
Discussion .....	27
Limitations .....	29
Conclusion .....	29
REFERENCES .....	32

## **LIST OF ABBREVIATIONS**

<b>Abbreviation</b>	<b>Description</b>
Flu	Influenza
VPD	Vaccine preventable disease
COVID-19	SARS-CoV-2



## **ABSTRACT**

Widespread COVID-19 vaccination among college students is critical to reducing the spread of SARS-CoV-2 on campuses and within communities. Without mandates, however, some students remain unvaccinated. In this study I used semi-structured interviews to examine traditional (aged 18-23) college students' decision making for COVID-19 vaccination. I found that risk perception—of both the vaccine and the disease—played a key role in students' decisions, but that these perceptions were largely influenced by the social and cultural context, as the pandemic forced students to make health decisions alone for potentially the first time. In this thesis I consider how risk was actively avoided and how the liminality of both a pandemic and emerging adulthood impacted the way students accessed sources, formed their risk perceptions, and then made their vaccination choices.

## I. INTRODUCTION

*When she lived at home, Quin's parents made the decisions about her healthcare. Quin trusted them to do so, they were her parents and they both worked in health-related fields. Quin followed their lead when she went to college, majoring in biochemistry. She believed in science and also felt she had a good understanding of medical research on account of her parents' and her own studies.*

*At college Quin did not have many health concerns, she rarely went to the doctor. She was proactive about her health care though and received the flu vaccine every year. She felt strongly about this. As a freshman, she had ignored her mom's reminder to get the flu vaccine and ended up contracting the flu for the first and only time in her life. Getting a COVID-19 vaccine, however, was a different matter.*

*At the time of her interview, both of Quin's parents were vaccinated against COVID-19 and her father was pestering her about when she would do the same. Quin felt nervous though, the vaccines were all new, and she wanted to do her own research. As a senior, four years removed from living at home, she was not willing to just do what her parents told her to:*

*I haven't really done my research and that's why I haven't gotten it yet. Because I just don't want to go into something and be like, "Oh, just give me whatever." That just doesn't seem like a good idea.*

*Instead, Quin was turning to others around her, particularly her friends and others on social media for information and advice. This process caused Quin to question the*

*vaccine and its potential side-effects. Despite this Quin claimed that she still “had faith” in vaccination, she just wanted to make the “correct” decision. Quin had never made a decision like this on her own and wanted to take responsibility for doing things the right way. This process though led her to put off taking the very vaccines that she claimed to believe in and want.*

In this example, Quin—like many traditional college students (ages 18-23)—is in the process of becoming an independent decision-maker (Morimoto, 2019). As a college student, she has left her childhood home, where her parents made many decisions on her behalf. However, she is not yet a financially and socially independent adult decision-maker.

As Arnett (2015) explained, young adults, like Quin, are in a transitional or liminal period of “emerging adulthood.” They are transitioning from childhood, living under their parents’ guidance or even control, to full-fledged adults making their own decisions. During this time, they are developing their own identity and viewpoints. This process entails considering information and making decisions about careers, politics, religion, personal health, and more with decreasing input from parents or other family members. In some cases, this may result in decisions that go against the beliefs and practices of these individuals.

Establishing personal identity in this way involves being exposed to different viewpoints (from roommates, peers, professors, and others) and information from various sources, then using these new inputs to form/solidify personal beliefs (Henrich, 2001). However, identity formation does not happen overnight, and typically emerging adults try

on many different roles/views during this process (Schwartz and Pantin, 2006). What they are exposed to and try matters, as beliefs and identities solidified during this process can have long lasting impacts on their future decision-making. Political beliefs formed in emerging adulthood, for example, are often predictive of future adults' concerns about the environment and environmental practices like recycling (Mah, Matsuba, and Pratt, 2020).

In this study I consider university students' decision-making about health, specifically their decisions to accept or reject COVID-19 vaccines. The SARS-CoV-2 (COVID-19) pandemic has forced adults across the United States and other developed countries to make decisions about their own vaccination. This includes emerging adults attending college.

Vaccination decision-making in this context has involved gathering/being exposed to information from a variety of sources, assessing this information for accuracy, internally calculating how information from sources deemed "trustworthy" is relevant—based on past personal history as well as risk perception and avoidance (Beck, 1992)—and balancing internal feelings/desires with the expectations of others. In the case of emerging adults in particular, the COVID-19 pandemic has enabled an examination of how the liminality of college impacts university students' formation of risk perception and their identities as health decision-makers.

## **II. BACKGROUND**

### **Liminality of College Students' Health Decisions and The Pandemic's Effects**

Health decision-making is a unique aspect of emerging adulthood. Young adults are generally a healthy age-group with few medical concerns. For many young adults their health decisions are limited to receiving influenza (flu) vaccines and annual checkups. Thus, the development of independent health decision-making often occurs at a slower pace compared to other types of decision-making, for example voting (in the United States, adults gain the ability to vote at 18) or involvement in causes (clubs, religious organizations, and community service groups are commonly available on college campuses in the US).

As a result, past research regarding young adults/college students and health decision-making has primarily focused on flu vaccine uptake. The flu vaccine differs from the COVID-19 vaccines in some key ways: it has been around much longer than the COVID-19 vaccines, it is a yearly vaccine, and its effectiveness can vary greatly due to miscalculations in what virus strain to include (this decision is made a year in advance [CDC, 2021]). Because the effectiveness of the flu vaccine varies and the flu itself is not usually problematic for young adults, flu vaccines are often mistrusted or seen as unnecessary (Lutz et al, 2020; Quin et al. 2019).

The COVID-19 pandemic has changed this status quo. It has forced adults, including college students, to regularly make health decisions about things like face masks, social distancing, going to public spaces and more recently vaccinating. In this environment, it has become possible to study health decision-making processes during emerging adulthood outside of a flu vaccine context.

The literature on college students' flu vaccine uptake—which is largely survey-based—suggests that a lack of vaccination stems from a variety of factors including: lack of confidence in the vaccines (Schmid et al., 2017; Rogers et al., 2018; Jadhav et al., 2018), complacency in regard to the flu (Agarwal, 2014; Benarczyk et al., 2015), lack of knowledge and awareness about where and how to get flu vaccines (Schmid et al., 2017; Benjamin and Bahr, 2016), and negative social pressures from parents or peer groups (Schmid et al., 2017; Nyhan et al., 2012; Jadhav et al., 2018). Based on this research, recommendations for increasing flu vaccination among college students often focus on educating young adults about the flu and flu vaccine and involving trusted sources, particularly health care providers. However, as the research fails to account for the broader context of health decision-making, including risk perceptions and issues of access, these solutions are likely overly simplistic.

In the context of the COVID-19 pandemic, research on vaccination has largely been survey-based and provides solutions similar to those from flu vaccine research. Malik et al.'s (2020) study of COVID-19 vaccine acceptance in the US, for example, suggests utilizing healthcare providers and health officials as trusted sources of information to boost vaccination uptake. However, this does not account for populations with little to no interactions with healthcare providers, including emerging adults/college students. Alternatively, Qiao, et al. (2021) in their study of COVID-19 vaccine acceptance in college students, found that higher perceived severity of the virus was a predictor of COVID-19 vaccine acceptance, but did not account for how students were determining the severity of the virus or benefits of the vaccine.

## **Vaccine Decision-Making Influencers**

Considering vaccination decision-making more broadly, the literature suggests decisions are based on a variety of factors including responsible consumerism, individualism, and the distrust of the government and science.

Responsible consumerism is strongly linked with decision-making in the US (Peretti-Watal et al., 2014). The public is encouraged to self-educate about consumer products and is responsible for avoiding risks (Makarovs and Achterberg, 2017). Parents, for example, can spend hours online going through reviews on sites like Amazon.com to assess what is the best/safest toy for their children. If they do not go through the process of self-educating, and their child is harmed by a toy they select, they could be held socially responsible for making a poor parenting decision. The social worldview that responsibility falls on consumers often drives individuals to be skeptical and hyperaware, or as Beck (1992) describes “risk-averse.”

Responsible consumerism applies to vaccination as well. Research among new parents, for example, finds that most parents conduct “research” as a part of their decision-making process (Brunson 2013). For some parents that entails asking their children’s health care providers what they would do, for others that involves reading and analyzing primary sources (journal articles, peer-reviewed books, etc.). With the rise and increased use of social media, “researching” has become even more complex and convoluted.

As Smith and Reiss (2020) found in their study of online discourses about COVID-19, parsing through the figurative firehose of information available on the internet and specifically social media, can be confusing, especially for those who were

not prepared to do this research. Online misinformation about vaccination adds to the complexity of this issue (Kata, 2010). The emotional way information is presented in these arguments preys on a lack of knowledge pulling people into the world of health misinformation (Smith and Reiss, 2020).

Secondly, the cultural value of individualism in the US affects how the risks and benefits of vaccines are assessed. Individualism inherently leads to a focus on the self and/or one's close family as opposed to others. Regarding decisions about vaccinations, this type of focus often leads individuals to evaluate vaccines based on the direct personal benefits/risks, rather than the risks/benefits to their communities. Sobo (2016), for instance, in her study of vaccination decision-making in private schools, found that even when parents fully understood herd immunity and viewed it as important, it was not a primary factor in their decisions. Instead, these parents made decisions based on what they felt was in the best interest of their families. In the context of the pandemic Maaravi et al.'s (2021) study found that more individualistic countries generally had more cases and mortalities, as there was lower adherence to prevention measures than in predominantly collectivist countries.

Despite this, literature from public health sources, including the CDC, often focuses on community benefits to promote vaccines and raise concerns about the risks of vaccine-preventable diseases (VPDs [Brunson and Sobo, 2017]). Anti-vaccine arguments, in contrast, tend to address perceived personal risks, appealing to an individualistic focus (Kata, 2010).

Individualism also impacts how information is perceived. Health care providers' and public health officials' preferences for one-size-fits-all responses to individual



vaccination concerns, for instance just repeating population-level statistics about VPDs and vaccines to promote vaccine benefits, can be off putting to those looking at the issue with an individualistic focus (Brunson and Sobo, 2017). Research has further shown that even when those with a positive view of vaccination have concerns, they feel doctors' responses are more persuasive than informative, leading them to self-educate instead of relying on their health care providers (Raithatha et al., 2003). Anti-vaccine messages also emphasize an individual's "right to choose" appealing to people's individualism and the goals of responsible consumerism (Kaufman, 2010).

Finally, the tendency to be skeptical naturally accompanies both responsible consumerism and individualism. Skepticism in turn allows distrust in government agencies and science to develop. Individuals are self-interested and assume others are too, as a result they must be wary of who really benefits from scientific claims (Douglas, 2015). This distrust allows those with vaccine hesitant attitudes to disregard scientific support for the safety and effectiveness of vaccines (Kata, 2010). People want full transparency of the risks and benefits and are not willing to just accept doctors' or other professionals' advice on what is good for them (Larson, 2013).

This has been especially true for COVID-19 vaccines, as the risks appeared to change during the vaccine rollout, such as with the emergence of the Johnson & Johnson blood-clots, making officials statements of safety seem less trustworthy (Jenning et al. 2021) and subject to change. Individuals are left to parse through (largely online) information on their own looking for certainty of what is best, which can have negative impacts if they cannot determine what sources are reputable (Schwartz, 2012).

## **Risk and Vaccination**

The cultural influences discussed above are intertwined with risk perception and risk aversion (Beck, 1992). In *Risk Society*, Beck (1992) describes modern, industrialized societies that are preoccupied with the future and safety as “risk societies.” The US fits squarely into this category. Through traditional and social media, as well as personal networks, Americans have constant access to potentially anxiety inducing information, such as the unproven side effects of COVID-19 vaccines Quin was concerned with (Shensa et al., 2018). In an attempt to control and mitigate these perceived risks—stemming from the belief that it is possible to avoid risk with enough preparation/knowledge—they also value autonomy (aka individualism). The compromise between these concerns leads to responsible consumerism, where individuals become responsible for assessing potential risks and making the best decisions, giving them a sense of autonomy and control (Beck, 1992).

In terms of vaccination decision-making, scholars have noted that risk perception/avoidance is a central issue (Rogers et al., 2018; Brunson and Sobo, 2017). Risk perception affects how individuals (often parents) assess the benefits of vaccines and susceptibility/seriousness of VPDs. In turn, risk plays a key role in the determination of vaccination intentions (Rogers et al., 2018).

In the US the vaccine program in place since the late 1970s has made VPDs uncommon. Most Americans 50 years of age and younger, for example, have never had or seen someone experience diseases like diphtheria or measles. Consequently, many individuals perceive that they/their children are not susceptible to these diseases and/or that the diseases themselves must not be serious. This lowered risk perception has, in

turn, lowered the perception of vaccine benefits (Johnson et al., 2019). Concurrently, the focus on vaccination in the US has shifted from preventing VPDs to consideration of the real/potential risks of the vaccines themselves—what Beck (1992) refers to as the “unknown unknowns.” Such concerns have led to both vaccine hesitancy and refusal.

Controlling the risks of VPDs through vaccination has caused vaccines to become “a victim of their own success” (Schwartz, 2022). Vaccination can provide a sense of security, but when outbreaks of VPDs occur trust in vaccination and the promises of vaccine policies can be diminished (Brunson and Sobo, 2017), as it appears that those preventative measures did not effectively control/avoid risks. Since the ultimate goal of risk-averse people, such as much of the US population, is to avoid all risks, anti-vaccine sentiments that seem to offer little to no risks because VPDs are uncommon may be particularly appealing (Dube et al., 2016).

Although many of the COVID-19 waves are due, in part, to low levels of vaccination, many people can view this as evidence that the vaccines have not fulfilled their promises of risk avoidance. The blood clots caused by the Johnson & Johnson COVID-19 vaccines are an example of an “unknown unknown” (Beck, 1992). Even though these were rare occurrences, the blood-clots emphasized to some people that there are potential dangers in new vaccines. This led some to wait or flat out refuse vaccination, especially since college students are lower risk for severe complications from the virus.

### **III. METHODS**

This qualitative study was conducted in the context of a larger research project on general vaccination decision-making among college students. Data for this research were collected between March and May of 2021.

Data reported in this article were collected through semi-structured interviews with traditional undergraduate students at a university in Central Texas (Texas State University). Topics covered in the interviews included the processes/sources students went through to make their vaccination decisions, the factors that influenced their risk perceptions, and how their risk perceptions influence their COVID-19 vaccination decisions. The initial interview guide was based on a review of the literature. As the study progressed, questions in the interview guide were modified to clarify research questions, to include research topics identified in previous interviews, and to reflect the overarching goals of the larger project. All protocols of this study were approved by the IRB at Texas State University.

#### **Recruitment and Sample**

Research participants were recruited from undergraduate students who were between the ages of 18 and 23 years old. A master list of all students meeting these criteria was obtained from the university. This list was stratified by year in school (freshmen, sophomores, juniors, seniors) and gender (female and male, the university does not track other genders)—two variables that previous research (Brunson et al., 2022) indicated were predictive of COVID-19 vaccination decisions. The resulting lists were randomized, and recruitment emails were sent to members of each group.

To allow for comparison between groups, recruitment was meant to be weighted equally by year in school and gender (i.e., 5 female and 5 male freshman, 5 female and 5 male sophomores, etc.). However, male juniors (n=7) were slightly overrepresented in the final interview sample, while male freshman (n=4) and female juniors (n=4) were slightly underrepresented. At the end of each interview participants received a \$25 as an incentive for their time.

### **Data Collection and Analysis**

Analysis of the interview data for this study proceeded in an inductive manner following the tenants of thematic analysis. Qualitative analysis of students' vaccine choices indicated trends based on their vaccination decisions at that time (Table 1): those who had already received at least one dose of vaccine (*acceptors*), those who were planning and/or had already scheduled a vaccination appointment (*planners*), and those who were refusing vaccination (*refusers*). Subsequent assessment involved additional comparisons among these groups. Further comparisons based on gender and year in school were also made to investigate the impacts of these variables in the development of decision-making during early adulthood.

### **A Note about Context**

This research was conducted in the spring of 2021 during the beginning stages of the widespread rollout of COVID-19 vaccines in the US (these vaccines were made available to all adults in late April 2021[AJMC staff, 2021]). At this point in time, the availability of vaccines and increasing vaccination rates gave rise to an optimistic belief

that things might soon return to “normal” (UCLA Health, 2021).

Since this time, however, COVID-19 variants, including Delta and Omicron, have challenged this perspective, and increased political divisiveness surrounding vaccine mandates and mask wearing has developed. As of November 2021, CNN reported that “Big cities and Democratic areas – especially on the coasts – largely have the virus under control with large swaths of their populations vaccinated and mask-wearing de rigueur – while in more rural and Republican regions the virus continues to rage through the unvaccinated population.” (Cillizza, 2021). As of March 2022, the Omicron surge has largely passed, but the US population has become numb to the pandemic situation and there is a belief that “normal” may never come (Young, 2022).

#### IV. FINDINGS

Forty interviews were conducted virtually via Zoom. Interviews lasted between thirty minutes to one hour. Each interview was audio recorded and later transcribed verbatim. A demographic questionnaire was also provided to participants at the end of their interviews. Full demographic details of the sample are provided in Table 1.

**Table 1.** Full Demographic Information

		Total	By Vaccine Choice Group		
		Sample	Acceptors	Planners	Refusers
Year in School and Gender					
Freshman		22.5% (9)	5	0	4
	Female	12.5% (5)	4	0	1
	Male	10% (4)	1	0	3
Sophomore		25% (10)	6	4	0
	Female	12.5% (5)	2	3	0
	Male	12.5% (5)	4	1	0
Junior		27.5% (11)	10	1	0
	Female	10% (4)	4	0	0
	Male	17.5% (7)	6	1	0
Senior		25% (10)	7	1	2
	Female	12.5% (5)	3	1	1
	Male	12.5% (5)	4	0	1
Race/Ethnicity					
African American		10% (4)	2	1	1
Asian		22.5% (9)	8	0	1
Hispanic		30% (12)	9	1	2
Multi-racial		10% (4)	3	1	0
White		27.5% (11)	6	3	2
Political Orientation					
Conservative		0	0	0	0
Conservative Lean		7.5% (3)	2	1	0
Centrist		20% (8)	4	0	4
Liberal Lean		30% (12)	9	2	1
Liberal		40% (16)	13	3	0
Prefer not to answer		2.5% (1)	0	0	1
Health/Science Major/Minor					
Yes		17.5% (7)	6	0	1
No		82.5% (33)	22	6	5

Analysis of this data suggested that risk perception—of both the vaccines and the disease—played a key role in the decisions students made. Risks considered include: the relevant risks of the virus; who these risks apply to, and who students may encounter; the known and potential unknown risks of the vaccines; the social risks of accepting, or not accepting, vaccines; and the risk of trusting various sources of information and how to decide what those were. Each student reported weighing some or all these risks and ultimately described their decision-making process as having to learn to be responsible consumers rather quickly during emerging adulthood.

### **Formulating SARS-CoV-2 Risk Perceptions**

In line with typically having few health concerns during emerging adulthood, students reported initially perceiving COVID-19 as manageable and felt low risk for severe complications due to youth. Perceived susceptibility and perceived seriousness of a virus are important factors in determining the benefits of the vaccines. This means that when a person feels there is a low chance that they will get the virus or have serious symptoms then they are more likely to feel a vaccine is unnecessary for them personally. Students were forced to quickly formulate these risk perceptions of the virus to make health decisions for potentially the first times in their lives.

### ***Perceptions of Seriousness***

Across all categories, students generally felt that the COVID-19 virus was not particularly dangerous. They tended to describe themselves as young and healthy and expressed that they could “handle” the symptoms if they were infected. Amy (acceptor,



female, junior), for example, said “I think if I got COVID, I would be fine.”

There were exceptions, however. Students with underlying conditions did not feel that their youth lessened the potential of severity, as Sara (acceptor, female, junior) explained: “I am pre-diabetic, so I am at a higher risk of more severe side effects from it and symptoms from it because of that.” Also, when students had encounters with severe cases and/or heard about people they knew—especially their family or friends—becoming extremely ill or dying this increased their perceived seriousness of the virus and sometimes even their perceived susceptibility, such as when James (acceptor, male, sophomore) recalled how his uncle’s severe case affected his concerns:

... just a few weeks ago, my uncle's in the ICU...It got really bad. And I always knew the vaccine and would take it seriously, but after seeing that, I was like, driving around in the square, everyone was open, everyone was there, and I was like, uh-uh(negative)... Nope. People are still getting sick.

Comparison by vaccination choice groups revealed consistent trends. While acceptors and planners felt severe symptoms were unlikely, the possibility was still considered, as Levi (acceptor, male, junior) explained: “I don't have any asthma or stuff like that. So, I don't think I'm very high risk for severe case. Of course, you never know....” In contrast, refusers did not acknowledge the potential for severe symptoms, for example, John (refuser, male, freshman) stated, “If you get [COVID-19] it'll just ruin two weeks of your life.”

### *Perceptions of Susceptibility*

Discussions about perceived susceptibility often focused on students' abilities to avoid the virus using other preventative measures, such as mask wearing or social distancing. Most students felt they were using these methods effectively, however differences emerged between vaccination choice groups when the conversation shifted to the effectiveness of other's precautions.

Refusers often stated others were not effectively taking precautions. However, instead of seeing this as an increase to their personal risk level, this seemed to enhance their views of individualism (vs the common good), as Joe (refuser, male, freshman) suggested: "So in general, I have a very distrustful mentality of people around me...so many people just are very inconsiderate, and they will be a part of the problem if it benefits them." Since other people were not doing their part to protect the community, these students felt they should not be expected to get vaccinated under the guise of herd immunity. Refusers also stated that they could effectively avoid contracting COVID-19 without the vaccine, as Steve (refuser, male, senior) suggested, "I have never caught COVID... because I'm a relatively clean person, so I come home, I wash my hands. I like to think I have good hygiene."

Acceptors and planners, in contrast, had different reactions to others not following precautions. These students also felt they were adhering to preventative measures effectively but expressed an increase in perceived vulnerability due to others' lack of adherence. Levi (acceptor, male, junior) expressed these concerns when he said, "I just have enough people on Snapchat that are like, "yeah, no mask mandate... finally we're free" or whatever. I'm just like... after what we've been through for a whole year, you're

just ready to give it all up and start spreading COVID again, I guess."

### **Assessing Perceived Risks and Benefits of Vaccination**

Once a student had a high enough perceived seriousness and susceptibility of the COVID-19 virus then the perceived benefits of the vaccine had the potential to outweigh its perceived risks. Students were assessing the potential long-term and short-term side effects and the vaccines' speed of development in an attempt to avoid the highest risk decision.

### ***Assessing Speed of Development and Unknown Long-Term Side Effects***

The biggest factor that led to skepticism for all vaccination choice groups was the speed of the COVID-19 vaccine development and approval. For most students the speed at which vaccines were developed and offered to the public raised questions about whether the vaccines were properly tested and if there was any way of knowing what the long-term side effects would be.

These concerns were particularly common among refusers. When asked how much time it would take for him to feel comfortable that the vaccine was safe Steve (refuser, male, senior) responded, "35 years." He, like other refusers, expressed that he would only get vaccines that had been around a long time, like the measles vaccine, explaining it was because, "They've already have all the research and they weren't kind of pumped out super quickly."

Acceptors and planners also discussed long-term side effects, but they tended to accept that some unknowns are inevitable due to the newness of the vaccine. For

acceptors and planners, the immediate benefits of the vaccines outweighed the potential future risks. When Micah (acceptor, male, junior), for example, was asked his thoughts about long-term side effects he said with a sigh, “They [vaccines in general] haven't caused any negative side effects in the past and so I don't foresee it [this time either], but at the same time you just never know with something so new.”

### ***Perceived Severity of Short-Term Side Effects***

Short-term side effects were also considerations in students’ assessment of the vaccines’ risks. Acceptors deemed the potential short term side effects manageable and preferred those risks rather than risking the full extent of COVID-19. Whereas refusers seemed wary of even the mild side effects. When discussing possible side effects, for example, Steve (refuser, male, senior), stated “...they say body aches and headaches and stuff like that and like just hurting. I just don't want that.” However, when Charles (acceptor, male, junior) was discussing the same potential side effects he stated “... potential downsides of the vaccine are so much less than the potential downsides of catching COVID.”

Refusers like Steve were attempting to avoid all risks of any sickness or at least take the path that seemed the least risky at the moment. In his mind, the vaccine guaranteed being sick for a few days—even if the sickness was mild—and there was also the potential for unknown long-term side effects. Because Steve was confident in his ability to avoid COVID-19 altogether and felt he was low risk for severe symptoms if he contracted it, not being vaccinated was, in his mind, the least risky option.

Situations like the blood clots and death associated with the Johnson & Johnson

vaccine in March 2021 exacerbated this issue. Refusers often talked about this issue and how it enhanced their sense of nervousness. Steve, for instance, shared that he was considering being vaccinated before the Johnson & Johnson vaccine pause, “I was considering it and then I saw what happened with the Johnson & Johnson and then I was like, “No, I’m not [doing that].””

Acceptors and planners, in contrast, also acknowledged the issue with the Johnson & Johnson vaccine, but they felt such severe reactions were rare and unlikely to happen to them. Carla (acceptor, female, freshman), for example, remarked “I don’t buy lottery tickets, so I’m not super [scared] by, oh no, it’s three in every hundred-thousand people will end up with life-threatening symptoms.”

### **Navigating Societal Pressures and Impact on Others**

Beyond weighing the risks associated with SARS-CoV-2 and the COVID-19 vaccines for themselves, students also reported their decisions were shaped by those around them. This included weighing the risks of the disease for others, particularly family and friends, and feeling pressure to take actions, particularly from peer groups. During this time of emerging adulthood students began looking to social norms to help them shape their own decisions.

#### ***Concerns About Impacting Others***

Students did not consider the risks of COVID for themselves, they also considered what the disease might do to the people around them. Having family members and/or friends who were at high risk for complications was a source of concern for

students across all of the vaccine decision groups.

For many acceptors and planners, not wanting to be responsible for spreading COVID-19 to someone they cared about often played key roles in their final decisions. Dave (planner, male, sophomore), explained his reasons for setting up a vaccine appointment when he said, “I ended up getting it because my dad’s in a higher risk area. He's older and he is a little overweight.” These students also talked about protecting others through other preventative methods, such as mask wearing, even after being vaccinated.

Most refusers did not mention high-risk family or friends, if they did, they indicated that they would protect them by measures other than vaccination. Sam (refuser, male, freshman), for example, when talking about protecting his high-risk family stated, “We don't let my grandfather go out pretty much at all because he's quite old. So, we don't want to take any risks like that.” Refusers hardly discussed considering their decision’s effect on the community, but when they did mention this, it was while discussing why they might get the vaccine “one day.”

### ***Societal Pressures and Norms***

Social pressure also played a role in students’ vaccination decisions. None of the interviewees wanted to get someone else sick or be labeled a “spreader.” Jane (acceptor, female, junior), who was the president of a sorority on campus, explained, “We were the only chapters to [cancel all sorority events]. I canceled everything. I was like, "No." I was like, "I'm not having us be responsible for a COVID outbreak.” Students did not want to be a spreader and often expressed that getting the vaccine would reduce their chances of

being a spreader, or at least signal that they had done all they could to try and not be.

According to students after vaccines became available, accepting vaccines began emerging as a social norm, whereas not being vaccinated entailed the risk of being seen as part of the issue. Most students, even refusers, expressed that getting the vaccine was what most people were doing and that vaccination was the best solution for ending the pandemic. Quin (refuser, female, senior) and Jane (acceptor, female, junior) both summed up this sentiment when they each remarked, “I know that a vaccine will help us get out of a pandemic. And so why would I not want to be a part of the solution? So I definitely think that that influences me.” and “If you don't get vaccinated... I'm definitely like ‘you are out of my circle.’”

Many students reported seeing others post their vaccination cards or photos of themselves being vaccinated on social media and with that came a “sense of urgency” and an increased societal pressure. Posting about getting vaccinated is an example of signaling where students were representing their personal ethics and that they are now potentially safer to be around, as they were now at a lesser risk for severe cases and in many peoples’ minds would be less likely to spread the virus to others.

### **Burdens of Responsible Consumerism**

“The promise of security grows with the risks and destruction and must be reaffirmed over and over again to an alert and critical public through cosmetic or real interventions in the techno-economic development.” – Ulrich Beck (1992)

Students often explained they were trying to make the “best” decision, but many

found the process involved parsing through misinformation and attempting to understand medical jargon making the process stressful. This pressure led some students (like Quin [refuser, female, senior]) to remain unvaccinated, not because they were against vaccine, but because they felt they had not been able to assess the situation adequately and did not want to be responsible for making a bad choice:

I just think doing research in general is really important. You should know what you're putting in your body. Well, for the most part, I don't think I'm going to know everything in it, but just like the percentages, like the success rate, like the risk factors, because some may have different side effects than others. And so those are just all things that I think I should know, and take into account before I put that in my body.

This anxiety was exacerbated by having multiple vaccines to choose from. Most students stated they wanted “the most effective” vaccine and had been comparing those available. This additional assessment, however, created additional opportunities for them to encounter mis- and dis-information. Joe (refuser, male, freshman) explained that “on TikTok or on those Snapchat ads, they can give you that click baity, like vaccinations kill people. And I don't ever trust any of it, but it's still very much sets a little warning in my mind.” Students who expressed fewer concerns and less skepticism overall were willing to accept whatever vaccine was most readily available. When discussing her vaccine preference, for example, Carla (acceptor, female, freshman) remarked “Personally, I had a leaning towards Moderna or Pfizer, but logistically, I was just trying to see if I could get any of them.”

Social media use led directly to some of these anxieties. Most students, when directly asked, reported that they were (or should be) getting information on COVID-19

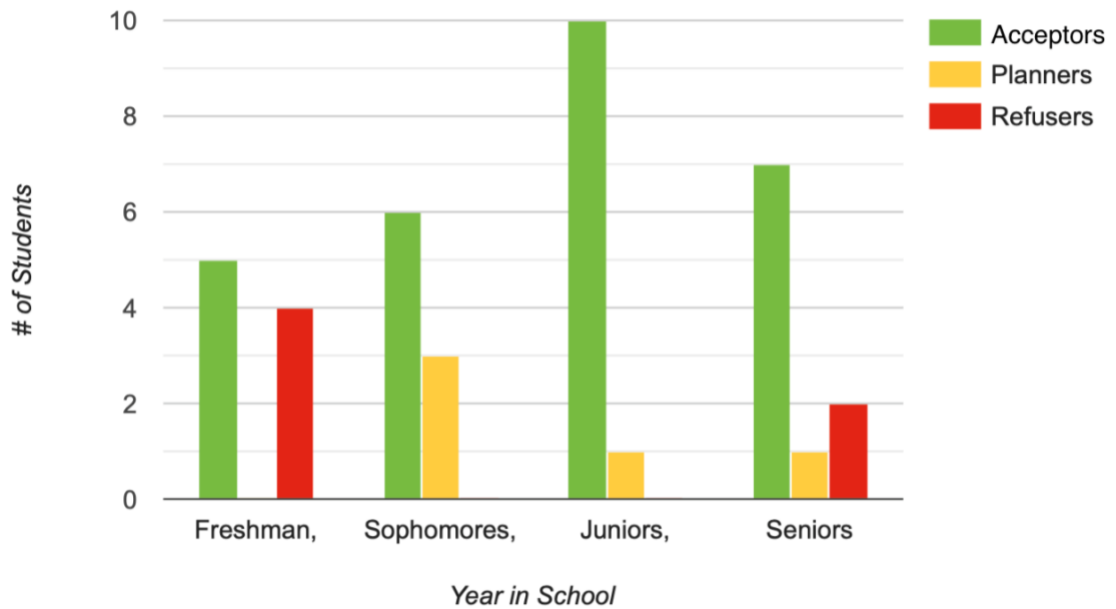


and COVID-19 vaccines from the government websites, and particularly the Center for Disease Control (CDC) website. However, these same students, when indirectly talking about their research, reported obtaining much/all of their information from social media and/or a post prompting their research. Sam (refuser, male, freshman) explained his situation thus: “All the stuff that just comes up on your phone. For the vaccine, I have tried to look into things a little, but usually for news and everything, just whatever pops up.” In addition to information, social media also provided a way for students to track who around them (family, peers, etc.) was accepting or rejecting vaccination.

### **Differences in Risk Perceptions and Information Sources by Year in School**

Year in school was used as a proxy of how long a student had been living on their own and where they are in their transition to independent decision-makers, as traditionally upper-classmen have been living away from home longer than lower-classmen. In a comparative analysis, differences were apparent between freshmen, sophomores, juniors, and seniors.

First, differences existed in vaccine choice (Figure 1). There were 4 refusers among the freshmen and 2 refusers among the seniors: Steve and Quin. In his interview Steve argued that more time was needed to know if the vaccine was safe. Quin felt she had not done enough personal research to make an informed decision. In both cases, the students were taking their emerging role as responsible consumers very seriously. In contrast, the freshmen refusers did not express they felt much responsibility to research the COVID-19 vaccines themselves or get them at all. They were getting most of their information from social media or family members.



**Figure 1.** Year in school by vaccine choice group.

This same trend was apparent across all years. Students just entering emerging adulthood tend to be more reliant on their childhood sources of decision-making, such as their parents/family. Freshman and many sophomores, for example, often mentioned trusting and relying on their parents/family’s risk perceptions and research. As freshman Joe explained:

I definitely am aware of how little I know...which is why I trust the opinions of certain family members like my two sisters who were in the medical field because they went to college, they know what they're talking about.

A shift seemed to occur with the juniors like Jane (acceptor, female, junior) when she said, “I definitely don't trust people's opinions, unless they have factual information

behind it.” While juniors took parents/family risk perceptions into consideration, they often stressed the importance of doing their own research on top of that.

Seniors only mentioned even considering parent’s or family’s opinions in their decision-making if that family member worked in the medical field, otherwise the seniors tended to stress the importance of doing your own research. However, seniors were the only group to mention trusting the university to assess the risks for them. Mark (acceptor, male, senior), for example, explained, “I knew I was going to get it. And if Texas State was allowing students to get it, I was like, I trust Texas State's judgment.”

## **V. DISCUSSION AND CONCLUSION**

### **Discussion**

Traditional college students were still developing their identities and learning to be independent decision-makers when the pandemic forced them to quickly assess risks, and then make health decisions on their own for potentially the first time. The liminality of emerging adulthood (Arnett, 2015) impacted this process. This was apparent in how lower classmen (e.g. younger students) relied more on parents/family for information and risk perception formation than upper classmen and how, in general, students were looking to the emerging social norms for guidance on their decisions. This is in alignment with other vaccine decision-making processes that occur during emerging adulthood, such as in DeLauer et al.'s (2020) study of HPV vaccination in college students.

It is often suggested that decision-making is based solely on cost and benefit analysis, but anthropological research has shown that social learning and cultural transmission is often equally, if not more influential (Henrich, 2001). Brunson et al.'s (2022) COVID-19 vaccination willingness study, a survey conducted among the same population as the research presented here, found that students' feelings of risk were more predictive of willingness than actual risk. This aligns with my findings that students' feelings/perceptions of risk often did dictate their choices. However, the qualitative data further suggested that these risk perceptions were largely dictated by perceived social norms, social media, personal life experiences, and in some cases continued reliance on parental/family advice.

The liminality and lack of recent precedent of the pandemic, combined with the burdens of becoming independent adults who would be held accountable for their

choices, influenced what sources students trusted. Social media played a large role in the way students accessed and were exposed to different information/sources, especially as most activities shifted online due to the pandemic. Social media also provided students the ability to assess if those around them were getting the vaccines. Reliance on other's anecdotal stories to inform and/or confirm risk perceptions is in alignment with what can be expected during this transitional time of identity formation (Arnett, 2015).

Overall, students were overwhelmed and frustrated trying to navigate not only the uncertain times due to the pandemic, but also the uncertain times specific to the traditional college experience. Other populations were also experiencing the uncertainty of the pandemic, but already had established viewpoints around health decisions that colored the way they viewed the COVID-19 vaccines, which could be positive when they were trusting of vaccines and a negative when vaccine hesitancy was already set in (Sarwar et al. 2021).

The burden of responsible consumerism is shifting from parents' shoulders to the students during this time (Arnett, 2015) and this pressure to make correct decisions was only amplified by the absence of a normal/routine path to follow. Many students might have ended up refusing if it had not been for external factors. Making no decision and waiting it out can be enticing with so much uncertainty, especially when combined with their seemingly low perceived seriousness/susceptibility of the virus.

However, the social context helped to shape what "normal" behavior was and many students fell in line with the emerging social norms in the end, even if they did not feel it was necessary for their personal protection due to feeling young, healthy, and thus low-risk. The less established their identities were (aka the younger they were), the less

they were impacted by the individualism that often dictates vaccination choices and were more influenced by community benefits. Students were making their best attempts to prove themselves as responsible consumers and avoid being a part of the group who was viewed as having made the wrong initial decision. Acceptors and planners were also attempting to present themselves in a positive light to others based on what they believed the emerging social norm was.

### **Limitations**

This research was conducted while COVID-19 vaccines were just rolling out and the topic is highly controversial with potentially hostile responses from both sides. Meaning that the sample likely leans slightly toward those who were more accepting of the vaccine, since that was often perceived as the “right thing to do” and those who felt otherwise might have worried their views would not be well received and thus declined interviews. Although, this qualitative research sheds light on the important reasoning and influencers behind the decision-making process, it is not wholly generalizable due to the methods and sample size. Therefore, further research needs to be done to confirm and add to the understanding of why and how risk perceptions develop and influence the uptake of vaccines in traditional college students and generally for people during emerging adulthood.

### **Conclusion**

According to the results of this study, traditional undergraduate students would likely be most receptive to information about vaccination as freshman and sophomores

when they are just entering emerging adulthood and are more reliant on others for critical information that dictates their risk perceptions and decision-making. Upper classmen such as juniors and seniors are beginning to solidify their opinions/identity and prioritize their own research thus providing them with information/interventions on how to critically assess and parse through sources might be more effective than just telling them what is best. Freshman and sophomores could also benefit from learning how to better navigate and critically assess the information/sources they are seeing and hearing. Seniors are on their way out of emerging adulthood and might be less receptive to these types of interventions but could benefit from increased access to credible and digestible sources for their own personal research. This could be especially helpful for students that trust the university's judgement of what is reputable. Other studies, such as DeLauer et al.'s (2020) study of HPV vaccination in college students, suggest similar recommendations about providing students, especially seniors, with information they can parse through themselves.

Thankfully it seems that students are willing to change their minds during this time and are interested in taking action to protect their peers. Brunson et al.'s (2022) COVID-19 vaccination willingness study also found this "pro-social tendency" meaning that students might be receptive to messages that emphasize this.

This study is important because few qualitative studies have been completed that adequately assess the impacts of risk perceptions and vaccine acceptance in this population. College students' COVID-19 vaccine acceptance is one of the necessary factors for returning to "normal" through herd immunity, as they tend to fill many service industry jobs and have direct contact with the public. Also, many college students live in

high-risk environments for contracting the virus themselves (Lu et al., 2021). In this way, college students' risk perception formation processes about the COVID-19 virus for both themselves and others, and possibly even more so the COVID-19 vaccines, are critical to understand.



## REFERENCES

- AJMC Staff. 2021. "A Timeline of COVID-19 Vaccine Developments in 2021." *American Journal of Managed Care* website, June 3. Accessed [January 5, 2022]. <https://www.ajmc.com/view/a-timeline-of-covid-19-vaccine-developments-in-2021>.
- Arnett JJ. 2015. *Emerging Adulthood: The Winding Road from the Late Teens Through the Twenties* 2<sup>nd</sup> edition. New York: Oxford University Press.
- Beck U. 1992. *Risk society: towards a new modernity*. India: SAGE publications.
- Benjamin SM, Bahr KO. 2016. Barriers Associated with Seasonal Influenza among College Students. *Influenza Research and Treatment*. doi:10.1155/2016/4249071
- Brunson EK. 2013. The Impact of Social Networks on Parents' Vaccination Decisions. *Journal of American Academy of Pediatrics* 131(5):1397-1404. doi:10.1542/peds.2012-2452
- Brunson EK, Sobo EJ. 2017. Framing Childhood Vaccination in the United States: Getting Past Polarization in the Public Discourse. *Human Organization* 76(1):38-37. doi:10.17730/0018-7259.76.1.38
- Brunson EK, Rohde RE, Fulton LV. 2022. College students' willingness to accept COVID-19 vaccines. *Journal of American College Health*. doi: 10.1080/07448481.2021.1996375
- CDC. 2021. Selecting Viruses for the Seasonal Influenza Vaccine. <https://www.cdc.gov/flu/prevent/vaccine-selection.htm>
- Cillizza, Chris. 2021. This is how badly partisanship has poisoned the the conversation about the Covid-19 vaccine. *CNN* website, November 16. Accessed [January 5, 2022]. <https://www.cnn.com/2021/11/16/politics/covid-19-vaccine-partisanship/index.html>
- Delauer, V. McGill-O'Rourke, A. Gordon, C. Hamilton, N. Desruisseaux, R. DuarteCanela, M. Heyer, A. Macksound, K. 2020. Human papillomavirus and health decision-making: Perceptions and accountability in college. *Health Education Journal* 79(1):46-57. doi:10.1177/0017896919862309
- Douglas H. 2015. Politics and Science: Untangling Values, Ideologies, and Reasons. *The Annals of the American Academy of Political and Social Science* 658:296-306. doi:10.1177/0002716214557237

- Dube E, Vivion M, Sauvageau C, Gagneur A, Gagnon R, Guay M. 2016. “Nature Does Things Well, Why Should We Interfere?”: Vaccine Hesitancy Among Mothers. *Qualitative Health Research* 26(3):411-425. doi:10.1177/1049732315573207
- Henrich J. 2001. Decision-making, cultural transmission and adaptation in economic anthropology. *Theory in economic anthropology* (pp 252 – 315). AltaMira Press.
- Jenning W, Stoker G, Bunting H, Valgarosson VO, Gaskell J, Devine D, McKay L, Mills MC. Lack of Trust, Conspiracy Beliefs, and Social Media Use Predict COVID-19 Vaccine Hesitancy. *Vaccines* 9. doi:10.3390/vaccines9060593
- Jadhav ED, Winkler DL, Anderson BS. 2018. Vaccination Perceptions of College Students: With and without Vaccination Waiver. *Frontier in Public Health*. doi:10.3389/fpubb.2018.00036
- Johnson DK, Mello EJ, Walker TD, Hood SJ, Jensen JL, Poole BD. 2019. Combating Vaccine Hesitancy with Vaccine-Preventable Disease Familiarization: An Interview and Curriculum Intervention for College Students. *Vaccines* 39(7). doi:10.3390/vaccines7020039
- Kata A. 2010. A postmodern Pandora’ box: Anti-vaccination misinformation on the Internet. *Vaccine* 28:1709-1716. doi:10.1016/j.vaccine.2009.12.022
- Kaufman S. 2010. Regarding the Rise of Autism: Vaccine Safety Doubt, Conditions of Inquiry, and the Shape of Freedom. *Ethos* 38(1): 8-32. doi:10.1111.j.1548-1352.2009.01079.x
- Larson H. 2013. Negotiating vaccine acceptance in an era of reluctance. *Human Vaccines and Immunotherapeutics* 9(8):1-3. doi:10.4161/hv.25932
- Lu J, Weintz C, Pace J, Indana D, Linka K, Kuhl E. Are college campuses superspreaders? A data-driven modeling study. *Comput Methods Biomech Biomed Eng*. 2021;24(10):1136–1145. doi:10.1080/10255842.2020.1869221.
- Lutz CS, Fink RV, Cloud AN, Stevenson J, Kim D, and Amy PF. 2020. Factors associated with perceptions of influenza vaccine safety and effectiveness among adults. *Vaccine* 38(6): 1393-1401. doi:10.1016/j.vaccine.2019.12.004
- Maaravi Y, Levy A, Gur T, Confino D, Segal S. “The Tragedy of the Commons”: How Individualism and Collectivism Affected the Spread of the COVID-19 Pandemic. *Frontiers in Public Health* 9. doi:10.3389/fpubh.2021.627559
- Mah A, Matsuba MK, Pratt MW. 2020. The politics behind environmentalism: How political ideological development in emerging adulthood may play a role. *Journal of Environmental Psychology* 69. doi:10.1016/j.jenvp.2020.101417

- Malik AA, McFadden SM, Elharake J, and Omer SB. 2020. Determinants of COVID-19 vaccine acceptance in the US. *EClinicalMedicine* 26. doi:10.1016/j.eclinm.2020.100485
- Makarovs K, Achterberg P. 2017. Contextualizing education differences in “vaccination uptake”: A thirty nation survey. *Social Science and Medicine* 188:1-10. doi:10.1016/j.socscimed.2017.06.039
- Morimoto SA. 2019. Emerging Adulthood: An Intersectional Examination of the Changing Life Course. *Przegląd Socjologii Jakościowej* 15(4): 14-33. doi:10.18778/1733-8069.15.4.02
- Nyhan B, Reifler J, Richey S. 2012. The Role of Social Networks in Influenza Vaccine Attitudes and Intentions Among College Students in the Southeastern United States. *Journal of Adolescent Health* 51:302-304. doi:10.1016/j.jadohealth.2012.01.014
- Painter JE, Plaster AN, Tjerland DH, Jacobson KH. 2016. Zika virus knowledge, attitudes, and vaccine interest among university students. *Vaccine* 35:960-965. doi:10.1016/j.vaccine.2016.12.050
- Qiao S, Tam CC, Li X. 2021. Risk Exposures, Risk Perceptions, Negative Attitudes Toward General Vaccination, and COVID-19 Vaccine Acceptance Among College Students in south Carolina. *American Journal of Health Promotion* 36(1):175-179. doi: 10.1177/08901171211028407
- Quin SC, Jamison AM, An J, Hancock GR, Freimuth VS. 2019. Measuring vaccine hesitancy, confidence, trust and flu vaccine uptake: Results of a national survey of White and African American adults. *Vaccine* 37: 1168-1173. doi:10.1016/j.vaccine.2019.01.033
- Raithatha N, Holland R, Gerrard S, Harvey I. 2003. A qualitative investigation of vaccine risk perception amongst parents who immunize their children: a matter of public health concern. *Journal of Public Health Medicine* 25(2):161-164. doi: 10.1093/pubmed/fdg034
- Rogers CJ, Bahr KO, Benjamin SM. 2018. Attitudes and barriers associated with seasonal influenza vaccination uptake among public health students; a cross-sectional study. *BMC Public Health* 18:1131. doi:10.1186/s12889-018-6041-1
- Sarwar, A. Nazar, N. Nazar, N. Qadir, A. Measuring vaccination willingness in response to COVID-19 using a multi-criteria-decision making method. *Human Vaccines & Immunotherapeutics* 17(12): 4865-4872. doi: 10.1080/21645515.2021.2004836

- Schmid P, Rauber D, Betsch C, Lidolt G, Denker M. 2017. Barriers of Influenza Vaccination and Behavior - A Systematic Review of Influenza Vaccine Hesitancy, 2005 - 2016. *PLOS One* 12(1). doi:10.1371/journal.pone.0170550
- Schwartz J. 2012. New Media, Old Messages: Themes in the History of Vaccine Hesitancy and Refusal. *Virtual Mentor* 14(1):50-55. doi:10.1001/virtualmentor.2012.14.1.mhst1-1201.
- Schwartz SJ, Pantin H. 2006. Identity Development in Adolescence and Emerging Adulthood: The Interface of Self, Context, and Culture. *Advances in Psychology Research* 45:1-40.
- Shensa A, Sidani JE, Dew MA, Escobar-Viera CG, Primack BA. 2018. Social Media Use and Depression and Anxiety Symptoms: A Cluster Analysis. *American journal of health behavior* 42(2):116-128. doi:10.5993/AJHB.42.2.11
- Smith CP. 2017. First, do no harm: institutional betrayal and trust in health care organizations. *Journal of Multidisciplinary Healthcare* 10:133-144. doi:10.2147/JMDH.S125885
- Smith TC, Reiss DR. 2020. Digging the rabbit hole, COVID-19 edition: anti-vaccine themes and the discourse around COVID-19. *Microbes and Infection* 22(10):608-610. doi:10.1016/j.micinf.2020.11.001
- Sobo EJ. 2016. What is herd immunity, and how does it relate to pediatric vaccine uptake? US parent perspectives. *Social Science & Medicine* 165:187-195. doi:10.1016/j.socscimed.2016.06.01
- World Health Organization. Ten threats to global health in 2019. <https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019>.
- UCLA Health. 2021 Is it safe to return to a normal routine after COVID-19 vaccine? *UCLA Health* website, May 2. Accessed [March 11, 2022]. <https://www.uclahealth.org/vitalsigns/is-it-safe-to-return-to-a-normal-routine-after-covid-19-vaccine>.
- Young, Ed. 2022. How did this many deaths become normal? *Atlantic* website, March 8. Accessed [March 9, 2022]. <https://www.theatlantic.com/health/archive/2022/03/covid-us-death-rate/626972/>