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Anxiety Risk Factors and Social Isolation Among Young Adults

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Walden University

College of Health Sciences and Public Policy

This is to certify that the doctoral dissertation by

Jennifer S. Clancy

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Walden University

2023

Abstract

Anxiety Risk Factors and Social Isolation Among Young Adults

by

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MPH, Grand Canyon University, 2015

BS, University of Mississippi, 2002

Dissertation submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

August 2023

Abstract

The COVID-19 pandemic is a public health concern that impacted the world. Increased feelings of loneliness and social isolation during the pandemic were reported to be associated with those seeking help for symptoms of anxiety and depression. Though symptoms of anxiety have been associated with social isolation, research is limited on the association between the anxiety risk factors and social isolation among young adults in the United States. Using the socioecological model, the association between social isolation (dependent variable) with financial stress, health anxiety, and perceived impact of COVID-19 (independent variable), and the influence of gender, race, and household status on predicting the likelihood of social isolation were examined. This cross-sectional analysis included results from 446 U.S. young adults aged 18-29 years old who completed an online survey. Chi-square and ordinal logistic regression analyses showed that the independent variables were predictors of social isolation. However, there were negative associations when controlled for gender, race, and household status. This study has implications for social change because it showed through the strength of association whether financial stress, health anxiety, and perceived impact of COVID-19 are anxiety risk factors for social isolation among young adults. Moreover, it indicated the need for future studies of the association between the anxiety risk factors and social isolation to determine whether financial stress, health anxiety, and perceived impact of COVID-19 is causal for social isolation. These studies could lead to the development of public health interventions that reduce and prevent social isolation and its associated outcomes such as suicide and long-term mental health.

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Dedication

This work is dedicated to my parents, Dorothy M. Swint, and Robert Swint.

Thank you for teaching me the value of education and being a guiding light to help me accomplish my dreams.

To my husband, Lakendrick, thank you for your love, sacrifice, and motivation to reach my full potential. I am forever grateful.

Lastly, to my children, Lakendrick Jr, Miley Jaye, and Jewel Belle, thank you for your patience, unwavering support, and understanding my emotions and purpose to achieve this goal. I hope I have instilled in you to have a passionate pursuit of knowledge.

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Chapter 1: Introduction to the Study

The coronavirus disease 2019 (COVID-19) or SARS-CoV-2 is a contagious disease that emerged in December 2019 and rapidly spread throughout the world. The widespread of the virus led to a global pandemic, creating challenges and concerns about the welfare of the world. In efforts to control and minimize the virus, the government imposed social distancing and full lockdown restrictions on communities (Poudel et al., 2022). The lockdown caused nonessential businesses and common gathering places such as parks and churches to close. Research showed that COVID-19 caused a variety of symptoms that could lead to prolonged illnesses (Poudel et al., 2022). For instance, the virus caused pneumonia and could affect the respiratory system, resulting in possible organ failure (Zhou et al., 2020). In addition to affecting organs and other body systems, mental health could also be affected causing depression, anxiety, and sleep disturbance (Zhou et al., 2020). Regarding mental health, the prevalence of anxiety and depression increased by 25% globally during the first year of the COVID-19 pandemic (World Health Organization [WHO], 2022). This increase prompted countries to look deeper into mental health and the impact of COVID-19 on mental health. Research found that the increase in stress was caused by social isolation during the pandemic. Loneliness, financial worries, and losing loved ones were among the multiple stress factors that led to anxiety and depression (WHO, 2022). WHO (2022) reported that women and young people were significantly impacted by the pandemic and were excessively at risk of self-harming and suicidal behaviors, which is associated with increased anxiety and depression. According to the National Alliance on Mental Illness (NAMI, 2022), suicide

is the second leading cause of death among teens and young adults. Young adults not having the same connections during the pandemic, mentally and socially, as older adults were cited as possible risk factors (Cohen, 2022). For example, anxiety increased among young adults that were unmarried, had low income, and less educated (Goodwin et al., 2020). In this study, I examined the association between anxiety risk factors (financial stress, health anxiety, and the perceived impact of COVID-19) and social isolation. Examining the impact of the above anxiety risk factors when it comes to social isolation among young adults has several positive social change implications. First, contributing to research on hard-to-reach young adults across the United States aged 18-29 by providing a perspective not yet explored—particularly whether there is an association between social isolation and financial stress, health anxiety, and perceived impact of COVID-19. Secondly, it indicated the need for future studies to determine whether financial stress, health anxiety, and perceived impact of COVID-19 is causal for social isolation. This study can guide public health professionals to address the negative impact of anxiety risk factors and social isolation among young adults with efforts of reducing and preventing suicide and long-term mental health outcomes. In this chapter, I introduce the research study by discussing the background and purpose of the study, and describing the problem statement, research questions, and hypotheses. I also present the theoretical framework, nature and significance of the study, and the assumptions, limitations, and scope of delimitations.

Background of Study

Significant associations between loneliness, social isolation, and anxiety/depression have been reported in older adults. Goodman et al. (2020) explained that the increase of anxiety in young adults would be expected to have a greater impact on longer-term mental health outcomes than the increase of anxiety in older adults. Smith et al (2020) concluded that the linear association between age and mental health may be disproportionately affecting young people during the pandemic. They suggested that research was required to understand whether the association is due to declining economic prospects or diminished social contacts. The gap is that there is limited research on whether social isolation is associated with the anxiety among U.S. young adults during the COVID-19 pandemic. Young adults aged 18-29 years old are in the key period of vulnerability for the onset of mental health conditions and lead among other age groups struggling with symptoms of anxiety and depression (United States Census Bureau, 2020). Anxiety is a precursor to the severity of many mental health conditions and is a significant element of health-related quality of life during a pandemic (Clair et al., 2021). Therefore, it is important to reduce anxiety among this age group to prevent longer-term mental health outcomes in the future.

Problem Statement

Mental Health America (2021) explained that, before the COVID-19 pandemic, poor mental health among adults increased by 19% (1.5 million individuals) in 2017-2018 and the number of adults seeking for help with anxiety increased by 93% since 2019. It was concluded that 70% of those seeking help with moderate to severe

symptoms of anxiety or depression reported that loneliness or isolation contributed to their mental health concerns. United States Census Bureau (2020) presented data collected from the Household Pulse Survey, a rapid-response online survey used to measure the social and economic impact of the COVID-19 pandemic on U.S. household. Data showed that the age group of 18-29 years old lead in reporting symptoms of anxiety. It was unknown whether the symptoms of anxiety were associated with the extended social distancing required during the pandemic. In a study by Goodwin et al. (2020), it was concluded that younger age groups with anxiety were at a higher risk of developing longer-term mental health outcomes than older adults with anxiety. Data suggested that mental health among young adults aged 18-29 is a public health concern. The effects of social isolation, loneliness, and anxiety have been established in older adults, but research lacks in the association between social isolation and anxiety in young adults, especially during COVID-19.

Purpose of the Study

In this quantitative study, I examined the association between anxiety risk factors and social isolation among young adults across the United States aged 18-29 years old. The independent variables were financial stress, perceived impact of COVID, and health anxiety and the dependent variable was social isolation. Covariates in this study were gender, race, and household status.

Research Questions and Hypotheses

RQ1: To what extent is financial stress related to social isolation among young adults during COVID-19?

*H*₀₁: There is no relationship between financial stress and social isolation among young adults during COVID-19.

*H*₁₁: There is a relationship between financial stress and social isolation among young adults during COVID-19.

RQ2: To what extent is perceived impact of COVID related to social isolation among young adults during COVID-19?

*H*₀₂: There is no relationship between perceived impact of COVID and social isolation among young adults during COVID-19.

*H*₁₂: There is a relationship between perceived impact of COVID and anxiety among young adults during COVID-19.

RQ3: To what extent is health anxiety related to social isolation among young adults during COVID-19?

*H*₀₃: There is no relationship between health anxiety and social isolation among young adults during COVID-19.

*H*₁₃: There is a relationship between health anxiety and social isolation among young adults during COVID-19.

RQ4: To what extent do financial stress, perceived impact of COVID, and health anxiety predict social isolation among young adults during COVID-19 controlling for gender, race, and household status?

*H*₀₄: There is no relationship between financial stress, perceived impact of COVID, and health anxiety and social isolation among young adults during COVID-19 while controlling for gender, race, and household status.

*H*₁₄: There is a relationship between financial stress, perceived impact of COVID, and health anxiety and social isolation among young adults during COVID-19 while controlling for gender, race, and household status.

Theoretical Framework

Since it has been well-established that COVID-19 has impacted the population in many ways, I used the socioecological model (SEM) for the theoretical framework of this study (see Sheinbein et al., 2019). SEM theorizes that numerous factors can affect or be related to human development by focusing on interrelations among personal and environmental factors (Sheinbein et al., 2019). Those factors could include social, physical, and political factors that may exist in overlapping levels that influence each other (Centers for Disease Control and Prevention [CDC], 2020). This theoretical model is a good fit for investigating the association between social isolation and anxiety risk factors since has been successfully utilized to address a range of health issues (CDC, 2020). I offered a more detailed description of this model in Chapter 2.

Nature of Study

The study was a quantitative cross-sectional analysis with the use of primary data. The sample was American young adults, across the United States, aged 18-29. They responded to an online survey, which was accessed via social media and flyer. The design of this study was a cross-sectional analysis which allowed the computation of ordinal logistic regression to detect the strength of association between the variables under study. The independent variables were financial stress, health anxiety, and perceived impact of COVID-19. The dependent variable was social isolation. The

covariates were gender, race, and household status. A thorough description of the methods used in this study was presented in Chapter 3.

Definitions

Anxiety: Feelings of tension, worried thoughts, and physical changes (American Psychological Association [APA], 2022).

COVID-19: An infectious disease caused by the SARS-CoV-2 virus. Also recognized as coronavirus (WHO, 2022).

Financial Stress: Occurs when financial and/or economic events create anxiety, worry, or a sense of inadequacy, and is accompanied by a physiological stress response (Financial Health Institute, 2022)

Gender: Defined as either male or female.

Health Anxiety: Having excessive worry and fear of being sick or getting sick with illness (Kosic, 2020).

Race: A person's identification with one or more racial groups (United States Census Bureau, n.d.).

Social Isolation: The objective absence of contacts and interactions between a person and a social network (Gardner et al., 2018).

Assumptions

The first assumption in this study was that anxiety among young adults during the pandemic is a serious public health concern and one that is worth investigating. My second assumption was that participants would have experienced some level of anxiety during the COVID-19 lockdown. The third assumption was that participants would be

able to recall their experience during the pandemic lockdown and provide honest and accurate answers. These assumptions were addressed by collecting data from a substantial sample size to reduce any negative outcomes in this study.

Scope and Delimitations

This study included American young adults (18-29 years) across the United States population. Participants had to be able to read English well enough to take the survey. I examined anxiety risk factors and social isolation during the COVID-19 pandemic. I developed the survey using existing survey tools for social isolation, financial stress, health anxiety, and perceived impact of COVID-19 (see Appendix A, Appendix B, Appendix C, and Appendix D). It was accessible via social media and flyer.

Limitations

A potential barrier was not having the measurement of anxiety before the COVID-19 lockdown and physical distancing measures were directed. Therefore, change in anxiety cannot be assessed other than from current and self-reported change. Another barrier was recruiting enough participants among the ages 18-29 years old to reach the power sample needed. A challenge in surveying this age group was getting them to complete the survey in its entirety (Canilang et al., 2020). Limitations were expanded once the research was conducted and completed.

Significance

Findings from this study provided vital insights on whether financial stress, perceived impact of COVID, and health anxiety predict social isolation among young adults in the United States. This research has the potential to impact positive social

change in the United States by providing key information for decision making and planning to reduce anxiety among this age group to prevent suicide and longer-term mental health outcomes in the future. The results of this study may be useful for identifying and making connections between the anxiety risk factors and social isolation among young adults. Identifying these connections will be beneficial for improving awareness and interventions within the communities. The results are also beneficial for closing a gap in the current literature and providing a need for future studies to determine the casual relationship between the anxiety risk factors and social isolation among the young adult population.

Summary

Anxiety has been established to be associated with social isolation, suicide, and long-term mental health illness. Studies show that anxiety has increased among young adults during the COVID-19 pandemic lockdown, but limited research exists on the associations of anxiety risk factors and social isolation among the age group. In this quantitative cross-sectional study, I explored three anxiety risk factors and social isolation among U.S. young adults using an online survey developed from existing survey tools. The independent variables were financial stress, health anxiety, and perceived impact of COVID-19. The dependent variable was social isolation. The covariables were gender, race, and household status. Chapter 1 provided a synopsis of the study. Chapter 2 presented a thorough review of the literature pertaining to the association of anxiety risk factors and social isolation, the theories available to support or disprove this relationship, and the methods used to obtain the literature reviewed. Chapter 3 presented the methods

used to conduct the study. Chapter 4 presented the results of this research and Chapter 5 provided a comprehensive discussion of the interpretation of the data, including the study limitations and potential social implications of this research.

Chapter 2: Literature Review

There is an increasing concern of poor mental health among young adults, especially during the COVID-19 pandemic (Mental Health America, 2021). The physical distancing policies introduced to control COVID-19 were associated with the emergence of increased feelings of loneliness and social isolation during the COVID-19 pandemic (Smith et al., 2020). Mental Health America (2021) concluded that 70% of those seeking treatment with symptoms of anxiety or depression reported that loneliness or isolation contributed to their mental health concerns. During the pandemic, data from the 2020 National Survey on Drug Use and Health (NSDUH) showed that the number of adults living with any mental health illness increased to 21% by 2020. The prevalence of mental illness was found to be higher in young adults aged 18-29 years old compared to the other age groups (National Institute of Mental Health, 2022).

The literature has identified common anxiety risk factors as well as the association between social isolation and long-term mental illness (Goodwin et al., 2020). It has also been established that it is unknown whether symptoms of anxiety among young adults are associated with social isolation (United States Census Bureau, 2020). These findings prompted the need to address the association between anxiety risk factors and social isolation among young adults, since social isolation has been linked to long-term mental illness and suicide risk (Catali et al., 2019). The SEM was appropriate to use to investigate the interaction between anxiety risk factors and social isolation across individual, relationship, community, and societal levels of young adults. In this chapter,

the literature search strategy, theoretical framework, theoretical connection to this study, and review of key variables were discussed.

Literature Search Strategy

The literature presented in this chapter supports the proposed quantitative research and relevant studies on anxiety risk factors and social isolation among young adults. I used the Walden University Library to access literature for this research study. The multidisciplinary databases that I searched were APA Psych Info, Medline, Google Scholar, EBSCOHost, ProQuest, Thoreau, and Academic Search Complete. I searched for peer-reviewed articles published between the years of 2017 to 2022 and used the following keywords: *anxiety*, *anxiety risk factors*, *social isolation*, *ostracism*, *loneliness*, and *mental health*. Combinations of keywords included “*young adults and anxiety*,” “*anxiety and social isolation*,” *social isolation and young adults*,” “*anxiety risk factors among young adults*,” *social isolation among young adults*,” “*mental health among U.S young adults*,” and “*mental health and COVID-19*”. Searches were also completed for the additional variables in the study. Keywords included in the search were *financial stress and social isolation among young adults*, *health anxiety and young adults*, *health anxiety and social isolation among young adults*, *impact of COVID-19 among young adults*, and *perceived impact of COVID-19 and social isolation among young adults*. Government websites and databases such as National Institute of Mental Health, CDC, Mental Health America, and the United States Census Bureau were included in locating data from published reports. The literature search focused on the most recent and relevant

studies published within the last 5 years. Older research studies are included due to their relevance to the research interest of this study.

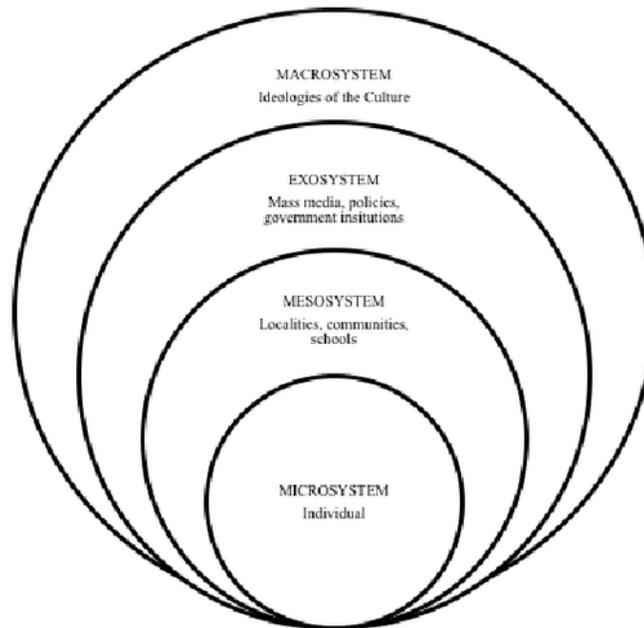
Theoretical Framework

SEM was used to address the research questions in this study. The SEM is a theory-based framework developed by Bronfenbrenner to understand various factors that can affect or be related to human development by focusing on interrelations among personal and environmental factors (Sheinbein et al., 2019). The model theorizes that human development is influenced by the interaction between the characteristics of the individual, the community, and their environment which includes social, physical, and political factors (Sheinbein et al., 2019). The construct of health has since been conceptualized in the SEM and successfully used to address a range of health issues and the effectiveness of preventive strategies (CDC, 2022). Woodgate et al. (2020) explained that the SEM served as a framework to examine and understand factors associated with anxiety and depression symptoms. The use of the SEM in my study served as a framework to investigate the interplay among anxiety risk factors within and between the various levels and their role on social isolation.

The SEM is a four-tier model that focuses on the interaction between individual, relationship, community, and societal factors (CDC, 2020). The model emphasizes that health is affected by various factors that exist in overlapping levels which influence each other at another level (Figure 1). The SEM is structured into four systems: microsystem, mesosystem, exosystem, and macrosystem.

Figure 1

Image of Socioecological Model



Note. From “Applying a Socio-Ecological Framework to Thematic Analysis Using a Statewide Assessment of Disproportionate Minority Contact in the United States” by D. X. Henderson and T.D. Baffour, 2015, *Qualitative report*, 20(12), p. 1963.

(<https://doi.org/10.46743/2160-3715/2015.2405>)

Microsystem

The microsystem is the first and innermost level of the SEM (Kilanowski, 2017). It contains the individual and their immediate surroundings of strong interactions, relationships, and influences such as parents, siblings, and teachers. Those interactions, relationships and influences are direct and bi-directional contacts with the individual and are crucial for fostering the individual’s development (Kilanowski, 2017). This means that the individual can be influenced by the people in their immediate surroundings and

can also influence them as well. In addition, the reaction of the individual to the people in their microsystem can also influence how they treat them in return (Guy-Evans, 2020).

Mesosystem

The mesosystem is the second level of the SEM and focuses on the interrelationships among the microsystems of the individual's life (Guy-Evans, 2020). For example, the relationship that the individual has at home can impact the relationship that they have at school and vice versa (Campos-Gil, 2020). In this example, the microsystem consists of the individual's classroom, classmates, and teacher while the mesosystem is composed of the school, student body, and staff. The interactions between the settings (home and school) can directly affect the individual and his/her behavioral and educational outcomes. Crawford (2020) explained that mesosystems are created by how microsystems (e.g., home and school) interact.

Exosystem

Exosystem is the third level of the SEM and shares similarities with the mesosystem. It is made up of microsystems that interact with each other but excludes the individual from one of the microsystems (Crawford, 2020). The interaction among the microsystems does not directly impact the individual but does influence them in a positive or negative way. An example of an individual's exosystem would be a parent's workplace. The individual is not included in this setting but could be indirectly affected by the long hours worked by the parent.

Macrosystem

The macrosystem is the outermost level of the SEM. This level includes all the elements contained in the microsystem, mesosystem, and exosystem (Guy-Evans, 2020). Additionally, it involves cultural, religious, and societal values and influences that affect an individual. Legal systems, political systems, nationality, economic conditions, and taboos are examples of macrosystems (Guy-Evans, 2020). In this level, an individual living in a low-income country might develop differently than an individual living in a high-income country.

Theoretical Connection to the Study

The SEM was appropriate for this study since it focuses on different factors that affect health. The SEM conceptualizes that health is affected by the interactions between the individual, the community, and the physical, social, and political environments (CDC, 2015). The framework is well-established and has been commonly used to analyze the multidimensional interactions among individuals and their social settings across various levels (Ramey-Moore et al., 2021). The application of the SEM to understand and address mental health at socioecological levels has introduced new modalities (Ramey-Moore et al., 2021). Research showed that mental health may be related to or caused by the reactions from environmental stressors, genetics, head injuries, or biochemical imbalances (Singh et al., 2019). The socioecological perspective offers a concept for organizing and evaluating health-promotion interventions for mental health by simultaneously examining the individual, the systems, and the interplay between the systems. In this study, I applied the SEM as a theoretical framework to examine the

association between anxiety risk factors and social isolation among young adults across the four systems: microsystem, mesosystem, exosystem, and macrosystem.

Literature Review Related to Key Variables and Concept

The key concept explored in this study was the association between anxiety risk factors and social isolation among young adults. The key variables investigated were anxiety risk factors (financial stress, health anxiety, and perceived impact of COVID-19) and social isolation. The prevalence of anxiety among adults increased during the COVID-19 pandemic, particularly for young adults aged 18-29 years old (Jia, 2022). The isolation of the pandemic worsened social disconnection among the age group as reports of anxiety and loneliness increased. The effects of social isolation, loneliness, and anxiety have been established in older adults, but research is limited in the association between social isolation and anxiety in young adults, especially during COVID-19 (Goodwin et al., 2020).

Anxiety Risk Factors among Young Adults

Anxiety has been associated with mortality and as a strong predictor of negative health outcomes (Goodwin et al., 2020). It is an internalizing disorder characterized by subjective feelings of nervousness and worry, apprehension, tension, and changes to the autonomic nervous system (Spielberger, 2022). According to Mental Health America (2022), anxiety disorders are among the most common mental illnesses in the United States. Anxiety among young adults aged 18-29 has become a serious public health concern with the significant increase of anxiety during the COVID-19 pandemic. In a study based on U.S. Census Bureau Household Pulse Survey (HPS) data, adults aged 18

and older reported symptoms of anxiety and depressive disorders during the months of the pandemic (August 19, 2020–February 1, 2021; Jia, 2021). Findings from the HPS data showed the largest increase were among young adults aged 18-29 years old and those with less than a high school education (Jia, 2021). It is important to understand the time period of vulnerability for anxiety among young adults. It can be challenging for some as they transition into adulthood with variables that may affect their mental health as they reach their developmental competencies. Variables that may influence mental health in a negative way are called risk factors (American Mental Wellness Association, 2022). In my study, risk factors were identified to address the problem of elevated anxiety among young adults. Financial stress, health anxiety, and perceived impact of COVID-19 were the risk factors identified in the literature. These risk factors were examined based on four domains of SEM (microsystem, mesosystem, exosystem, and macrosystem).

Financial Stress

The COVID-19 pandemic had a huge economic impact on adults within the United States. In a study by Hasler et al. (2021), young adults were three times more likely to report stress due to financial difficulty during the pandemic than older adults. This possibly could have been the first time some young adults experienced financial uncertainties. Hasler et al. (2022) also found that 91% of the young adults surveyed in the study reported stress experienced about their financial uncertainties had a negative impact on their mental health. Tran et al. (2018) examined the association between financial stress and anxiety among 304 college students and concluded that financial stressors were linked to mental health issues such as anxiety and depression. Over the past 2 decades,

literature has shown a focus on the association between financial stressors and mental health disorders such as anxiety on individual and societal levels. Mofatteh (2020) conducted a study to identify risk factors associated with stress, anxiety, and depression among undergraduate students in developed and developing countries. One conclusion was that financial stressors such as the lack of adequate financial support, poverty, and low family income during childhood were risk factors of stress, anxiety, and depression (Mofatteh, 2020). A study supported by National Institutes of Health (NIH) found that individuals exposed to stressors (as mentioned above) during childhood were most likely to report elevated levels of anxiety when confronted with a stressful life event during young adulthood, such as the COVID-19 pandemic (Simon, 2021).

Health Anxiety

Health anxiety is described as having excessive worry and fear of being sick or getting sick with illness (Kosic, 2020). To some degree, most people experience health anxiety which can positively affect their health by their early detection of health issues, encouraging healthier behaviors. On the other hand, health anxiety can be detrimental when it is excessive. In a study by Kosic (2020), the difference between low and high levels of health anxiety were explained based on contemporary cognitive-behavioral models. The models suggested that the misinterpretation of body sensations and changes as dangerous tends to occur with people who experience high levels of health anxiety. Those misinterpretations also contribute to their elevated anxiety. For example, in the context of COVID-19, people with high health anxiety are likely to misinterpret any

bodily sensations or changes as being infected with the virus. This, in return, increases their anxiety.

Haig-Ferguson (2021) discussed health anxiety among young adults during the COVID-19 pandemic as a risk factor. Research showed that college students that had anxiety sensitivities before the pandemic experienced an increase in health-related worries. Health anxiety tends to increase in those that experienced watching someone in their personal or social network suffer or die from a serious disease (Haig-Ferguson, 2021). Literature showed that the internet use has also increased health anxiety and anxiety levels among young adults. A study conducted to investigate the effect of COVID-19 on health anxiety and cyberchondria levels among 794 students found that health anxiety was higher in students who frequently used the internet to gain health information on COVID-19 (Kurcer et al., 2021). Kurcer et al. (2021) explained that cyberchondria is the excessive and repetitive search of online health information with hopes of reducing health anxiety. Instead, anxiety and fear are increased from the information gathered and from the spread of excessive and false information of the virus.

Perceived Impact of COVID-19

There is limited research on the perceived impact of COVID-19 among young adults, particularly in the United States. In this study, the perceived impact of COVID-19 was measured by asking to what extent has the situation with COVID-19 affected the way of life. It was necessary to include perceived impact of COVID-19 as an anxiety risk factor because of the lack of focus in research as well as a chance to measure the perceptions of young adults toward the major disruption of work and daily life caused by

COVID-19. Tull et al. (2020) examined the association of psychological outcomes and perceived impact of COVID-19 on daily life among a sample of 500 U.S adults.

Researchers found that the perceived impact of COVID-19 was positively associated with elevated anxiety and worry about health and finances (Tull et al., 2020). In a similar study, Cao et al. (2020) investigated the psychological impact of COVID-19 on 7143 undergraduate students in China. The perceived impact of COVID-19 was alternately measured by economic stressors, effect on daily life, and academic delays. Findings concluded that they were positively associated with anxiety symptoms.

Social Isolation Among Young Adults

One essential component of human life is having a social network. A positive social network provides support and guidance, which can influence health outcomes of an individual. When social networks are absent, social isolation occurs. Social isolation is defined as the objective absence of contacts and interactions between a person and a social network (Gardiner et al., 2018). Shvedko et al. (2018) described social isolation as the lack of belonging socially and engaging with others, having minimal number of social contacts, and are deficient in quality relationships. Clair et al. (2021) explained that external isolation refers to the frequency of contact or interactions with other people, while internal or perceived social isolation refers to the person's perceptions of loneliness and satisfaction with their relationships. This distinction is important to understand because a person can experience being isolated or lonely even when they have frequent contact with other people and conversely may not feel isolated or lonely when their contact with others is limited (Clair et al., 2021).

Literature explained that the exposure to social isolation can have a long-term negative effect on mental health over time. Some negative health outcomes related to social isolation include depression, anxiety, stress, and insomnia (Robb et al., 2020). Social isolation has been recognized as one of the main risk factors associated with suicidal outcomes (Catali et al., 2019). In a narrative review of literature by Catali et al. (2019), social isolation (objectively and subjectively) was strongly associated with suicidal outcomes.

Anxiety Risk Factors and Social Isolation

The COVID-19 pandemic forced a crucial implementation of unprecedented “social distancing” procedures to limit the spread of the virus. In addition to the social distance procedures, those who had been exposed or infected with the virus were required to quarantine and isolate themselves from the general population to reduce to the transmission of COVID-19. Since the restrictive measures of the pandemic, evidence has emerged with a focus on the increase of poor mental health outcomes such as anxiety and depression. Literature showed that there is an established association between poor mental health outcomes and social isolation for the older populations, while research is limited regarding young adults in the United States. Christiansen et al. (2021) examined data from 2017 Danish Health and Morbidity Surveys to determine the associations and the effects of age and gender between loneliness, social isolation, poor physical, and mental health among adolescents and young adults. Findings indicated that loneliness and social isolation among adolescents and young adults were strongly associated with mental health problems. Adolescents and young adults who feel lonely experienced

poorer physical and mental health, while socially isolated individuals experienced poorer mental health. This study provided evidence that young socially isolated adults experienced poor mental and physical health outcomes. Smith et al. (2020) explained that there is a linear association between age and mental health disproportionately affecting young people during the pandemic. Researchers explored the impact of COVID-19 self-isolation/social distancing on the mental health among a sample from the United Kingdom (UK) population and found that high levels of anxiety and depression and low levels of mental health were reported while under the governmental requirement of self-isolation/social distancing during the COVID-19 pandemic. Results showed that younger females (smokers, low income, and with physical multimorbidity) were associated with higher levels of poor mental health (Smith et al., 2020). In a similar study, Hubbard et al. (2021) found that younger adults, especially women and those living in the most deprived areas have greater anxiety and depression. Social and psychological risk factors influencing mental health in Scotland during COVID-19 pandemic were investigated and data showed that young adults living in socioeconomically deprived communities experienced higher levels of anxiety.

Summary

Poor mental health among young adults has become a growing public health concern. Young adults are reporting elevated levels of anxiety and leading in suicide rates since the onset of COVID-19 (Cohen, 2022). During the COVID-19 pandemic, the need for social distancing has exacerbated the isolation of many older adults and exposed younger adults to a similar experience of isolation. Evidence has established that social

isolation is strongly associated with poor mental health outcomes among older adults (Malcolm et al., 2019). Similar studies conducted with young adults also established that socially isolated individuals experience poor mental health outcomes such as anxiety (Smith et al., 2020). Despite of the evidence, research remains limited among young adults in the United States. It is important to address the increase in anxiety among young adults by identifying risk factors and examining their association with social isolation during COVID-19. Key information for decision making and planning to reduce anxiety among this age group to prevent longer-term mental health outcomes in the future are needed. Findings from my research study may provide vital insights on whether the anxiety risk factors (financial stress, perceived impact of COVID, and health anxiety) predict social isolation among young adults.

To address this gap, a quantitative research approach was used to examine the association between anxiety risk factors and social isolation. This research design was used to pinpoint the association between financial stress, perceived impact of COVID, and health anxiety and social isolation during the COVID-19 lockdown among young adults. Chapter 3 discussed the research method used to answer the research questions. Additionally, the population, sampling procedures, data collection, and data analysis plan were discussed.

Chapter 3: Research Method

In this quantitative cross-sectional study, I explored the association of anxiety risk factors and social isolation among young adults across the United States. Covariates in this association were included and a multivariable analysis was conducted to examine the association. In this chapter, I explain the research design that was employed and my reasoning for selecting this design. Further, the methodology to conduct the study including the population, sampling procedures, data collection processes, and the data analysis plan is provided. In addition, I examine the potential threats to validity and provided the ethical procedures used in this research.

Research Design and Rationale

The dependent variable was social isolation. The independent variables were the anxiety risk factors (financial stress, perceived impact of COVID, and health anxiety). The covariates were gender, race, and household status. A cross-sectional design was used in this study to examine the association between the variables. Cross-sectional designs are observational study designs that look at data (exposure and outcome) from a population at one point in time and are mainly used to investigate the prevalence of a disease (Wang & Cheng, 2020). This design is ideal for this study because self-reported anxiety risk factors and social isolation would be examined among a sample of U.S. young adults during the COVID-19 lockdown. The cross-sectional design was also appropriate for this study because it enabled me to understand the prevalence or high frequency of the anxiety risk factors and social isolation among young adults across the United States. When deciding which methodology to use, cross-sectional was the primary

choice because of the time and inexpensive benefits it offers. Another observational research design that I considered was the cohort design. A cohort design involves comparing two groups of subjects based on their exposure to a particular risk factor over a long period of time. This design can be conducted from a prospective (forward-looking) or retrospective (backward-looking) viewpoint of data (Barrett & Noble, 2019). The cohort design was ruled out as a methodology for my study because of the amount of time and funding that would be necessary to complete the longitudinal study. For example, the cohort design would have been ideal for my study if I wanted to investigate anxiety risk factors and social isolation among two groups of young adults over a long period time. This methodology would have provided me with a great amount of exposure data from young adults who are not experiencing anxiety risk factors during COVID-19 and later follow up with them in the future and examine whether those experiencing anxiety risk factors during COVID-19 were more likely to become socially isolated.

Methodology

Population

The target population was young adults aged 18-29, living in the United States during the COVID-19 pandemic. The United States is comprised of approximately 331 million people (United States Census Bureau, 2021). Participants in this study were recruited via social media, flyer and by the snowball sampling method. Any young American adult, living in the United States, from the ages of 18-29 years old was eligible to voluntarily participate in this survey.

Sampling and Sampling Procedures

Data was collected via online surveys. Participants were provided with a survey link from those who shared the research study on their social media platforms. Participants entered their answers on their own. Security measures were in place to ensure the participants that their identity and answers would remain anonymous. The survey excluded people under the age of 18 and over the age of 29 as well as U.S. citizens living in foreign countries. I performed a power analysis to determine the sample size needed for this study. The *GPower* software is a free, online software tool that allows the implementation of various types of power analyses (Kang, 2021). Sample size calculators are also available online to compute the minimum samples needed to satisfy desired statistical constraints in a research study (Calculator.net, 2022). For this study, an online sample size calculator was used to determine the sample needed. The commonly used confidence level of 95% was entered into the calculator, along with a 5% margin of error. The population proportion was 50% as suggested by the calculator. The population size was left blank as an indication for unlimited population size. Computations resulted in a minimum of 385 participants needed to conduct this study (see Calculator.net, 2022). To adjust for possible constraints such as the lack of completed surveys, I increased the calculated sample size to a minimum of 400 participants. Compensation or other incentives were not provided to encourage respondents to participate in the online survey.

As part of the sampling procedure, I recruited young American adults across the 50 states of the United States ranging from the ages of 18-29 years old to voluntarily participate in the research study. This was done by using social media, flyers, and the

snowball sampling method. The snowball sampling method relied on sampled participants to make referrals to those who may also share interest in the research study (Atlas et al., 2021). For my study, the snowball sampling method involved sending the survey link to a broad group of young adult contacts and to those who initially sampled to request that they share the link with other participants that would be interested in participating in the study.

Data Collection, Confidentiality, and Management Procedures

I recruited participants via social media, flyer, and the snowball sampling method. Flyers included the purpose of the study, criteria for eligible participants, how the data would be used, and a QR code and link to access the online survey. The flyers were posted on my social media platform (Facebook) and inside of local businesses, with the owners' permission. My professional and personal groups on Facebook were asked to share my flyer with those that meet the criteria as participants and with those that are interested in my research study. Participants were able to scan the QR code or click the survey link to access the consent form and survey. Data was collected anonymously using SurveyMonkey, a password protected platform. Participant anonymity was ensured by using the data security options available on the platform. I performed this by selecting the *anonymous response* option and deselecting the *save IP address* option. Data was collected and downloaded onto Microsoft Excel after the completion of the study. The study link was then deactivated and deleted. Data was stored on my password-protected laptop and USB flash drive and will be destroyed after 5 years. Participants were

informed of the anonymity of the survey and their protection as a participant during the consent form of the survey (Walden IRB approval no. 01-20-23-0746378).

Instrumentation and Operationalization of Constructs

The independent variables were financial stress, perceived impact of COVID, and health anxiety. As noted above, a survey needed to be designed to gather the specific data points. Several survey instruments existed for measuring social isolation and the independent variables in this study. The Patient-Reported Outcomes Measurement Information System (PROMIS) developed a four-item scale to assess perceptions of being avoided, excluded, detached, disconnected from, or unknown by others (Primack et al, 2017). This tool was used to assess social isolation on a 5-point Likert scale ranging from 1 to 5, corresponding to responses of never, rarely, sometimes, often, and always. Raw scores for social isolation range from 4 to 20, with each item scored from 1 to 5 (See Appendix A). The Financial Anxiety Scale (FAS) developed by Archuleta et al (2013) was used to measure financial stress. This scale was designed based on criteria from the General Anxiety Disorder-7 item scale (GAD-7) to specifically measure an individual's tendency to worry about his/her finances (See Appendix B). The FAS consists of seven items on a 7-point Likert-type scale, ranging from 1 (never) to 7 (always) (Basyouni et al., 2021). Health anxiety was measured using the Short Health Anxiety Inventory (SHAI), developed by Salkovskis et al. (2002). It is an 18-item self-reported scale designed to assess an individual's worry about health (See Appendix C). Health anxiety was based on the sum of the point values of each of 18 items (Tull et al., 2020). The perceived impact of COVID was measured by single item using a 5-point Likert-type

scale ranging from 1 (no impact at all) to 5 (impacted my life a great deal; Robb et al., 2020; See Appendix D). Approval letters to use survey tools, FAS, (SHAI, PROMIS Social Isolation 6a, and Perceived Impact of COVID-19 can be found in Appendix E, F, G, and H, respectively. With the approval to use the four survey tools, I developed the survey instrument for my study by combining the four survey tools into one questionnaire in SurveyMonkey to be distributed among young adults (18-29 years old) to voluntarily participate.

Data Analysis Plan

I began collecting data from each participant in the study by using the survey instrument developed in SurveyMonkey to measure financial stress, perceived impact of COVID, health anxiety, and social isolation. Data was transferred to the Microsoft Excel spreadsheet for the data cleaning process. I coded each variable by using an alpha numeric code for each variable and item. For example, financial stress was coded as FS1, FS2, FS3, and so forth. Coding was composed of the first two letters of the variable and a number to represent each item. The total score for each variable was represented by TL. For instance, the total score for financial stress was coded as FSTL. This process of coding created a dataset that was examined by univariate, bivariate and multivariate analyses using the SPSS Version 28 software. The independent variables (financial stress, perceived impact of COVID, and health anxiety) were ordinal levels of measurement, so the descriptive statistics were minimum, maximum, mean, and standard deviation. The dependent variable (social isolation) also had an ordinal level of measurement. The descriptive statistics were minimum, maximum, mean, and standard deviation. The levels

of measurement for the covariates (gender, race, and household status) were nominal. Therefore, the descriptive statistics for them were frequencies and percentages.

The inferential statistics for the research questions were bivariate and multivariate analysis. The bivariate analysis for the independent variables (financial stress, perceived impact of COVID, and health anxiety) and the dependent variable (social isolation) in research questions 1-3 were the Pearson Chi-square test because these variables were categorical. The Pearson Chi-square test was also used to analyze the relationship between the covariates (gender, race, and household status) and the dependent variable (social isolation). I included the covariates because they can influence the relationship between the independent and dependent variables. Including the covariates in the analyses was important to control their impact on the dependent variable, which can increase statistical power and reduce bias (Frost, 2023). The multivariate analysis for the dependent, independent, and covariate variables in research question 4 was ordinal logistic regression because the dependent variable had an ordinal level of measurement.

The assumptions of the ordinal logistic regression model had to be met to ensure the validity of the model (Sesay et al., 2021). The assumptions include that the dependent variables are ordered, one or more of the independent variables are continuous, categorical or ordinal, no multicollinearity, and the existence of proportional odds (Sesay et al., 2021). Multicollinearity is a type of disturbance that occurs in the data when multiple independent variables are correlated with each other (Sesay et al., 2021). I used the variance inflation factor (VIF) statistic to determine whether multicollinearity existed. To evaluate the proportional odds, I used the test of parallel lines. Proportional odds

means that the independent variables have identical effects at each level of the dependent variable (Sun et al., 2018). The test of parallel lines shows whether the assumption of proportional odds has been satisfied or violated through statistical significance (National Centre for Research Methods, 2022).

Data Screening and Cleaning

Data screening and cleaning involved verifying the answered surveys for completeness. I checked the scores for each variable that were out of range or missing. Errors were managed by using the imputation method. Missing data can decrease the data quality and reliable techniques such as imputation should be used to maintain the completeness in a dataset (Khan et al., 2020). All surveys that contained 1-2% completion was excluded from data analysis using listwise deletion. The techniques were used to reduce the influence of missingness in this study (Khan et al., 2020). Completed surveys were included in data analysis and in the results of the study. Once the data cleaning was completed, I transferred the dataset to the SPSS software for data analysis.

Research Question and Hypotheses

The primary objective of this research study was to investigate the association between anxiety risk factors and social isolation among young U.S adults aged 18-29 years old. Financial stress, health anxiety, and the perceived impact of COVID-19 were the risk factors examined individually to determine whether there is an association with social isolation. Lastly, associations were examined between the three anxiety risk factors and social isolation while controlling for gender, race, and household status. The

following research questions and associated hypotheses (H_0 = null hypothesis, H_1 = alternative hypothesis) were used in my research study:

RQ1: To what extent is financial stress related to social isolation among young adults during COVID-19?

H_{01} : There is no relationship between financial stress and social isolation among young adults during COVID-19.

H_{11} : There is a relationship between financial stress and social isolation among young adults during COVID-19.

RQ2: To what extent is perceived impact of COVID related to social isolation among young adults during COVID-19?

H_{02} : There is no relationship between perceived impact of COVID and social isolation among young adults during COVID-19.

H_{12} : There is a relationship between perceived impact of COVID and anxiety among young adults during COVID-19.

RQ3: To what extent is health anxiety related to social isolation among young adults during COVID-19?

H_{03} : There is no relationship between health anxiety and social isolation among young adults during COVID-19.

H_{13} : There is a relationship between health anxiety and social isolation among young adults during COVID-19.

RQ4: To what extent do financial stress, perceived impact of COVID, and health anxiety predict social isolation among young adults during COVID-19 controlling for gender, race, and household status?

H_04 : There is no relationship between financial stress, perceived impact of COVID, and health anxiety and social isolation among young adults during COVID-19 while controlling for gender, race, and household status.

H_14 : There is a relationship between financial stress, perceived impact of COVID, and health anxiety and social isolation among young adults during COVID-19 while controlling for gender, race, and household status.

Statistical Analysis Plan

The statistical analysis plan began with conducting descriptive analysis of the dataset. Descriptive analysis of all the items presented in the survey were expressed using tables and figures. For research questions 1-3, I conducted a chi-square test of independence to examine the association between the categorical ordinal variables of financial stress, health anxiety, perceived impact of COVID-19 and social isolation. Nihan (2020) explained that the chi-square test is a commonly used statistic to evaluate the hypothesis that there is no correlation among two categorical variables in a single population and whether there is a significant association between the two variables. The analysis of research questions 1-3 lead up to employing an ordinal regression model in which the three independent variables were entered into analysis to predict social isolation. For research question 4, the ordinal regression statistical model was conducted to analyze the hypothesis and answer the research question. The key output of the ordinal

regression model included the p-value, the coefficients, the measures of association, and the log-likelihood (Bürkner et al., 2019). This model was appropriate to use in my study to determine whether the association between the response and the items in the survey are statistically significant. For instance, I used the ordinal regression model to evaluate to what extent do financial stress, perceived impact of COVID, and health anxiety predict social isolation among young adults during COVID-19 controlling for gender, race, and household status. The null hypothesis stated that there is no relationship between financial stress, perceived impact of COVID, and health anxiety and social isolation among young adults during COVID-19 while controlling for gender, race, and household status, whereas the alternative hypothesis stated that there is an association. If the p-value was .05 or less, the model was concluded as significant and the null hypothesis was rejected, thereby accepting the alternative hypothesis. If the p-value was greater than .05, the null hypothesis was retained, and the alternative hypothesis was deemed false. Lastly, the research questions were addressed using the results of the analysis.

Threats to Validity

Validity of a research study is defined as how well the results among a study population can be applied to a real-world setting (Patino et al., 2018). In my research study, unknown confounders and the self-reporting design of the survey could pose a threat to the internal validity of the study. Participants of the study could report inaccurate data due to their lack of knowledge of the terms used in the survey questions or their inability to recall their feelings or symptoms during the pandemic lockdown. To

increase internal validity, I made sure that the sample size, data collection, and data analysis were carefully planned and adequate enough for this study.

Ethical Procedures

All data was protected and held in confidentiality along with the approval of the Institutional Review Board (IRB). Data of the participants was anonymous and therefore participants could not be identified. Data was password protected on my data storage and will be destroyed 5 years after completing the study. Participants were provided with an information sheet to read and sign to offer their consent of understanding and agreeing to participate in the research study. Participants understood that data collected in this research study was for statistical reporting and analysis purposes to satisfy the dissertation requirements of obtaining the Doctor of Philosophy at Walden University.

Summary

In this chapter, I discussed the methodology, threats to validity, and the ethical procedure of my research study. The methodology covered the sample population, sampling procedures, data collection and confidentiality process, instrumentation and operational constructs and the data analysis plan. The threats to validity and how those threats could be prevented or limited were presented. Lastly, the ethical procedures were discussed. Chapter 4 presented the results of the data analysis, including descriptive data of the participants, results of the chi-square tests and ordinal regression model, and appropriate data tables and figures.

Chapter 4: Results

In this quantitative cross-sectional study, I explored the association between anxiety risk factors (financial stress, health anxiety, and perceived impact of COVID) and social isolation in U.S. young adults. I also included covariates involved in this relationship. I used several statistical tests to identify associations between the variables, and concluded the study with a multivariable logistic regression analysis to create a model that would attempt to predict the likelihood of social isolation. The dependent variable was social isolation. The independent variables were financial stress, health anxiety, and perceived impact of COVID. The covariates were gender, race, and household status. The primary research objective was to examine the association between anxiety risk factors and social isolation. The secondary objective for this study was to identify if the covariates are confounders for the potential association between the anxiety risk factors and social isolation. The following research questions and associated hypotheses (H_0 = null hypothesis, H_1 = alternative hypothesis) used to guide this study were:

RQ1: To what extent is financial stress related to social isolation among young adults during COVID-19?

H_0 1: There is no relationship between financial stress and social isolation among young adults during COVID-19.

H_1 1: There is a relationship between financial stress and social isolation among young adults during COVID-19.

RQ2: To what extent is perceived impact of COVID related to social isolation among young adults during COVID-19?

*H*₀₂: There is no relationship between perceived impact of COVID and social isolation among young adults during COVID-19.

*H*₁₂: There is a relationship between perceived impact of COVID and anxiety among young adults during COVID-19.

RQ3: To what extent is health anxiety related to social isolation among young adults during COVID-19?

*H*₀₃: There is no relationship between health anxiety and social isolation among young adults during COVID-19.

*H*₁₃: There is a relationship between health anxiety and social isolation among young adults during COVID-19.

RQ 4: To what extent do financial stress, perceived impact of COVID, and health anxiety predict social isolation among young adults during COVID-19 controlling for gender, race, and household status?

*H*₀₄: There is no relationship between financial stress, perceived impact of COVID, and health anxiety and social isolation among young adults during COVID-19 while controlling for gender, race, and household status.

*H*₁₄: There is a relationship between financial stress, perceived impact of COVID, and health anxiety and social isolation among young adults during COVID-19 while controlling for gender, race, and household status.

This chapter includes my assessment of the data analysis, results of the study, and a summary. I discuss the data collection, demographic characteristics, and present supporting tables and figures.

Data Collection

I collected data via online surveys between January 2023 and March 2023. The data was generated and transferred into an Excel file. The missing data in this study were managed by applying the listwise deletion and imputation methods. The techniques were used to reduce the influence of missingness in this study. Cases that contained only 1-2% completed items were removed from the analysis. The rationale for this was that respondents may have experienced question fatigue or a loss of interest in the survey. Therefore, including the cases would not have been a valid measure of quality (Khan et al., 2020). Imputation was used to replace missing values for the remainder of the participants. The clean dataset was then imported to a new file in SPSS Version 28 for statistical analysis. The sample size was 385, as determined by using an online sample size calculator. To adjust for constraints, I increased the sample size to 400. A dataset of 471 participants were assessed for missing data on the variables of interest. After I removed the missing cases, the dataset consisted of 446 participants for statistical analysis.

Baseline Descriptive and Demographic Characteristics of the Sample

The study sample included participants aged 18-29 years old currently living in the United States and during the onset on COVID-19 pandemic ($N=446$). The results of the sociodemographic characteristics of the sample are shown in Tables 1 - 3,

respectively. In Table 1, percentage of male participants were higher than female participants. Table 2 shows the household status of participants living with others was higher than those who lived alone, and the percentage of White/Caucasian participants were higher than participants of other race groups in Table 3.

Table 1*Frequency Analysis for Gender*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	249	55.8	55.8	55.8
	Female	197	44.2	44.2	100.0
	Total	446	100.0	100.0	

Table 2*Frequency Analysis for Household Status*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Live alone	170	38.1	38.1	38.1
	Live with others	276	61.9	61.9	100.0
	Total	446	100.0	100.0	

Table 3*Frequency Analysis for Race*

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	American Indian or Alaskan Native	8	1.8	1.8	1.8
	Asian/Pacific Islander	86	19.3	19.3	21.1
	Black or African American	74	16.6	16.6	37.7
	Hispanic	12	2.7	2.7	40.4
	White/Caucasian	266	59.6	59.6	100.0
	Total	446	100.0	100.0	

The descriptive statistics for the main study variables are summarized in Table 4. The number of respondents for each variable was 446. The mean score was 2.14 ($SD=.890$) for social isolation, 2.84 ($SD=.989$) for financial stress, 1.13 ($SD=.418$) for health anxiety, and 3.77 ($SD=1.062$) for the perceived impact of COVID. Prior to conducting the multivariate analyses, I conducted chi-square analyses to detect statistically significant relationships between gender, race, and household status and the dependent variable of social isolation. In Table 5, the chi-square value for gender was 18.739 with a p -value of .005. As shown in Table 6, race had a chi-square value of 26.060 with a p -value of .011 and household status had a chi-square value of 28.154 with a p -value of less than .001 (Table 7). The p -values for the three covariates were less than 5, indicating that gender, race, and household status are statistically related to social isolation (see Tables 5-7).

Table 4

Descriptive Statistics for Main Study Variables

	Range	Minimum	Maximum	Mean	SD
SITL1	3	1	4	2.14	.890
FSTL	3	1	4	2.84	.989
PC1	4	1	5	3.77	1.062
HITL	2	1	3	1.13	.418

Note: SITL1=Social Isolation Total; FSTL=Financial Anxiety Scale Total; HITL=Short Health Anxiety Inventory Total; PC1=Perceived Impact of COVID

Table 5*Chi-Square Test (Gender and Social Isolation)*

	Value	<i>df</i>	Asymptotic Significance (2- sided)
Pearson chi-square	18.739 ^a	6	.005
Likelihood ratio	19.872	6	.003
Linear-by-linear association	16.823	1	<.001
N of valid cases	446		

Note: Five cells (41.7%) have expected count less than 5. The minimum expected count is .07.

Table 6*Chi-Square Test for (Race and Social Isolation)*

	Value	<i>Df</i>	Asymptotic Significance (2- sided)
Pearson chi-square	26.060 ^a	12	.011
Likelihood ratio	26.375	12	.009
Linear-by-linear association	5.734	1	.017
N of Valid Cases	446		

Note: Ten cells (50.0%) have expected count less than 5. The minimum expected count is .20.

Table 7*Chi-Square Test (Household and Social Isolation)*

	Value	<i>Df</i>	Asymptotic Significance (2- sided)
Pearson chi-square	28.154 ^a	3	<.001
Likelihood ratio	28.167	3	<.001
Linear-by-linear association	22.199	1	<.001
N of valid cases	446		

Note: One cell (12.5%) had expected count less than 5. The minimum expected count is 4.19.

Statistical Assumptions

Four assumptions should be considered when running an ordinal logistic regression analysis (Sesay et al., 2021). The first assumption is that the dependent variable is measured on an ordinal level. In this study, the assumption was met since the dependent variable, social isolation, was measured on an ordinal 5-point Likert scale where 5 represented having normal symptoms and 1 represented having severe symptoms. The second assumption states that dependent variables should be categorical, ordinal, or continuous (University of St. Andrews, n.d.). In this study, there were three predictor variables (financial stress, health anxiety, and the perceived impact of COVID) and three confounding variables (gender, race, and household status). Financial stress, health anxiety, and perceived impact of COVID were measured on an ordinal scale, while gender, race, and household status were categorical variables. Therefore, the second assumption was also met. The third assumption is that there should be no multicollinearity among independent variables (University of St. Andrews, n.d.). I used the variance inflation factor (VIF) statistics to test multicollinearity among the independent variables. As shown in Table 8, all VIFs were less than the threshold of 10, indicating there was no evidence for multicollinearity among the independent variables. According to Senaviratna et al. (2019), values of VIF exceeding 10 or more indicate the presence of multicollinearity among independent variables. This confirmed that the third assumption was met. The last assumption is that there are proportional odds (Senaviratna et al., 2019). Proportional odds are a key assumption in ordinal regression which assumes that the effects of the independent variables are consistent across the different thresholds

(National Centre for Research Methods, 2022). To test for the proportional odds assumption, I used the test of parallel lines. If the test of parallel lines shows statistical significance, then the assumption of proportional odds has been violated (National Centre for Research Methods, 2022). The proportional odds assumption was tested for the ordinal regression model and is presented in the results section below.

Table 8

Collinearity Diagnostics

Model	Collinearity statistics	
	Tolerance	VIF
1 FSTL	.778	1.285
PC1	.870	1.149
HITL	.946	1.057
Race	.977	1.024
Gender1	.950	1.052
Household status	.894	1.118

a. Dependent Variable: SITL1

Research Questions and Hypotheses

I addressed four research questions in this study. The results of the chi-square and ordinal logistic regression analyses were presented in this section. The statistical analysis was performed to test the following research question and hypothesis:

Research Question 1

RQ1: To what extent is financial stress related to social isolation among young adults during COVID-19?

H_0 1: There is no relationship between financial stress and social isolation among young adults during COVID-19.

H_{11} : There is a relationship between financial stress and social isolation among young adults during COVID-19.

To investigate the first research question, the Pearson Chi-square test was computed to determine whether financial stress is independent of social isolation. As shown in Table 9, the results were significant with a chi-square value of 232.314 and p -value of $<.001$. Due to the statistically significant results, the null hypothesis was rejected. Therefore, the results indicated that there is an association between financial stress and social isolation among young adults during COVID-19.

Table 9

Chi-Square Test (Financial Stress and Social Isolation)

	Value	<i>df</i>	Asymptotic significance (2-sided)
Pearson chi-square	232.314 ^a	9	$<.001$
Likelihood ratio	243.918	9	$<.001$
Linear-by-linear association	180.567	1	$<.001$
<i>N</i> of valid cases	446		

Note: Four cells (25.0%) have expected count less than 5. The minimum expected count is 1.13.

Research Question 2

RQ2: To what extent is the perceived impact of COVID related to social isolation among young adults during COVID-19?

H_{02} : There is no relationship between perceived impact of COVID and social isolation among young adults during COVID-19.

H_{12} : There is a relationship between perceived impact of COVID and anxiety among young adults during COVID-19.

To investigate the second research question, the Pearson Chi-square test was computed to determine whether the perceived impact of COVID is independent of social isolation. As shown in Table 10, the results were significant with a chi-square value of 64.816 and p -value of $<.001$. Due to the statistically significant results, the null hypothesis was rejected. Therefore, the results indicated that there is an association between the perceived impact of COVID and social isolation among young adults during COVID-19.

Table 10

Chi-Square Test (Perceived Impact of COVID and Social Isolation)

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	64.816 ^a	12	<.001
Likelihood Ratio	62.758	12	<.001
Linear-by-Linear Association	41.070	1	<.001
N of Valid Cases	446		

a. 4 cells (20.0%) have expected count less than 5. The minimum expected count is .54.

Research Question 3

Research Question 3: To what extent is health anxiety related to social isolation among young adults during COVID-19?

H_0 : There is no relationship between health anxiety and social isolation among young adults during COVID-19.

H_1 : There is a relationship between health anxiety and social isolation among young adults during COVID-19.

To investigate the third research question, the Pearson Chi-square test was computed to determine whether health anxiety is independent of social isolation. As shown in Table 11, the results were significant with a chi-square value of 35.720 and p -

value of $<.001$. Due to the statistically significant results, the null hypothesis was rejected. Therefore, the results indicated that there is an association between health anxiety and social isolation among young adults during COVID-19.

Table 11

Chi-Square Test (Health Anxiety and Social Isolation)

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	35.720 ^a	6	<.001
Likelihood Ratio	35.854	6	<.001
Linear-by-Linear Association	28.617	1	<.001
N of Valid Cases	446		

a. 4 cells (33.3%) have expected count less than 5. The minimum expected count is .35.

Research Question 4

Research Question 4: To what extent do financial stress, perceived impact of COVID, and health anxiety predict social isolation among young adults during COVID-19 controlling for gender, race, and household status?

H₀: There is no relationship between financial stress, perceived impact of COVID, and health anxiety and social isolation among young adults during COVID-19 while controlling for gender, race, and household status.

H₁: There is a relationship between financial stress, perceived impact of COVID, and health anxiety and social isolation among young adults during COVID-19 while controlling for gender, race, and household status.

In research question 4, ordinal logistic regression was applied to assess the association between the dependent variable (social isolation) and the independent variables (financial stress, perceived impact of COVID, and health anxiety), while

controlling for gender, race, and household status (covariates). In addition to the first three assumptions of ordinal logistic regression being met in this study, the data must meet the fourth assumption with proportional odds (Laerd Statistics, n.d.). Proportional odds indicates that each independent variable has an identical effect at each cumulative split of the ordinal dependent variable (Laerd Statistics, n.d.). The proportional odds model is compared with a cumulative odds model without the proportional odds constraint/assumption to generate a full likelihood ratio test. When the difference in model fit between the two models is small and not statistically significant ($p > .05$), the assumption of proportional odds is concluded as being met. The assumption of proportional odd is violated when the difference of fit is large and statistically significant ($p < .05$). As shown in Table 12, the assumption of proportional odds was met with a chi-square (χ^2) of 24.064 with a p-value of .458, as assessed by the full likelihood ratio test comparing the fit of the proportional odds location model to the cumulative model with varying location parameters. The deviance goodness-of-fit test indicated that the model was a good fit to the observed data, $\chi^2(507) = 378.473$, $p = 1.000$, but most cells were sparse with zero frequencies in 65.4% of cells (Table 13). However, the final model statistically significantly predicted the dependent variable over and above the intercept-only model, $\chi^2(12) = 277.713$, $p < .001$. This indicated that the independent variables add statistical significance to the model or at least one independent variable is statistically significant.

As per the regression estimates, there were three threshold estimates (Table 14). Threshold 1, using the dependent variable of social isolation as a base, is the rank

between normal and mild symptoms/impairments. Threshold 2 is the rank between mild and moderate symptoms/impairments, and Threshold 3 is the rank between moderate and severe symptoms/impairments. The thresholds, also known as cut-point, determine how close the variables are to the next level of the intervals and ranks. The estimate for Threshold 1 was -6.737, while Threshold 2 estimate was -4.898 and Threshold 3 at -.174.

Health anxiety at location, HITL=2, was a statistically significant predictor of social isolation ($\beta = -1.988$, $p = .002$). This means for every unit decrease in health anxiety, there is a predicted decrease of 1.988 units in the log odds of a higher level of social isolation (the lower the level, the worse the outcome). Health anxiety was rated on a scale of 1 to 3 with 1 representing the lowest level of health anxiety while 3 representing the highest. HITL=1 ranked between no/mild and moderate health anxiety, while HITL2 ranked between moderate and substantial health anxiety.

The perceived impact of COVID (PC1) was also a statistically significant predictor of social isolation at locations PC1=1, PC1=2, and PC1=4. The variables were ranked as: PC1=1 (no impact-rarely), PC1=2 (rarely-undecided), PC1=3 (undecided-somewhat), and PC1=4 (somewhat-impacted my life a great deal). The odds of PC1=1 predicting social isolation were -1.940, $p = <.001$. The odds of PC1=2 predicting social isolation were -.942, $p = .015$, while PC1=4 was -.597, $p = .022$.

Lastly, financial stress (FSTL) was ranked as: FSTL=1 (minimal-mild anxiety), FSTL=2 (mild-moderate anxiety), and FSTL=3 (moderate-severe anxiety). Each location of financial stress was statistically significant in predicting social isolation with p-values

of $<.001$. In addition, while controlling gender, race, and household status, gender was found associated with social isolation ($\beta = -.529$, $p = .011$).

Table 12

Test of Parallel Lines for the Association between Financial Stress, Health Anxiety, Perceived Impact of COVID, and Social Isolation^a

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	501.375			
General	477.312 ^b	24.064 ^c	24	.458

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.^a

a. Link function: Logit.

b. The log-likelihood value cannot be further increased after maximum number of step-halving.

c. The Chi-Square statistic is computed based on the log-likelihood value of the last iteration of the general model. Validity of the test is uncertain.

Table 13

Goodness-of-Fit

	Chi-Square	Df	Sig.
Pearson	743.018	507	$<.001$
Deviance	378.473	507	1.000

Link function: Logit.

Table 14

Ordinal Regression Model Estimates for the Association between Financial Stress, Health Anxiety, Perceived Impact of COVID, and Social Isolation

	Estimate	Std. Error	Wald	Df	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Threshold [SITL1 = 1]	-6.737	.882	58.369	1	<.001	-8.465	-5.008
[SITL1 = 2]	-4.898	.857	32.707	1	<.001	-6.577	-3.220
[SITL1 = 3]	-.174	.793	.048	1	.826	-1.729	1.380
Location householdstatus	-.411	.219	3.524	1	.060	-.839	.018
Gender1	-.529	.209	6.415	1	.011	-.938	-.120
Race	.121	.078	2.384	1	.123	-.033	.274
[HITL=1]	-1.988	.639	9.685	1	.002	-3.240	-.736
[HITL=2]	-1.247	.736	2.870	1	.090	-2.690	.196
[HITL=3]	0 ^a	.	.	0	.	.	.
[PC1=1]	-1.940	.586	10.973	1	<.001	-3.088	-.792
[PC1=2]	-.942	.388	5.915	1	.015	-1.702	-.183
[PC1=3]	-.164	.392	.174	1	.676	-.932	.605
[PC1=4]	-.597	.260	5.272	1	.022	-1.106	-.087
[PC1=5]	0 ^a	.	.	0	.	.	.
[FSTL=1]	-3.746	.445	70.790	1	<.001	-4.618	-2.873
[FSTL=2]	-3.611	.332	118.019	1	<.001	-4.262	-2.959
[FSTL=3]	-2.044	.295	48.141	1	<.001	-2.621	-1.466
[FSTL=4]	0 ^a	.	.	0	.	.	.

Link function: Logit.

a. This parameter is set to zero because it is redundant.

Summary

In this section, the bivariate analyses of questions 1-3 showed that there were statistically significant associations between the independent variables (financial stress, health anxiety, and perceived impact of COVID), and the dependent variable (social isolation). Multivariate analysis showed that there was an association between the independent variables and social isolation while controlling for gender, race, and

household status. However, there was a statistically significant association between race and social isolation among young adults in the United States. Chapter 5 introduced the interpretation of these findings, limitations of the study, recommendations, and implications for professional practice and social change.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this quantitative cross-sectional study was to examine the association between financial stress, health anxiety, the perceived impact of COVID and social isolation while controlling for gender, race, and household status among young adults in the United States. The prevalence of anxiety and depression increased worldwide during the COVID-19 pandemic (WHO, 2022). The increase prompted an urgent need to investigate the impact of COVID-19 on mental health. Research found that the increase in stress was associated with social isolation. However, there was limited literature on the association between anxiety risk factors and social isolation among young adults in the United States. In the current study, I used primary data with a cross-sectional design. This study was beneficial because it indicated a significant association between anxiety risk factors and social isolation. Also, there was a significant association between anxiety risk factors and social isolation while controlling for gender, race, and household status.

Interpretation of the Findings

Research Question 1

The findings of the study regarding RQ1 showed that there was a statistically significant association between financial stress and social isolation. These results were consistent with the literature. Previous studies showed that young people are at an increased risk of poor mental health by factors such as loneliness, social isolation, and financial distress (Varma et al., 2021). Young adults experiencing financial distress are

more likely to have anxiety and depression and are at a higher risk of reporting suicidal thoughts, which is associated with social isolation (Varma et al. 2021).

Research Question 2

The findings in RQ2 illustrated that there is a statistically significant association between the perceived impact of COVID and social isolation. The results were not compatible with the literature. This could be because this study was the first one to assess the perceived impact of COVID and social isolation among young adults. However, in a study by Tull et al. (2020), the perceived impact of COVID was found to be negatively associated with loneliness, whereas in the current study, the perceived impact of COVID was found positively associated with social isolation. The difference between social isolation and loneliness is that social isolation is the objective state of having the lack of social relationships or infrequent social contact (Wu, 2020). It is associated with mental and physical health risks even if a person does not feel lonely (Wu, 2020). On the other hand, loneliness is a subjective feeling of being alone or disconnected from others, even if the person has many social relationships (Wu, 2020).

Research Question 3

The findings regarding RQ3 revealed that there was a statistically significant association between health anxiety and social isolation. These results were also consistent with the literature. Past research showed that epidemic and pandemic events tend to increase health anxiety, especially for those already prone to health anxiety as a trait (Stone et al., 2022). Researchers found that the increase in health anxiety results in behavioral and psychological changes such as increased cyberchondria and social

withdrawal (Stone et al., 2022). This supports the alternative hypothesis that health anxiety predicts social isolation. The current study provides evidence to limited research that health anxiety predicts social isolation among young adults in the United States.

Research Question 4

To investigate the last research question, I used ordinal logistic regression to assess the association between financial stress, perceived impact of COVID, health anxiety, and social isolation among young adults while controlling for gender, race, and household status. Prior to conducting the statistical test, the proportional odds ratio assumption was met ($p = 0.458$ is statistically significant). The findings of the ordinal logistic regression showed that there was statistical significance between the anxiety risk factors and social isolation among young adults while controlling for gender, race, and household status. There is limited research to compare the findings of this study to involving the association between anxiety risk factors and social isolation among young adults in the United States, hence the reason for this study. In addition to the young adult age group in the United States, the covariates (gender, race, and household status) presented a new perspective that researchers had not considered for the combination of financial stress, perceived impact of COVID, and health anxiety. Gender, race, and household status were found statistically significant in predicting social isolation during bivariate analysis. However, when controlled during ordinal logistic regression, gender was the only covariate found to be significant in predicting social isolation. A previous study found that men/boys tend to be more isolated than women/girls and gender differences in isolation were depended on the timing and place they are in their life

course (Umberson et al., 2022). Findings in the current study also suggested that there may be unknown confounders existing to produce negative estimates and significant *p*-values during the analysis of the variables.

The theory that grounded this study was the SEM. The model focuses on the multiple factors that affect health and understands health to be affected by the interaction between the individual, the group/community, and the physical, social, and political environments (UNC Center for Health Equity Research, 2023). The results of this study were aligned with the public health prevention framework, which enables researchers to analyze the range of factors that put young adults at risk of mental health illnesses and social isolation. Since the model illustrates how factors at one level influence factors at another level, it suggested that it is necessary to act across multiple levels of the model to decrease the risk of social isolation, which is associated with suicide and suicidal behavior (CDC, 2022). The results demonstrated the need for intervention on the individual and interpersonal levels to target anxiety risk factors, such financial stress and health anxiety, to educate young adults on healthy lifestyle behaviors such as wellness checks and problem-solving skills that can reduce their risk for long term mental illnesses. On a community level, employee assistance counselors, health coaches, health care providers, and community leaders could assist in promoting mental health and financial literacy, telehealth appointments, screenings for depression/anxiety, and the acceptability of mental health treatment. On a society level, interventions are needed to reduce anxiety and the risk factors that cause longer-term mental health outcomes.

Limitations of the Study

There are several limitations that one must consider with the results of this study. One limitation in this study was the self-report of data. Ross et al. (2019) explained that bias input happens in self-reporting data when respondents answer questions according to what they think may be favorable to the researcher. Therefore, it was possible that participants in the study may have indicated more socially acceptable responses rather than their authentic response resulting in social desirability bias. A measure that was taken to lessen this limitation and to encourage honest self-reporting was to maintain the participants' confidentiality by not collecting any information that could be used to identify them. Recall bias may have also existed when participants were asked to recall past events within the last six months. Recalling past events can pose a challenge with participants not being able to adequately recall those events (Story & Tait, 2019). Another limitation in this study was its cross-sectional design. This study was able to determine if the independent variables of financial stress, health anxiety, and perceived impact of COVID predicted social isolation, the data could not definitively determine the causal direction for the link between the independent variables and social isolation. Wang & Cheng (2020) described one weakness of the cross-sectional study design to be the inability to establish causal relationships between variables. Lastly, unknown confounders can produce negative estimates in ordinal logistic regression (McDonald, 2022), which was evident in the findings of this study. In this study, more confounding variables should have been controlled to avoid erroneous conclusions.

Recommendations

Recommendations for how the findings of the study can be applied to practice are in response to the statistically significant association between the independent variables and social isolation among young adults. The first recommendation in response to the ordinal logistic regression model offering predictive utility for social isolation is to improve financial knowledge levels to help ease financial stress and anxiety. A recent study showed that US adults reported anxiety and stress about their personal finances before the onset of COVID-19 pandemic (Pierce and Williams, 2021). The results of the current study showed that there is an association existing between financial stress and social isolation among young adults, prompting a need for interventions that promote financial literacy. Results also showed that there is an association between health anxiety and perceived impact of COVID and social isolation. The recommendation for practice in response to the ordinal logistic regression model offering predictive utility for social isolation is for the need of interventions that offer treatments such as behavioral stress management that teaches skills to manage health anxiety and how to function in daily life. In regard to perceived impact of COVID, participants reported that the pandemic affected their daily lives ranging from none at all to a great deal. To tackle this, actions across individual, community, and societal levels may be required to address financial or occupational uncertainty of the pandemic and provide adequate mental health resources to address the growing mental health crisis among young adults.

Recommendations to mitigate the limitations of the study are mostly related to the design of the study. This study failed to provide a deeper insight between the anxiety risk

factors and social isolation. I recommend that a different study design such as a longitudinal study design is utilized to examine demographic characteristics, risk factors, and social isolation. This design will allow researchers to examine the same sample over a period of time (Fridman et al., 2021). The current study did not obtain the participant's mental health status and other essential information prior to COVID that could have offered a better insight and conclusion from the results. I also recommend that more confounding variables are controlled to avoid bias and erroneous conclusions. Lastly, I recommend that other anxiety risk factors are considered to be identified and analyzed as predictors of social isolation to understand the appropriate interventions needed to address mental health among this age group.

Implications For Professional Practice and Social Change

My study suggested that identifying anxiety risk factors, as a predictor of social isolation, can improve the mental health and the associated mental health outcomes among young adults in the United States. Social isolation is a product of multiple influences, therefore impact across the four levels of the SEM is most impactful for social change. The use of the social ecological model supports the need for public health practitioners to develop and implement programs addressing anxiety risk factors that may lead to social isolation. Social change will be observed when young adults experiencing anxiety and social isolation are cared for with interventions based on this study. When mental health is prioritized, the outcomes associated with mental health of young adults are expected to improve. This study is important to professional practice and creating social change because it adds to the body of knowledge and literature by identifying

associations between anxiety risk factors and social isolation among a hard-to-reach age group. Researchers should continue to identify other anxiety risk factors that may predict social isolation among young adults to advance knowledge and practice in improving the mental health of young adults in the United States.

Conclusion

To my knowledge, the current study was the first to examine the association between anxiety risk factors (financial stress, health anxiety, and perceived impact of COVID) and social isolation among young adults in the United States. The study outcome showed a significant association between anxiety risk factors and social isolation. Furthermore, the results revealed a significant, but negative association between the anxiety risk factors and social isolation, while controlling for gender, race, and household status. The significance of the findings suggested that further research is needed to identify other anxiety risk factors that may lead to social isolation. Social isolation is a risk factor of suicide, which is the second leading cause of death among young adults in the United States (CDC, 2023). Based on this study, I suggest a need to address mental health as it relates to social isolation across the four levels (individual, community, organizational, and societal) of the socioecological model. The results of this study support the need for interventions that can manage, treat, and prevent anxiety among young adults to prevent longer-term mental health outcomes in the future.

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Appendix A: Survey Questionnaire for PROMIS Social Isolation 6a

PROMIS Item Bank v2.0 - Social Isolation – Short Form 6a

Social Isolation – Short Form 6a

Please respond to each item by marking one box per row.

		Never	Rarely	Sometimes	Usually	Always
UCLA11x2	I feel left out.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
UCLA13x3	I feel that people barely know me.....	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
UCLA14x2	I feel isolated from others	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
UCLA18x2	I feel that people are around me but not with me	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Iso-CaPS1	I feel isolated even when I am not alone	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
Iso-CaPS2	I feel that people avoid talking to me	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

Appendix B: Survey Questionnaire for Financial Anxiety Scale (FAS)

Financial Anxiety Scale (FAS)

Each item on the FAS can be rated either yes/no (with a cut-off score of 4 or higher) or on a Likert scale for clinical purposes.

1. I feel anxious about my financial situation.
2. I have difficulty sleeping because of my financial situation.
3. I have difficulty concentrating on my school/or work because of my financial situation.
4. I am irritable because of my financial situation.
5. I have difficulty controlling worrying about my financial situation.
6. My muscles feel tense because of worries about my financial situation.
7. I feel fatigued because I worry about my financial situation.

Appendix C: Survey Questionnaire for Short Health Anxiety Inventory (SHAI)

HAI (Short version)

Each question in this section consists of four statements. Please read each group of statements carefully and then select the one which best describes your feelings, over the past six months. Identify the statement by ringing the letter next to it, i.e. if you think that statement (a) is correct, ring statement (a); it may be that more than one statement applies, in which case, please ring any that are applicable.

1.	(a) I do not worry about my health (b) I occasionally worry about my health (c) I spend much of my time worrying about my health (d) I spend most of my time worrying about my health
2.	(a) I notice aches / pains less than most other people (of my age) (b) I notice aches / pain a much as most other people (of my age) (c) I notice aches/ pains more than most other people (of my age) (d) I am aware of aches / pains in my body all the time
3.	(a) As a rule I am not aware of bodily sensations or changes (b) Sometimes I am aware of bodily sensations or changes (c) I am often aware of bodily sensations or changes (d) I am constantly aware of bodily sensations or changes
4.	(a) Resisting thoughts of illness is never a problem (b) Most of the time I can resist thoughts of illness (c) I try to resist thoughts of illness but am often unable to do so (d) Thoughts of illness are so strong that I no longer even try to resist them
5.	(a) As a rule I am not afraid that I have a serious illness (b) I am sometimes afraid that I have a serious illness (c) I am often afraid that I have a serious illness (d) I am always afraid that I have a serious illness
6.	(a) I do not have images (mental pictures) of myself being ill (b) I occasionally have images of myself being ill (c) I frequently have images of myself being ill (d) I constantly have images of myself being ill
7.	(a) I do not have any difficulty taking my mind off thoughts about my health (b) I sometimes have difficulty taking my mind off thoughts about my health (c) I often have difficulty in taking my mind off thoughts about my health (d) Nothing can take my mind off thoughts about my health
8.	(a) I am lastingly relieved if my doctor tells me there is nothing wrong (b) I am initially relieved but the worries sometimes return later (c) I am initially relieved but the worries always return later (d) I am not relieved if my doctor tells me there is nothing wrong
9.	(a) If I hear about an illness I never think I have it myself (b) If I hear about an illness I sometimes think I have it myself (c) If I hear about an illness I often think I have it myself (d) If I hear about an illness I always think I have it myself

10.	(a) If I have a bodily sensation or change I rarely wonder what it means (b) If I have a bodily sensation or change I often wonder what it means (c) If I have a bodily sensation or change I always wonder what it means (d) If I have a bodily sensation or change I must know what it means
11.	(a) I usually feel at very low risk for developing a serious illness (b) I usually feel at fairly low risk for developing a serious illness (c) I usually feel at moderate risk for developing a serious illness (d) I usually feel at high risk for developing a serious illness
12.	(a) I never think I have a serious illness (b) I sometimes think I have a serious illness (c) I often think I have a serious illness (d) I usually think that I am seriously ill
13.	(a) If I notice an unexplained bodily sensation I don't find it difficult to think about other things (b) If I notice an unexplained bodily sensation I sometimes find it difficult to think about other things (c) If I notice an unexplained bodily sensation I often find it difficult to think about other things (d) If I notice an unexplained bodily sensation I always find it difficult to think about other things
14.	(a) My family / friends would say I do not worry enough about my health (b) My family / friends would say I have a normal attitude towards my health (c) My family / friends would say I worry too much about my health (d) My family / friends would say I am a hypochondriac

For the following questions, please think about what it would be like if you had a serious of a type which particularly concerns you (such as heart disease, cancer, multiple sclerosis and so on). Obviously you cannot know for definite what it would be like; please give your best estimate of what you think might happen, basing your estimate on what you know about yourself and serious illness in general.

15.	(a) If I had a serious illness I would still be able to enjoy things in my life quite a lot (b) If I had a serious illness I would still be able to enjoy things in my life a little (c) If I had a serious illness I would be almost completely unable to enjoy things in my life (d) If I had a serious illness I would be completely unable to enjoy my life at all
16.	(a) If I developed a serious illness there is a good chance that modern medicine would be able to cure me (b) If I developed a serious illness there is a moderate chance that modern medicine would be able to cure me (c) If I developed a serious illness there is a very small chance that modern medicine would be able to cure me (d) If I developed a serious illness there is no chance that modern medicine would be able to cure me

17.	(a) A serious illness would ruin some aspects of my life (b) A serious illness would ruin many aspects of my life (c) A serious illness would ruin almost every aspect of my life (d) A serious illness would ruin every aspect of my life
18.	(a) If I had a serious illness I would not feel that I had lost my dignity (b) If I had a serious illness I would feel that I had lost a little of my dignity (c) If I had a serious illness I would feel that I had lost quite a lot of my dignity (d) If I had a serious illness I would feel that I had totally lost my dignity

Appendix D: Survey Questionnaire for Perceived Impact of COVID-19

Participant will respond to the question using a 5-point Likert-type scale ranging from 1 (no impact at all) to 5 (impacted my life a great deal).

1. To what extent has the situation associated with COVID-19 affected the way you live your life?

No Impact at all

Rarely Impact

Undecided

Somewhat Impact

Impacted my life a great deal

Appendix E: Permission and Approval to Use Financial Anxiety Scale (FAS)

Re: Permission to Use

Hello Dr. Archuleta,

I am a doctoral student at Walden University completing a dissertation in Public Health with a specialization in Epidemiology. I am writing to ask written permission to your survey tool for measuring financial stress in my research study. My research study will focus on the association between anxiety risk factors and social isolation among young adults in the United States. My research is being supervised by my professor, Dr. Clarence Schumaker, Professor of Public Health.

The Financial Anxiety Scale (FAS) is an appropriate tool to measure financial stress for my research study. It will allow me to examine the association between financial stress and social isolation among young U.S. adults during the pandemic lockdown. I plan to incorporate the survey tool as well as use the same scoring procedures to develop a survey instrument for my research study. There will be no modifications to your survey tool.

If available, I would also appreciate receiving copies of supplemental material that will help me administer the test and analyze the results; for example, (1) the test questionnaire, (2) the standard instructions for administering the test, and (3) scoring procedures.

In addition to using the tool, I also ask your permission to reproduce it in my dissertation appendix. The dissertation will be published in the Walden University Institutional Repository at <https://scholarworks.waldenu.edu> and deposited in the ProQuest Dissertations & Theses database.

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- At your request, I will send a copy of my completed research study to you upon completion of the study and/or provide a hyperlink to the final manuscript

If you do not control the copyright for these materials, I would appreciate any information you can provide concerning the proper person or organization I should contact.

If these are acceptable terms and conditions, please indicate so by replying to me through e-mail at jennifer.clancy@waldenu.edu

Sincerely,

Jennifer Clancy, MPH

Hello Jennifer,

Thank you for reaching out to me. Yes, you may use the FAS in your dissertation as long as you include appropriate citations. Also, can you fill out this [Google Form](#)? It is not a permission form but rather a way for me to personally keep track of people who are using it.

Good luck with your dissertation!

Kristy L. Archuleta, Ph.D., LMFT, CFT-I™
Financial Planning, Housing and Consumer Economics | *Professor & Graduate Coordinator*

Appendix F: Permission and Approval to Use Short Health Anxiety Inventory (SHAI)

Re: Permission to Use

Hello Dr. Salkovskis,

I am a doctoral student at Walden University completing a dissertation in Public Health with a specialization in Epidemiology. I am writing to ask written permission to use the Short Health Anxiety Inventory (SHAI) for measuring health anxiety in my research study. My research study will focus on the association between anxiety risk factors and social isolation among young adults in the United States. My research is being supervised by my professor, Dr. Clarence Schumaker, Professor of Public Health.

The Short Health Anxiety Inventory (SHAI) is an appropriate tool to measure health anxiety for my research study. It will allow me to examine the association between health anxiety and social isolation among young U.S. adults during the pandemic lockdown. I plan to incorporate the survey tool as well as use the same scoring procedures to develop a survey instrument for my research study. There will be no modifications to your survey tool.

If available, I would also appreciate receiving copies of supplemental material that will help me administer the test and analyze the results; for example, (1) the test questionnaire, (2) the standard instructions for administering the test, and (3) scoring procedures.

In addition to using the tool, I also ask your permission to reproduce it in my dissertation appendix. The dissertation will be published in the Walden University Institutional Repository at <https://scholarworks.waldenu.edu> and deposited in the ProQuest Dissertations & Theses database.

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If these are acceptable terms and conditions, please indicate so by replying to me through e-mail at jennifer.clancy@waldenu.edu

Sincerely,

Jennifer Clancy, MPH

Thanks

I am happy to give permission. Details and the questionnaire itself are in the article.

There are two versions; one where the referent is six months, the other where the referent is two weeks, selected according to the purpose of the research

With best wishes

Paul

Professor Paul Salkovskis | Director | The Oxford Institute of Clinical Psychology Training and Research | The Oxford Centre for Psychological Health | The Oxford Cognitive Therapy Centre

Appendix G: Permission and Approval to Use PROMIS Social Isolation 6a

RE: Permission to Use - Case 00049575

I am a doctoral student at Walden University completing a dissertation in Public Health with a specialization in Epidemiology. I am writing to ask written permission to use the PROMIS Social Isolation Scale (short form 6a) for measuring social isolation in my research study. My research study will focus on the association between anxiety risk factors and social isolation among young adults in the United States. My research is being supervised by my professor, Dr. Clarence Schumaker, Professor of Public Health.

The PROMIS Social Isolation Scale (short form 6a) is an appropriate tool to measure social isolation for my research study. It will allow me to examine the association between anxiety risk factors (financial stress, perceived impact of COVID-19, and health anxiety) and social isolation among young U.S. adults during the pandemic lockdown. I plan to incorporate the survey tool as well as use the same scoring procedures to develop a survey instrument for my research study. There will be no modifications to your survey tool.

If available, I would also appreciate receiving copies of supplemental material that will help me administer the test and analyze the results; for example, (1) the test questionnaire, (2) the standard instructions for administering the test, and (3) scoring procedures.

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If these are acceptable terms and conditions, please indicate so by replying to me through e-mail at jennifer.clancy@waldenu.edu

Sincerely,

Hello Jennifer,

Thank you for reaching out and for your interest in using HealthMeasures for your research! As you are from a noncommercial institution conducting fixed term research, permissions are optional.

Some studies opt to obtain permissions as they include a screenshot review to ensure validity. Should you decide to proceed with permissions, the fee would be \$500/per standard measure per platform for the duration of your study. I am attaching our Guidelines for the Appearance of HealthMeasures document for your implementation. Please let us know if you would like to obtain permissions.

You can obtain the short form from HealthMeasures.net using the 'Search and View' tab. I am attaching our Guidelines for the Appearance of HealthMeasures to assist with your electronic implementation. Measure specific scoring guides are available once you select the short form you intend to use.

You have permission to include the measure in your dissertation appendix, but please be sure to include the © and a "reprinted with permission" statement. The permission is only for your dissertation, the measure may not be published in any journals in its entirety.

I hope I covered all of your questions, but please let me know if I missed anything or if you have any others!

Kind regards,
Honore

Appendix H: Permission and Approval to Use Perceived Impact of COVID-19

RE: [EXTERNAL] Permission To Use

Hello,

I am a doctoral student at Walden University completing a dissertation in Public Health with a specialization in Epidemiology. I am writing to ask written permission to your survey tool/item for measuring the "Perceived Impact of COVID-19" in my research study. My research study will focus on the association between anxiety risk factors and social isolation among young adults in the United States. My research is being supervised by my professor, Dr. Clarence Schumaker, Professor of Public Health.

In your article, "Psychological Outcomes Associated with Stay-at-Home Orders and the Perceived Impact of COVID-19 on Daily Life", perceived impact of COVID-19 was measured by single item using a 5-point Likert-type scale ranging from 1 (no impact at all) to 5 (impacted my life a great deal). This is an appropriate tool to measure the perceived impact of COVID-19 for my research study. It will allow me to examine the association between perceived impact of COVID-19 and social isolation among young U.S. adults during the pandemic lockdown. I plan to incorporate the survey tool/item as well as use the same scoring procedures to develop a survey instrument for my research study. There will be no modifications to your survey tool/item.

If available, I would also appreciate receiving copies of supplemental material that will help me administer the test and analyze the results; for example, (1) the test questionnaire, (2) the standard instructions for administering the test, and (3) scoring procedures.

In addition to using the tool/item, I also ask your permission to reproduce it in my dissertation appendix. The dissertation will be published in the Walden University Institutional Repository at <https://scholarworks.waldenu.edu/> and deposited in the ProQuest Dissertations & Theses database.

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- At your request, I will send a copy of my completed research study to you upon completion of the study and/or provide a hyperlink to the final manuscript

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If these are acceptable terms and conditions, please indicate so by replying to me through e-mail at jennifer.clancy@waldenu.edu

Sincerely,

Jennifer Clancy, MPH

Hi Jennifer,

Attached is the questionnaire packet that we used for the study. In the packet, you will find all the measures (as well as some additional ones) that were used in our Psychiatry Research paper. Scoring is pretty straightforward, as we created a number of measures for this study, with some measures (including the daily impact of COVID-19) consisting of a single item and others (e.g., risk perceptions associated with COVID-19) requiring simply a sum of the items. The other measures in the study (e.g., DERS) have their scoring criteria published elsewhere. Please let me know if you have any questions.

Matthew T. Tull, Ph.D.

Professor

Department of Psychology