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## The Effect of Virtual Learning as a Result of COVID-19

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## **The Impact of Virtual Learning as a Result of COVID-19**

Ann Redle and Joel McMullen

The University of Akron

### **Abstract**

In the early spring of 2020, the United States began to experience the effects of the question-inspiring, novel COVID-19 viral illness, with the onset of massive business, school, and entertainment closures, initiating a shift towards virtual learning, communication, and professional interactions. This paper is intended to identify the common experiences of two nursing students throughout the COVID-19 pandemic by utilizing a personal narrative, or autoethnographic approach, coupled with reviews of previously published literature relating to shared themes of the authors, including the rapid changes to an online environment from traditional classroom settings, the stressors that were experienced as a result of that alteration, and the personal development and growth which accompanied the transitions of this time period. Noting an increased resilience to rapid, unexpected changes affecting daily life, as well as enhanced knowledge of self-motivation and organization, the authors have experienced a number of constructive takeaways that will likely be implemented in the many years ahead. While the COVID-19 pandemic led to a variety of uncomfortable and detrimental outcomes and an array of losses which will not be forgotten, positive consequences can still be observed, leading to an improved future.

## Introduction

Reflecting on one's experiences in the context of a greater adventure can lead to vast discovery, about oneself, others, and the world at large. In March of 2020, the first major impacts of the novel COVID-19 viral disease, about which many had already heard of its origins in the city of Wuhan, China, took effect in the Midwestern United States, as schools, businesses, and offices began to close their doors to the public. The consequences of this rapid shift were tremendous, leading to stress and uncertainty, anger and confusion, and a myriad of other emotions which individuals began to express, and continue to endorse as change from the virus continues to unfold. For those who take time to look back, contemplate, and analyze their response to the events which have already taken place, and their anticipation of the experiences yet to occur, they may find connections to other individuals, life events, and knowledge previously not dreamt. This practice, when written down, as an exercise of critical thinking and inquiry, is known as auto-ethnographic research. Where many forms of scientific investigation seek to determine what will occur, auto-ethnographic exploration begins with the events which an individual or group has already experienced, and concludes with demonstrations of learning, and encourages generalization of evidence, in order to form a sensation of solidarity with others who have experienced similar circumstances.

This auto-ethnographic paper, comprising a total of four personal narratives and two literature reviews, will focus on distinct aspects of change which occurred due to the COVID-19 pandemic. More specifically, this journal will detail the authors' reactions, concerns, and opinions in response to many universities and institutions of higher education moving from primarily in-person, or face-to-face course instruction to an online, virtual format. Utilizing the authors' narratives, literature reviews will be performed in order to determine the reactions of

other students in similar situations and provide insight into some of the psychological and physiological responses which occurred in part, or totally due to the COVID-19 pandemic. By first focussing on the initial reactions of the authors, subsequent narratives will demonstrate relationships between specific stressors and their impacts, as well as the knowledge and skills that were gained from these experiences and their implications for the future. More precisely, the aim of this essay is to first explore specific responses to the COVID-19 pandemic from the viewpoint of two university nursing students and compare those outlooks to other students and experiences, and second, to satisfy the graduation requirements set forth by the Williams Honors College of the University of Akron.

## Section 1

### **Personal Reflection:** Redle, A.

Online school...something I had heard about before, but definitely not something I ever considered I might do, at least not voluntarily. I've never been a fan of staring at computer screens for long periods of time. Yes I do look at my phone, but usually intermittently, and honestly I would rather be doing something active or engaging in conversation with someone in person. My whole style of learning and interacting changed pretty rapidly one day after clinicals when it was announced the University of Akron would move to online education due to the coronavirus pandemic. At first I was kind of happy. It meant I could sleep in, save gas money, and go to class online or even asynchronously. I liked the idea of being asynchronous because I could work more. At that time I worked at a fast food restaurant that remained open because of the drive through even though most restaurants were closed. The rest of the spring semester of 2020 became pretty hectic, however. I went a whole week without taking my Science of

Nutrition test because I was so focused on my nursing classes. Pharmacology online was such a struggle. I forgot about my Science of Nutrition class until it dawned on me to check the course in BrightSpace. I frantically emailed my professor, and she was gracious enough to let me take my Science of Nutrition exam without even deducting late points. In addition to attending school virtually, I, along with everyone else, was dealing with the fear and stress that comes along with a pandemic, and aside from my immediate family and coworkers, I no longer saw my peers that I was so used to seeing daily. When the semester ended I was relieved. One benefit of moving to online learning so quickly was that I was forced to adapt. Being able to adapt to difficult and new situations is a necessary trait of good nurses. Despite the fact that Covid-19 and online learning made the end of sophomore year so challenging, I know that I have grown stronger because of it.

**Personal Reflection:** McMullen, J.

Repetition. Repetition is one of the best answers I can provide to the question: “How has the COVID-19 pandemic affected you?” Over the previous 27 months, many changes have been implemented, relative to the life most had experienced before the shutdowns of mid-March, 2020. I could recall and list those changes, but we’ve all heard that before. I could provide details on how my life has personally changed, but I’ve said that many times already. I could tell you about life behind a screen, I could tell you about the vaccine, I could tell you about the numbers, the prices of lumber, even the times we’ve blundered! But you’ve heard that by now. What then, is there to write about, if everything has already been told? Let us speak about why repetition has become such a large part of our lives, in these days following pandemic restrictions. Imagine you are traveling to visit a group of friends and on your way, an astonishing event takes place. When you arrive, the group wants to hear about your experiences, and so you tell them. Later, you

leave that group and eventually you find yourself with a different faction and you again want to share your story. Some time in the future, you're visiting with a friend who was not present in either of the previous groups, and so you tell the story yet again. Why did you have to repeat yourself so many times? The answer is simple, the people around you were not together all at one time. That sounds profoundly similar to the results of a certain even that much of the world has experienced in the past year. Humans thrive on repetition, as that is what leads to experts. However, when speaking and telling stories, we quickly become sick of repetition. We don't let our friends repeatedly tell us the same stories time and time again, since after the second or third instance, the recalling has lost all drama, expense, and excitement. Of course, we cannot all be together all of the time, especially over the past year, and thus repetition becomes necessary. That is no reason to become saddened however, as fortunately, a solution has been found: the video call. Repetition makes experts, and this one, is here for the ride from novice to professional.

## **Inquiry**

### **Review of Literature**

The following questions will be used to guide information presented in the subsequent analysis. PICOT questions were determined based on the feelings expressed by the authors in the above personal reflections. Since the intentions of both authors were not completely congruent, two PICOT questions will thus be explored. The first half of the analysis will focus on the following: **What was the impact on nursing students as they moved to online/ virtual learning classes during the COVID-19 pandemic as compared to in person courses?** The second half will thus address this question: **What was the reaction of university students as they moved to**

## **online/virtual learning class as compared to in person courses during the COVID-19 Pandemic.**

### **Search Strategies**

Key words and phrases used to locate appropriate literature sources for the following analysis include, but are not limited to: Virtual or online or remote or distance learning, e-learning, nursing students, COVID-19, and pandemic. All sources in this inquiry were located through utilization of academic databases provided to enrolled students through the University of Akron. Eight of the eight referenced articles were peer reviewed and published in or after 2019. Sources were selected based on the application and generalizability to the proposed PICOT question.

#### *Redle, A*

An important and pressing issue that arose in 2020 was the impact of moving to online/virtual learning on nursing students during the COVID-19 pandemic as compared to traditional in person courses students had been used to. In order to address this, studies were done to examine how nursing students adjusted to online learning during March of 2020. One such study entitled “Evaluating online learning engagement of nursing students” looked at the level of online motivation and learning engagement in nursing students who moved to online learning due to the coronavirus pandemic (Chan et al., 2021). The study used a prospective interventional design. Pearson’s correlation coefficient was used to see the relationship between perceived learning satisfaction and learning engagement. The population studied was part time nursing students enrolled in an elective online clinical course. After completing the online course, students completed an Online Student Engagement questionnaire (OSE).

Chan et al. provided ample background to the online learning process and various modes of virtual learning (2021). Online learning is also increasingly used for graduate school and part time learning due to its flexibility. However, the authors present the challenges wrought by online learning such as distractions and disingenuous online interactions between instructors and students. Because of these difficulties, this has prompted the advent of a Community of Inquiry (CoI) framework which is meant to address these problems. The focus of CoI is to create an environment in which teachers facilitate the learning experience through the use of communities of inquiry and development of purposeful relationships. Having a sense of community fuels engagement in the online learning process. CoI is a means to combat the feelings of isolation or lack of genuine interaction that can result from online classrooms. Because of the success of the CoI framework, it was utilized in the virtual class for the study.

The study used a flipped classroom setting (Chan et al., 2021). A flipped classroom differs from the traditional classroom in that, in the traditional classroom, lower levels of learning occur in the classroom and activities that require higher levels of learning occur outside of the classroom by the individual. In contrast, in a flipped classroom the higher levels of thinking and learning are done in the classroom and the lower levels of cognitive learning are done before class (Philips & O'Phlerity, 2019). A previous study along with other studies found that the flipped classroom approach promoted higher levels of critical thinking and learning engagement (Philips & O'Phlerity, 2019). In fact, the study conducted by Philips & O'Phlerity was conducted prior to the coronavirus pandemic and used surveys to compare students' learning attitudes coming from traditional learning formats, versus their learning attitudes after utilizing the flipped classroom setting (2019).

In order to assess perceived levels of learning satisfaction, students completed a three part survey. Part one focused on demographics. Part two included questions on satisfaction with class material, structure, format, autonomy related to the flexible format, and overall learning satisfaction. The third part looked at skills engagement, emotional engagement, participation engagement, and performance engagement. Results of the study showed that 45% of students met the criteria for highly engaged (Chan et al., 2021). Working for more than a year was correlated with lower levels of learning engagement. This may be due to increased burnout leading to lower levels of academic motivation. A focus group interview was conducted with four students to dive deeper into individual thought processes. One question asked during the interview was whether the students preferred online or face-to-face learning. Interestingly, all four of the students expressed they preferred online learning over face-to-face classes. Reasons for their preference included the idea that online learning requires self-discipline, is more flexible, and does not require transportation. However, the students did express the need for in-person laboratories and skills practice (Chan et al., 2021).

In Spain a study was conducted with nursing students during their first month transition to online learning beginning March 14, 2020 (Ramos-Morcillo et al., 2020). The purpose of the study was to look at the learning experiences and the expectations about the transition in the mode of learning because of the novel coronavirus. They used a qualitative approach and inductive thematic analysis. Variables examined include practicing nursing care, uncertainty, time, teaching methodologies, the context of confinement, the added difficulties, and face-to-face education (Ramos-Morcillo et al., 2020).

One theme found among students was the belief that clinicals are essential. Thus in an attempt to supplement clinicals virtually, the need for drastic improvement of virtual clinicals presented

itself. Students acknowledged the balance between returning to the clinical setting and health risks associated with the pandemic. They concluded that clinicals are indispensable and they preferred face-to-face over virtual clinical. It was noted that students did not choose online studies in the beginning of the academic year, and this disruption was unexpected. As a result, students were not yet comfortable with the new learning style during the one month period in which the study was conducted. Because of these drastic learning changes by the university, older students, particularly women and mothers had a more difficult time adapting. Additionally, a small percentage of students did not have adequate internet access or technological devices. The Universities of Murcia and Granada (where the study was conducted) loaned laptops to all of the students who requested them. Over 300 students in Murcia requested laptops, and mobile internet-access devices were also given.

Essential findings of the study were the need for a good online learning structure, and the realization that e-learning brings more challenges for older students, those with work and family responsibilities, those living in a rural environment, and those with limited electronic resources. The study concluded that improvements were necessary for online learning for the next academic year which would likely continue to be online. A notable limitation observed was that it was difficult to compare findings with other studies because of the new situation causing there to be a lack of similar studies (Ramos-Morcillo et al., 2020).

Another study specifically looked at nursing students' perspectives on the change to online learning because of the pandemic (Bdair, 2021). Izzeddin Bdair RN, Ph.D. conducted the study using descriptive-phenomenology. Through a purposive sampling method and telephone semi-structured interviews, twenty students were interviewed. Both advantages and challenges were looked at as themes in the interview. The themes identified as advantages included a

flexible learning environment, academic achievement, and student-centered learning. Those themes identified as challenges were inadequacy, academic integrity, learning environment, and family burden. The themes of recommendation for students and faculty were training, teaching, assessment, and quality monitoring (Bdair, 2021).

Students and faculty were generally satisfied with the online learning implementation. Students said that online learning helped with technology skills and learning, but they missed interacting with peers, instructors, and nurses. One student, for instance, liked the flexibility of listening to the recorded lectures on their own time but would run into technological difficulties. Students concluded that the online portion was good for educational purposes but was not sufficient for in person experience and hands-on learning. Flexibility was an advantage and students also had higher academic achievement during online learning. They reported satisfaction with the ability to be self-directed.

On the negative side, there were issues with monitoring academic integrity with assignments, quizzes, and exams. Students struggled with motivation and feedback learning at home. Another challenge was becoming familiar with the various online platforms used because courses lacked standardization by using multiple platforms and technologies. Both students and faculty complained of the lack of interaction between each other. Faculty also struggled initially with the rapid transition to online. Online learning is not optimal for teaching hands-on skills. Teachers struggled maintaining learning engagement in the online setting. Additionally, the online school presented hardships on families, especially those who needed internet access and new devices. Having to buy new devices added to financial stress, and in some cases, family members created a distracting environment for students. Many home environments offered a plethora of distractions such as pets or noisy lawn mowers in the background. Students with

disabilities were not included in the study. Researcher bias, a small sample size, and participant self-selection were also presented as possible limitations (Bdair, 2021).

*McMullen, J.*

A variety of studies have already been published in regards to the effects of certain changes which occurred as a result of the COVID-19 pandemic. In particular, educators from Manhattan College asked 121 university students to respond to a survey evaluating their responses to moving from traditional to virtual learning in a variety of categories, including “exhaustion, cynicism, and professional efficacy” (Gonzales-Ramirez, et al., 2021, p.29). Student responses indicated that their overall level of exhaustion increased as a result of the rapid movement to virtual learning platforms and aspects of their life and wellbeing outside of class were affected. Specifically, undergraduate pupils reported that their contact with other students and professors decreased significantly, and this decline impacted their nutritional and physical activity habits (Gonzales-Ramirez, et al., 2021). The study notes that while these results indicate students' level of burnout and exhaustion was increased due to the pandemic changes, widespread, baseline data was not available at the time of this study, and thus these results should be validated with future studies. Additionally, the authors recommend that, should the virtual learning environment become increasingly prevalent in the near future, higher-education facilities should provide students with methods of decreasing exhaustion and burnout, such as by encouraging goal setting and implementation of new work routines, as well as ways to increase social interaction with others (Gonzales-Ramirez, et al., 2021).

Implementing strategies to increase student wellbeing and community synergy in college students is difficult, especially when little is known in regards to optimizing effective teaching

strategies in the virtual learning environment (Kauppi, et al., 2020). Doctorate students and graduate level professors in the college of education at Oulu University, in Finland, recognized this issue and set forth to carry out a study which would evaluate the teaching strategies and their effect on undergraduate students in one specific course which was presented entirely over virtual platforms. The course, titled “Collaboration and Professional Interaction Skills” was directed towards students attending studies under the category of “educational sciences” (Kauppi, et al., 2020, p. 1105). The research team performed a two tiered study by first gathering baseline data through observation of how the course was initially presented. Feedback was based on student responses to the prescribed course outcomes, through professor feedback, and student comments and performance on assignments. The researchers then altered some aspects of course delivery and teaching strategies, while maintaining the presentation through a solely virtual experience. Data was again gathered, in a similar fashion to the initial assessment to evaluate the changes made and finalize a course design which was most beneficial to students (Kauppi, et al., 2020). The research team found that while students had “no problem with learning the [course] content ... individually”, issues were present in becoming competent in areas such as collaboration and interaction with other students and professionals in the working world (Kauppi, et al., 2020, p. 1112). Alterations made by the researchers to the course teaching strategies did result in increasingly positive feedback from students when the course was presented a second time. However, the authors still noted that some challenges were present despite their interventions and that many that remained were called paradoxical, especially students' desires for increased authentic and face-to-face encounters, despite their enjoyment of the flexibility which they experienced as a result of the virtual presentation (Kauppi, et al., 2020).

The two studies above demonstrate that while some benefits are present to virtual learning experiences, many challenges still exist which interfere with students' well being, especially surrounding social interaction and that, if the number of physical encounters which students consume continues to decline as a result of the COVID-19 pandemic, changes will need to be made in university settings in order to ensure that pupils have adequate opportunity to practice social cooperation, both to improve overall well being, and to remain prepared for the collaboration required in working settings following collegiate training.

Many college academic programs provide experiences that allow students to apply topics learned during coursework, in real-world settings, at some time prior to graduation. These opportunities act as a facilitated transition into the students' chosen profession, allowing for "space to discuss the significant differences between the expectation and realities of the ... work environment" (Sailsman & Milne, 2021, p. 65). For nursing students in particular, this event is often known as senior practicum and allows pupils to work one-on-one with a registered nurse in a healthcare setting in order to gain knowledge and hands-on training, and often results in feelings of significantly increased confidence (Sailsman & Milne, 2021). When the impact of COVID-19 became increasingly prevalent, the senior practicum was moved to a virtual presentation for many students. To determine the effects of this change on those involved, authors surveyed senior nursing undergraduates at the midpoint and immediately following the completion of the virtual practicum. Results of these surveys demonstrated that pupils felt an increased amount of exhaustion due to the "tedious nature of the online simulations and learning modules" which were required to be completed (Sailsman & Milne, 2021, p. 68). As a result, faculty of the college did adjust some of the conditions of assignments. Students also reported feelings of missing out on some benefits of the traditional senior practicum and faculty noted that

individualized feedback was difficult to provide to pupils as much of the evaluation was solely an observation of the timeliness of submitting completed work.

One solution that may improve student satisfaction to virtual learning experiences is providing information to educators concerning methods to make non-traditional courses more effective, approachable, and overall successful. Meniailo, et al. (2021), conducted a study to determine the response of the students and faculty towards increased remote learning due to COVID-19. The feedback received was influenced by the presentation of an informative course designed to prepare future educators for increased virtual learning in the times to come. Subjects of the study were presented with what researchers termed a “blitz course”, which the authors defined as a rapid demonstration of novel ideas, that included techniques to more easily transition classroom control to students in virtual learning settings (Meniailo, et al., 2021, p. 288). These items, which fall under control of teachers in traditional classroom settings, were named “innovative areas”, since in virtual learning environments, students would have to take control of them, in order to be successful in class. The list consisted of actions such as “[operating] electronic resources, [engaging in] counseling and modeling personal educational trajectory, [along with] self-organization” (Meniailo, et al., 2021, p. 288). Said another way: during virtual and online learning, students are expected to handle these facets without the aid of educators, which may present additional challenges that result in increased overall stress. Results of the study aimed to determine if attitudes towards these aspects of virtual learning changed following the informational presentation of the “blitz course” (p. 288). Ultimately, researchers concluded that this intervention “can be effective” but noted the limitation that the opinions on the above areas diverged between teachers and students (Meniailo, et al., 2021, p. 296). More specifically, students enjoyed areas such as expanded freedom, flexibility, and use of electronic

devices. In contrast, teachers preferred that students were more responsible for personal orientation and independence but admitted that the expanded amount of personal choice and freedom which students experienced as a result of virtual coursework were not ideal (Menaiilo, et al., 2021). In other words, researchers agree with previous reports that the largest burden to both educators and pupils in virtual learning environments is the need for students to be self motivated, and for teachers to decrease direct control over learners, the latter of which is generally present in traditional classrooms and can be valuable in motivating some students (Menaiilo, et al., 2021).

Current literature tends to support the idea of many current students, who argue that while virtual learning has some benefits, such as increased independence and choice in completing schoolwork, some imperfections do still exist, especially from the bias of students more familiar with in-person learning. The most prominent of which is likely missing out on in-person activities and experiences which cannot be replicated online, especially for students who participate in programs inside actual, physical working spaces. Other impacts of virtual learning which caused many students' distaste, may be related to the training of faculty and their implemented teaching strategies in the virtual environment. Since some professors had little experience teaching online prior to the changes caused by COVID-19, some assignments end up feeling laborious, tiresome, or even uninteresting. In turn, students' stress can become heightened, and lead to more complicated issues such as effects on students' mental health and wellbeing. Fortunately, a number of studies have begun to evaluate the effectiveness of some solutions to combat many of these less than ideal outcomes, with some promising feedback being gathered. The impact of virtual learning, on university students in particular, are becoming more prominent as an increasing quantity of pupils are unexpectedly experiencing nontraditional

coursework presentations. With this change, educators are challenged to optimize positive reactions to virtual learning environments, while reducing negative stressors that ultimately distract from student learning.

## Section 2

### **Personal Reflection:** Redle, A.

It was a bit of a disappointment going into junior year when I realized that, due to the pandemic, we would continue to be mostly online for classes. I was happy to be back to in-person clinicals, although for different clinical rotations, in person clinical days had to be canceled due to complications having to do with COVID-19. I was pleasantly surprised, however, that I began to really like being online. Some of my lectures were asynchronous and I could work on them on my own time. I could get ahead and then work on the days that I had class. I had been working in the emergency room as a nurse tech since the summer, and I really liked having enough time to work and still balance school. Taking tests was the only downside to being online. My internet was often pretty slow, and I had to make sure I was in a spot in my house in which I had a good connection and in which I would not be disturbed by others in my household. Although I did struggle at times to stay motivated, especially during live online lectures, overall, I kept my motivation up and was driven to be successful in my studies. While this was the case for me, I knew that many of my peers struggled being online. Not having the same structure, and not having the in person connection made it difficult to focus for many students. The only peers I saw junior year were those that I had clinical with or those I had in person lab with. This was strange, but I kept busy with work. I think if I did not stay busy, I

would have really felt the loneliness and lack of companionship that many students were suffering as a result of being online. I knew from my personal experience at work, that there were many people suffering from depression and having to be hospitalized as a result of the severity of their depression. I wonder how many of us nursing students were struggling, and what help was available to them during this time of social isolation?

**Personal Reflection:** McMullen, J.

With any life change comes a new variety of stressors requiring adaptation. Moving to a virtual presentation of collegiate coursework as a result of the onset of the COVID-19 pandemic brought a number of changes to my life. I first had increased worry and feelings of anxiety that I would be behind in my courses and would not have the opportunity to graduate on time. As this dismay began to be relieved, I had to adapt to other changes, such as increased screen time at home, since virtual lectures had to be watched and clinical experiences had to be made up online. This led me to change some of my hobbies, since relaxing while browsing social media or playing electronic games felt too similar to completing school work. Although seemingly simple, I needed to change my routine to accommodate being home for such an increased amount of time during the day. This was generally a positive change, however, I was not getting as much exercise throughout the day as I did not need to move between buildings on Akron's campus for my next class. I also had no need to prepare a backpack and think ahead to everything I wanted to bring with me for the day. Looking back, I also remember learning how to utilize a variety of new skills, such as the operating lockdown browser software the university prescribed for testing purposes, or the turning in virtual assignments into the assigned drop boxes, or even navigating the nuances of video conferencing with large groups. Above all, throughout much of the time

learning through virtual environments, I worried about changes in my grades. I felt that if I was doing better than I had when enrolled in in-person courses, I might be wrongfully accused of cheating, while at the same time having concerns that I would not be able to learn the material well enough to perform adequately on tests. Many of the changes I experienced as a result of the classroom shift initially caused added stress to my collegiate experience, as change is rarely easy and this was a change about which I, along with many others, was not excited. However, I positively adapted to most aspects of this new and evolving time, and my grades seemed to reflect that. I consider myself fortunate in that regard, as some students may have struggled in adjusting to the many changes that occurred and are continuing to take place, especially since a 100% positive outcome is incredibly rare in any population of humans.

### **Review of Literature**

The following question will be used to guide information presented in the subsequent analysis. The PICOT question was determined based on the feelings expressed by the authors in the above personal reflections. Since the temperament between authors is more similar compared to the reflection in section one, a single PICOT question will be explored, which is: **What is the impact of stress on nursing students and their grades as a result of moving to virtual courses during the Covid-19 pandemic as compared to in person courses?**

### **Search Strategies**

Key words and phrases used to locate appropriate literature sources for the following analysis include: nursing students, online learning, stress and anxiety. All sources in this inquiry were located through utilization of academic databases provided to enrolled students through the

University of Akron. Eight of the eight referenced articles were peer reviewed and published in or after 2017. Sources were selected based on the application and generalizability to the proposed PICOT question.

*Redle, A.*

Nursing school can be particularly stressful with all of its rigorous academic requirements. Adding a pandemic would seem to be a significant additional stressor. A study entitled “Transition in learning during COVID-19: Student nurse anxiety, stress, and resource support” looks into the lives of student nurses in Southern California during July and August of 2020 (Fitzgerald & Konrad, 2021). The stated purpose of the study was to examine the anxiety and stress of first-semester nursing students and to look into the resources available to ease the transition to online learning at the beginning of the pandemic. A descriptive design was used through a web-based survey generated from Qualtrics Software. Questions were adapted from the Anxiety Symptoms Checklist derived from the diagnostic and statistical manual of mental disorders-IV. Both perceived anxiety and symptoms of anxiety were looked at. Students were also asked if they had consulted a mental health professional and if they were concerned about graduating on time. The study implemented convenience sampling by emailing 79 potential participants. Fifty-six students ultimately participated (Fitzgerald & Konrad, 2021).

The majority of participants were female. On average, students reported 4.32 symptoms of anxiety out of 14 total symptoms. Each student reported at least one symptom of anxiety related to COVID-19. Ninety percent of students reported symptoms included difficulty concentrating and 84% reported feelings of anxiety or being overwhelmed. Participants that were younger or female were more likely to report symptoms of anxiety. Eighty percent responded that they often

felt anxious about the impact COVID-19 would have on their academics. Seventy percent attributed feelings of anxiety to events not meeting planned expectations of the mode of education. With regard to the stress related to the health impacts of the pandemic, 84% of participants reported fear of a loved one contracting the virus, and 70% reported fear of contracting the virus themselves. Sixty-two percent reported difficulty in handling the academic workload. Only 10% of students reported seeing a mental health professional due to stresses from the pandemic. In spite of the many negative emotions related to stress, students had positive responses as well. Eighty-eight percent of students said that the faculty's response to the changes in courses was either good or excellent. Eighty-five percent of students stated that peer support was either good or excellent, and 90% of students reported that faculty support was good or excellent (Fitzgerald & Konrad, 2021) .

Several correlations were found in the study. Stress was found to be correlated with anxiety due to academics. Correlations were also found between activities/relationships and anxiety and distress. Those who had "difficulty handling relationships" reported higher levels of stress because of family issues and had concerns about "their ability to handle difficulties in life" (Fitzgerald & Konrad, 2021). Those who stated support from instructors was good or excellent had fewer symptoms of anxiety. Some students also made comments in addition to answering the survey that expressed frustration over a lack of communication from the school of nursing about the abrupt changes. In addition to showing the relationship between stress and the coronavirus pandemic, the study also looked at practical ways to mitigate stress. For instance, debriefing sessions were conducted so that students could express their struggles with the school of nursing which helped increase faculty and peer support (Fitzgerald & Konrad, 2021) .

Another study conducted in Australia looked at anxiety, stress, and depression among undergraduate nursing and midwifery students during the pandemic and what socio-economic and educational characteristics may be correlated with higher levels of stress, anxiety, and depression (Kerr, et. al 2021). The study utilized a cross-sectional design between August and September of 2020. An anonymous survey was sent to 2,907 students in the baccalaureate nursing program in Victoria, Australia. A total of 638 students answered the survey. 48.5% of students reported moderate to severe depression, 37.2% reported moderate to severe anxiety, and 40.2% reported moderate to severe stress. Factors associated with high levels of depression, stress, and anxiety include being younger, being female, having self-reported poor health, and having completed more academic years. In conclusion, the authors suggested that universities should screen students for depression, anxiety, and stress during and after pandemics, and that referrals should be made available for students (Kerr, et. al 2021).

An interesting comparative study was done in China to look at the emotional responses and coping mechanisms of nurses versus nursing students (Huang et. al, 2020). A questionnaire was sent out between February 1st and February 20th, 2020. Those selected were nursing students or nurses between the ages of 18-26. The respondents were asked to forward the survey to ten of their colleagues and those who reported previous history of mental illness were excluded. The survey included a list of negative emotions “including anxious, fear, sadness and anger” and participants rated each emotion they experienced with 1 being no emotion in that category and 5 being the highest level of that emotion (Huang et. al, 2020). Coping strategies were also measured on a scale of 1-5, with 1 meaning the coping strategy was not used and 5 meaning the strategy is always used. Coping mechanisms were divided into problem-focused coping and emotion-focused coping. Problem-focused coping strategies included “active coping, planning,

and use of instrumental support” (Huang et. al, 2020). Emotion-focused coping included “use of emotional support, acceptance, positive reframing, religion, humor, substance use, self-distraction, self-blame, denial, behavior disengagement, and venting” (Huang et. al, 2020). Including coping strategies in the study allows researchers to look into ways to reduce or handle negative emotions experienced during stressful events such as pandemics.

After sending out the survey to 850 people, 802 valid and completed surveys were returned. The majority of respondents were female (74.9%) and the rest were male. 62.9% of respondents were from urban locations, and 37.1% were from rural locations. 430 respondents were nursing students and 374 were nurses. Anxiety levels in nurses were found to be significantly higher than nursing students. Women had significantly higher fear and anxiety levels than men. Interestingly, while participants from rural areas had higher levels of sadness, those from urban areas had higher anxiety. Further research should be conducted to identify what role isolation may have played in rural participants having higher levels of sadness, and what potential variables were present in urban cities that contributed to higher levels of anxiety. The study did note, however, that there was no correlation between levels of anxiety, fear, sadness, and anger and severity of urban outbreaks. Anxiety and anger were both associated with the distance urban participants had from COVID-19 cases. The closer coronavirus cases were, the higher the feelings of anxiety and anger (Huang et. al, 2020).

Utilizing the independent sample t test, the study identified that nurses used more problem-focused coping strategies than nursing students. Women were much more likely to use problem-focused coping strategies than men. Conversely, men were more likely to use emotion-focused coping strategies. Problem-focused coping strategies were considered “active coping, planning, and use of instrumental support” which means using tangible means to address

a situation (Huang et. al, 2020) . Emotion-focused strategies were “use of emotional support, acceptance, positive reframing, religion, humor, substance use, self-distraction, self-blame, denial, behavior disengagement, and venting” (Huang et. al, 2020). The study concluded that, although nursing students experienced anxiety, fear, and stress, ultimately nurses working in the pandemic experienced significantly more of these negative emotions (Huang et. al, 2020) .

In Jordan, researchers did a study to look at the mental health and well-being of healthcare students (Almhdawi et. al, 2021). Using a cross-sectional design, the researchers sent out questionnaires to undergraduate medical, dental, pharmacy, and nursing students. The survey consisted of “demographics, 12-item Short Form health survey (SF-12), students’ evaluation of distance learning, Neck Disability Index (NDI), Depression Anxiety Stress Scale (DASS21), and the International Physical Activity Questionnaire (IPAQ)” (Almhdawi et. al, 2021). The average age of students in the study was 20 years old, and a total of 485 students participated. Nursing students comprised 7.2% of the total participants. The study found moderate levels of depression, moderate levels of anxiety, and mild levels of stress in students. Higher levels of depression were associated with lower HRQoL (health-related quality of life). Students also generally reported not being satisfied with their online classes. The results prompted researchers to question what impact increased isolation and the pandemic’s effect on future jobs and education had on students’ mental health. Researchers identified the lack of equal representation of nursing and pharmacy majors as a limitation. Having a larger percentage of nursing major participants could have altered the overall results of the study. (Almhdawi et. al, 2021).

Looking through these studies, it is essential to identify patterns and look at the gaps in seeing the impacts of covid-19 on nursing students. Fitzgerald & Konrad, 2021, Kerr, et. al 2020, and Huang et. al, 2020 all found that being female was associated with higher levels of stress or

anxiety. These are three different studies from three different countries. This prompts the question, why is being female correlated with higher levels of stress in nursing students?

Additional investigation should be conducted to indicate what factors may contribute to females having higher stress and anxiety. Kerr, et al, 2021 and Almhdawi et al., 2021 found that poor health contributed to higher levels of anxiety or depression. All four studies showed the need for addressing mental health in students, especially healthcare students during pandemics. The need for coping mechanisms and peer support was also evident throughout each study.

*McMullen, J.*

Stress is a common theme in published literature and spans across many subject areas. This literature review will look at the known impacts of some specific stressors which the authors faced as a result of virtual learning during the COVID-19 pandemic outbreak. One stressor that affected students in particular, was the increased amount of time spent looking at and operating a backlit, computerized screen. Two studies looked at the impacts of this change during the time period of the COVID-19 pandemic. The first focussed on the relationship between screen time in hours per day and the quality of sleep and dietary habits in a population of undergraduate college students. By composing a survey and analyzing the responses, researchers determined that the population studied had a mean screen time of between 4 and 9 hours per day, though 63.3% of the participants in the study group admitted to being consistently engaged in greater than 10 hours of screen time in a 24 hour period. Researchers also determined that screen time was negatively correlated with sleep duration, that is as screen time in hours increases, sleep duration, also in hours, decreases. The average span of sleep for this population was approximately five hours. (Saxena, et al., 2021). In addition to sleep duration, participants

were asked to state the length of time required to fall asleep, which for 36% of the group, was longer than 30 minutes. Authors of the investigation note that this could be in part due to the additional light which was consumed at night, thus decreasing the amount of sleep hormones secreted in the brain (Saxena, et al., 2021). Ultimately, data was insignificant as to whether increased screen time was related to changes in dietary habits and caloric consumption. This lack of conclusive result could be due, in part, to the fact that the experimental subjects were rated as overweight prior to engagement in the study (Saxena, et al., 2021).

Much of the general population understands that sleep has restorative benefits, on both the mind and body, and may also realize that sleep aids in forming memories and habits, or in other words, learning. For students, a common measurement of learning is the grade system, where a numerical or alphabetical value is placed onto an individual's performance, with higher scores equating to better overall performance. Thus, although the study above did not report on the impact of students' sleep duration on their grade values, I question if sleeping for a far shorter span than recommended would lead to significantly less-than-optimal academic performance. More specifically, this study may allude that increased screen time, a direct result of the virtual learning environment, consequential of the COVID-19 pandemic, has ultimately related to a decreased scholastic performance in collegiate students. Of course, further evidence is necessary to bring forth causation and aid in greater generalizability of these findings. Academic administrators and faculty should be aware of the above relationship in regards to screen time and academic performance, as well as the overall health of students, as more aspects of coursework, in both the collegiate level and surrounding stages of schooling, move increasingly towards online applications which require many hours of screen time.

The second study that sought to determine the effects of increased screen time focuses on school age children, especially between one and ten years. Researchers utilized a cross-sectional design to obtain information via a survey for 3,392 children. The goal was to “[assess] the effects of lockdown [due to the COVID-19 pandemic] on daily life, behaviors, relationships, technological devices, and distance learning experience” (Picca, et al., 2021, p. 3). Results of the survey demonstrated that the lockdown period affected children’s behavioral habits in healthy ways, while at the same time, encouraged negative, or unhealthy patterns. In regards to screen time specifically, 53.4% of children aged six to ten years tended to spend between two and three hours per day performing distance learning tasks online. 34.8% of the same population spent the same amount of time per day engaging in leisure activities via a computerized screen, while a larger portion, 38.7%, spent less than one hour per day participating in leisure tasks virtually (Picca, et al., 2021). Unfortunately researchers did not provide data on active screen time in this population prior to placement of COVID-19 lockdown protocols, but did note that parents rated children who engaged in increased screen time as having sleep habits that were negatively influenced (Picca, et al., 2021). For children aged one to five years, screen time per day in excess of two hours was related to increased attention disturbances (Picca, et al., 2021). The authors of the study conclude by noting that consistent and continuous surveillance of children’s utilization of computerized screens is necessary to prevent an excess use (Picca, et al., 2021).

Though the study report does provide valuable evidence, the use of this particular article in regards to the proposed PICOT question is limited. The authors did not take into account academic performance in this scenario, and additionally, the population of interest is different than university students. However, as the study group is made of such a large number of pupils, some generalizability is present, especially since results of the above two studies demonstrate

many similarities. Both studies represent the need for off-screen tasks, in many populations of students, especially during times of heightened amounts of virtual learning. As the uncertainty of how future courses will be conducted continues to expand, school administration and faculty need to be aware of the effects of screen time on students' health, especially in regards to aspects of health which contribute to and impact academic performance, as this is often a commonly published measure for many higher educational facilities.

Increased screen time is not the only added stressor students may have faced during the rapid transition to virtual learning in the onset of the COVID-19 pandemic. The sudden opportunity, but never-the-less heightened risk, to engage in academic dishonesty became prominent. Tolman (2017), describes this phenomenon as he states “that there is less (physical) contact with the professor and supervision of learning [in virtual course environments]; therefore, there is more opportunity to cheat” (p. 581). He continues on in his meta-analysis of comparative studies of the presence of cheating in online versus traditional face-to-face courses by describing one major root cause of academic dishonesty. The amount to which students believe that others are engaging in cheating behavior is predictive of their own likelihood to also become dishonest in the academic setting. He notes that while multiple researchers have supported this hypothesis, conclusive evidence as to the extent to which students feel cheating is present has not yet been published. More specifically, some authors have published studies quantifying this attitude from students, but multiple sources are ultimately contrasting (Tolman, 2017). Throughout his article, Tolman (2017) describes a few common causes of academic misconduct, including: the tolerance of cheating by faculty, unpreparedness of students in unannounced tests, which are unlikely to be included in virtual platforms, as well as the presence of academic success in students prior to enrolling in collegiate coursework. He

notes that although many believe that academic misconduct occurs more frequently in online courses than those held in person, this idea is fundamentally inaccurate. Furthering his stance, Tolamn (2017) states “the nature of online courses ... is less conducive” in allowing students to cheat, since there is greater flexibility to learn the material and students do not have the opportunity to perceive others as engaging in behaviors of misconduct in the virtual learning environment (p. 583).

Academic dishonesty has a major impact on students’ grades and is thus often a principal concern for learning institutions. Due to the unexpected and unfamiliar shift to an environment of near-solely online coursework as a result of the COVID-19 pandemic, students involved in this transition may have found themselves more acutely aware of the possibility of both engaging in academic dishonesty, as well as being falsely accused of such behaviors. The dilemma and decisions brought about by these concerns could have presented a greater impact on students’ academic performance than the actual act of cheating. By becoming engrossed in worrying thoughts, especially of this nature, college attendees may not have been able to focus on their coursework, thus affecting performance. Some students may have even intentionally performed worse than they had previously during more traditional face-to-face instruction, so that they would not come under scrutiny. Cheating may not have been the only gnawing anxiety faced by learners in this time, and with additional concerns, increased alterations in academic achievement becoming increasingly common, as stress is known to play a considerable role in performance.

Happiness could be said to be the opposite of stress, especially since both terms are often experienced uniquely between persons and lead to differing outcomes in regards to performance. Researchers from psychology institutes in the United States and Canada sought to determine the veracity of this statement through the lens of academic performance, specifically students’ GPAs,

as well as determining if a relationship was present between grade point average and hedonic and eudaimonic attitudes (Kryza-Lacombe, et al., 2019). Authors define the former idea of “hedonia” as motivational behaviors that lead to “pleasure and relaxation”, while eudaimonic attitudes are those that provide value to actions, or a sense of “meaning” (Kryza-Lacombe, et al., 2019, p. 1323). To ascertain the presence of a correlation, 119 undergraduate college students were asked to complete one Lickert scale rating themselves on the frequency of engaging in certain tasks, such as exploring new competencies and gaining knowledge, an example of eudaimonia, or performing leisure activities, which would be more closely related to hedonia. Participants were also asked to complete a second Likert scale in order to provide feedback regarding the presence of “negative emotional states” such as “depression, anxiety, and stress” (Kryza-Lacombe, et al., 2019, p. 1329). Authors of the study determined that multiple correlations between variables were present. However, the report first notes that hedonism and eudaimonism were found to have no correlation, which the investigators admit was predicted since the survey provided to students was designed to intentionally explore differences between these two attitudes. More notably, results of the analysis determined that a statistically significant, positive correlation existed between a eudaimonic attitude and GPA, such that as one increased, the latter tended to also increase. Study researchers also sought to determine if those participants who rated both hedonic and eudaimonic attitudes as being greater than the population mean, demonstrated significant correlation in GPA results. A false positive was found, indicating that a positive correlation existed between GPA and expression of both happiness perspectives, when in reality, this relationship actually did not occur. (Kryza-Lacombe, et al., 2019). Authors note that given the false positive result, this conclusion should be interpreted with caution. Interestingly, no other relationships were found to be significant (Kryza-Lacombe, et al., 2019).

Based on current literature, evidence shows that academic performance is heavily affected by emotional well being. Kryza-Lacombe, et al. (2019), provided further evidence of this connection with the results of their study depicting that students who have ambition to find a meaning in their lives tended to perform better overall in academic settings, compared to those who were motivated by activities of pleasure, those who had large amounts of desire for both meaning and pleasure, and those who demonstrated low levels of motivation for either character description. Additionally, emotional status tends to be correlated with other stressors, such as increased screen time and concerns of academic dishonesty, all of which can further disrupt students' academic performance. These interactions can, and often do, lead to a cycle of ever increasing stress, decreasing overall health, and changes in scholastic output. Lifestyle alterations due to the COVID-19 pandemic have most definitely introduced some students to this impactful cycle, but despite the presence of many, generally negative reactions, not all aspects of these dramatic changes are entirely harmful.

### **Section 3**

#### **Summary: Implications for the Future**

Previously throughout this analysis, by focussing on nursing and university students, specific impacts of the COVID-19 pandemic and the stress caused by these abrupt changes have been discussed. While navigating this period in time has been difficult, the outcomes, such as personal and professional successes and growth, will be long lasting and more valuable as the pandemic moves into the endemic phase. One specific example encompassing both personal and professional growth is the development and application of critical thinking. Said another way,

adaptive learning seems to be a critical component to the nursing profession. While the coronavirus pandemic certainly threw a wrench in our lives in multiple ways, it certainly provided plenty of opportunities to engage in adaptive learning. Throughout the pandemic our modes of education, socialization, and even our health care delivery have been changing. Things have changed at rapid rates, and sometimes it has been difficult to keep up with the rate. Nursing school is meant to prepare us when we go out into the healthcare world so that we can make adaptations through our critical thinking.

Although students had to shift from in person to online learning so unexpectedly in March of 2020 and the adjustment was difficult for so many, some students ultimately preferred or at least succeeded with the change as seen with students described in Chan et al., 2021 and Bdair, 2021. Part of critical thinking is the ability to apply knowledge or even the capacity to learn new things in settings that may be new or unfamiliar. In nursing school it is impossible to learn all of the potential patient care scenarios. As an experienced nurse, it is still impossible to be able to anticipate and know what to expect in every clinical situation. That is where prior experience, knowledge, and adaptive thinking skills allows the nurse to use clinical judgment in unique situations. Implementing critical thinking allows one to thrive even in the unknown. It may take a little bit of time and there is a learning curve as seen with nursing students moving to online learning, but in the end, it is clear that nursing students can do what is necessary to confront new challenges in a rational way that also takes into account life circumstances in an empathetic way.

In addition to the impact of this curious time on critical thinking, other areas of student life have also been affected. Since the COVID-19 pandemic is still ongoing, as is dissonance in the outcomes between online and in person courses, some amount of conclusive evidence is

unavailable. Primarily, the question remains if those who were students during the height of the pandemic are able to more effectively cope with stressors, and are more greatly prepared for symptoms of burn out, as compared to those who experienced little to no change in school structure. In regards to this, Babicka-Wirkus, et al. (2021), a group of researchers who published a study on coping methods in a population with a variety of age groups admits the useful reminder that “the main condition for appropriate functioning is to develop optimal strategies of coping with stress” (p. 18). Many researchers know that development and demonstration of any skill improves with continued practice, and by being exposed to a monumental stressor while still in a place of active learning and refinement of skills, university students attending school while navigating the COVID-19 pandemic likely have an improved ability to cope with stress and challenges throughout the lifespan. Another group of researchers, whose study on student responses to rapid changes in the schooling structure was discussed earlier in this essay, Gonzales-Ramirez, et al., (2021), point out the valuable opportunities and resources that colleges and educators have in order to help the student population cope with overwhelming stressors and feelings of burnout. The authors even go so far as to encourage those in power to actively provide and share these resources with students, since early, untreated feelings of exhaustion will affect one’s career path later in life, and can lead to drastically negative consequences, especially in fields of medicine. The ideas set forth by these researchers, and echoed by many others, can be put to the test in future years, as forthcoming studies could follow up with those who experienced the COVID-19 pandemic first hand. These additional research opportunities would be incredibly valuable, especially since control and interventional groups have been established through a naturally occurring phenomenon. Though the implications and expectations of tomorrow are yet unknown, the authors of this analysis have surely become strengthened and

have learned to adapt to the many changes, challenges, and stressors which have resulted from the COVID-19 pandemic.

Change is hard, and unexpected change is even harder, but as the idiom reminds us, forgetting your regrets, causes you to lose your wisdom. Although we often do not wish to make ourselves uncomfortable by bringing to light the actions we regret, this displeasure indicates our maturation and growth. In the case of the changes we have experienced, and continue to encounter, as a result of the COVID-19 pandemic, despite the times we may hope to forget, through a retrospective lens, there is surely wisdom to be gained, knowledge to learn, and memories to keep. For those of us fortunate enough, life still continues, we haven't given up, and the world hasn't ended. For those who will not have the opportunity to see the world move forward from the times of a global pandemic, we pause to remember your legacy, and take with us the many values you have shared. We may not return to what was normal before the effects of the pandemic, but we will surely move forward with new understanding, to make the future brighter, healthier, and be more prepared for the unexpected.

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