FACTORS INFLUENCING STUDENT PERSISTENCE IN ONLINE COURSES DURING THE PANDEMIC: A MIXED-METHODS STUDY

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ABSTRACT

The sudden onset of the Pandemic due to COVID-19 required universities to quickly transfer face-to-face courses to the online learning environment. Many students found this new learning environment stressful and struggled to successfully complete course work. To identify factors that may have allowed students to succeed, a research study was conducted using a mixed methods design to elicit both quantitative and qualitative data with a focus on impact of the pandemic, impact of broadband access, perceived stress and persistence of students, and grit scores. The findings from this study may help guide future online course development.

Keywords: *student success, Pandemic, online learning, perceived stress, persistence, grit*

Graduate students report experiencing high levels of stress, which can negatively impact their academic performance (Wang & Zhao, 2020). The pandemic has added an additional layer of stress to students, especially for those that are healthcare professionals working on the front lines. While many programs are already delivered online, face-to-face graduate programs were forced to rapidly transition from in-person instruction to remote instruction. According to Chirikov and Kizilces (2020), many universities plan to continue remote learning through the 2021 school year. Due to the rapid transition from in-person to online instruction, it is imperative to understand the factors impacting student success and to utilize this knowledge to create and implement effective online courses in the future. A research study was conducted with graduate students at a university on the east coast to investigate possible factors that may have impacted student persistence in online course work during the pandemic and identify strategies to better support students.

BACKGROUND

The research study was conducted on graduate students and focused on five areas of interest which included the impact of the pandemic, impact of broadband access, perceived stress and persistence of students, and grit scores. Each of these areas will be discussed individually.

The Pandemic

The COVID-19 pandemic thrust individuals across the globe into a state of fear and uncertainty. In the United States, much like across the world, critical decisions were made in many cities and states to mitigate the spread of the virus. These decisions, in the form of societal mandates, instituted the use of face masks, social distancing measures, and stay-at-home orders. Non-essential businesses were forced to close or alter their business models to adhere to these recommendations, requiring many employees to work from home. In addition, schools at all educational levels pivoted to online learning transforming the teaching and learning process to one highly dependent on digital technology. While these decisions were made with the health and safety of the public in mind, the loss of routine and the resulting sense of security led to increased levels of panic and stress (Bakioglu et al., 2020; Wang & Zhao, 2020). Without a clear end date for this altered state of living and a recent spike in COVID-19 cases across the country, these negative feelings persist, compromising one's ability to manage these daily stressors.

For college students, the challenges during this time are quite complex. Competing priorities in their personal and professional lives, particularly for those in graduate and doctoral programs, are further complicated by the pandemic (Bal et al., 2020). Balancing these responsibilities with those that come with being a student has caused many to consider this population a vulnerable one in society (Wang & Zhao, 2020). Students report that stress and anxiety levels have increased as a result of the pandemic (Wang & Zhao, 2020). One of the greatest contributing factors to this was related to their education. Students reported having difficulty concentrating, as well as increased fears about their academic success and progression. Additional concerns about health and subsequent lifestyle changes due to COVID-19 related restrictions were also noted (Wang & Zhao, 2020). According to the Student Experience in the Research University (SERU, 2021) Consortium, depression and anxiety rates in graduate students have risen twofold since this time last year. Of those reporting these symptoms, the highest incidence rates are among those expressing difficulty adjusting to the remote learning environment (Chirkov et al, 2020). It is unclear if this strain is due to the increased demands placed on students at this time, or to the unexpected transition from face-to-face to remote instruction.

Impact of Broadband Internet Access

Along with the stress from the unexpected transition to remote instruction, many students were affected by the "digital divide." The term digital divide refers to differences among segments of the population related to access to the Internet and other key technologies (Haan, 2004). In 2004, Chen and Wellman described the digital divide as the "…gap between individuals (and societies) that have the resources to participate in the information era and those that do not" (p. 40). For over 16 years we have been discussing the impact of the digital divide and possible resolutions; unfortunately, the divide still exists in 2021. When the pandemic forced most universities to move to fully online, remote learning, many students were faced with the barrier of no Broadband Internet in their geographic location. According to Romm (2020), the disruptions wrought by the novel coronavirus have exacerbated those pre-existing digital woes, raising the question of whether the United States (U.S.) government and the telecom industry should have done more to cure the country's digital divide—well before a pandemic gripped the nation. According to the Federal Communications Commission's latest data, more than 21 million Americans do not have access to Broadband Internet (2020).

Due to these staggering statistics, the impact of slow Internet speeds on student success and stress levels were included in the study to identify barriers students may have faced as they studied remotely.

Perceived Stress and Persistence

As stated by Wang and Zhao, stress levels escalated during the pandemic due to work and family responsibilities, illness, and the rapid transition to remote learning (2020). The American Institute of Stress defined stress as "a condition or feeling experienced when a person perceives that demands exceed the personal and social resources the individual is able to mobilize" (2018, para. 2). Surveys have found that college students experience higher than average stress rates, which can have a negative impact on their academic performance (ACHA, 2017). Ultimately, stress can cause an increase in mind wandering, leading to a decrease in attention (Crosswell et al., 2020), making it challenging for students to focus on their coursework, even before the challenges imposed by the pandemic. The impact of perceived stress can lead to poor academic performance and non-completion of coursework, which is expensive not only for the student but also for the educational institutions (Boone et al., 2020; Yang et al., 2017).

The pandemic, racial inequities in the United States, and political unrest have heightened the stress college students are feeling. The American Psychological Association conducted a Stress in America 2020 Survey and found that nearly 78% of Americans feel that the pandemic has increased their level of stress. The highest level of heightened stress was reported by Gen Z adults (18-23). They report that the constant changes and uncertainty make planning for their future feel impossible. It is important to note that this survey measured levels of perceived stress. Perceived stress is defined as how an individual feels about stressful events in their life. This is important, as research shows that it is the level of perceived stress that impacts an individual's health, rather than the level of objective stress (Epel et al., 2018).

Persistence also plays an important role in perceived stress. Persistence in higher education can be defined as enrollment in one quarter to the next despite the presence of barriers (Holder, 2007). Research on persistence has found that one common reason graduate students do not persist is that they are unable to successfully balance the demands of work, school, and family (Bawa, 2016; Sorensen & Donovan, 2017). Another reason that students do not continue their studies is that they were not provided with institutional support to identify strategies to balance work and life demands (Sorensen & Donovan, 2017). Research by Yang et al. (2017) identified individual and program attributes that contributed to persistence in completing master level online coursework. All participants of the study identified at least one of the six individual attributes that contributed to their success. Individual attributes included a sense of accomplishment, a mastery of specific skills, perceived utility of learning, meeting career goals, displaying an interest in technology, and the amount of time and effort required.

The program attributes included the relevancy of the program or course to individual or professional needs; satisfaction with courses, program, and learning outcomes; institutional support; and the program tied to job promotion or additional responsibility. Participants identified the most important program attribute that contributed to student persistence was the relevancy of the program to individual or professional needs. These attributes are important considerations as students deal with current events including the pandemic, political unrest, and racial inequities, which have presented unprecedented barriers for students (Office of Civil Rights, 2021), making balancing these various demands of life even more challenging.

Grit

The last area of focus in the study was grit. According to Al-Zain and Abdulsalam (2021), grit is described as the persistent effort to continue regardless of the challenges. Duckworth described a "gritty" individual as someone who treats their success and achievement as a marathon, rather than a sprint (Duckworth et al., 2007, pp. 1087-1088). It is directly related to student engagement and academic achievement and is not necessarily related to the intelligence level of the student (Al-Zain & Abdulsalam, 2021; Duckworth et al., 2007). Intelligence is not enough to achieve goals, particularly long-term ones where perseverance is required. It is also important to note that grit is not a personality trait since it varies over time (West et al., 2016).

Measuring grit levels has shown to be beneficial in supporting student success by identifying students who are at greater risk and providing counseling and support in overcoming challenges that the student(s) may face (Ali & Rahman, 2012; Duckworth & Quinn, 2009; Sigmundsson et al., 2020). There are many published findings on the impact of grit within specific demographics. For example, certain individuals were more likely to develop grit and persevere through difficult situations. Research posited that grit may correlate with gender (Flaming & Granato, 2017), with females scoring higher in grit than their male counterparts (Aswini & Amrita, 2017; Christensen & Knezek, 2014; Jaeger et al., 2010). Grit has been linked to academic success and achievement, academic productivity and engagement, academic motivation and academic achievement (Eskreis-Winkler et al., 2014; Pate et al., 2017). It is therefore worthwhile to investigate the impact grit scores may have on student success in the online learning environment.

METHOD

Setting and Design

The setting for the study was a university in the eastern United States. Cognitive Learning Theory (CLT) was used as the framework for the study. CLT is defined as the understanding of how the mind works during learning with a focus on how information is processed and what factors impact the processing of this information. The theory suggests that the learner is an active participant in the learning process and brings skills, knowledge, and experience from the past that provide a foundation for success (Huitt & Hummel, 2003).

The research questions utilized to guide the study were as follows:

1. What factors impacted online graduate students' academic success or persistence during the COVID-19 Pandemic?
2. What is the relationship between online graduate students' levels of grit, perceived stress, and perceived persistence during the Pandemic?

A mixed methods design was used to elicit both quantitative and qualitative data. According to Tashakkori and Creswell, a mixed methods design increases the depth of understanding of the findings and decreases bias from either method when used alone (2007).

PARTICIPANTS AND DATA COLLECTION

Online students from a graduate program completed a survey with questions based on the five areas of interest identified previously. The survey was housed in Qualtrics and included Likert-type questions from the 8-item Grit Scale developed by Duckworth et al. (2009) and the Perceived Stress Scale (PSS) by Cohen (1983). The PSS is the most widely used psychological instrument for measuring the perception of stress. In addition, open-ended qualitative questions on persistence were included in the survey. The survey began with demographic questions such as age range, gender, experience with online learning, level in program, program of study, and access to Broadband Internet. A convenience sampling was utilized of students already enrolled in graduate courses. The students received a description of the study and permission was acquired at the beginning of the survey. Students could opt out of completing the survey once the survey link was accessed.

RESULTS

Study Sample

A total of 124 graduate nursing students completed the survey. Most of the participants were female (95%) and fell in the age range of 23-39 (62%). Almost all participants (88%) took at least two courses prior to taking the survey for this study. See Table 1 for the demographics of the sample.

Table 1 Demographic Data (N=124)

Courses Complete Prior to Survey		
0	7	6%
1	8	6%
2 to 4	52	42%
>5	56	46%
Age		
23-29	39	31%
30-39	38	31%
40-49	23	19%
50-59	21	17%
60 or older	2	2%
Prefer not to say	1	1%
Gender		
Female	118	95%
Male	6	5%

QUANTITATIVE RESULTS

Descriptive and inferential statistics were used to analyze the quantitative results from the survey. Participants were asked if the pandemic had any negative impact on their academic progression or success. Most notably, over half of the participants (66%) reported that the pandemic made it more difficult to handle the demands of graduate school, 19% of the students reported lower than expected grades, and 17% of the students had to take a quarter off from school. See Table 2 for responses describing the impact of the pandemic.

Table 2 Impact of the Pandemic on Academic Success and Progression (N=124)

More Difficult to Handle Demands of School		
Yes	66	53%
No	58	47%
Withdrew from Course		
Yes	9	7%
No	115	93%
Lower Grades During the Pandemic		
Yes	24	19%
No	100	81%
Unsuccessful in a Course		
Yes	8	6%
No	116	94%
Quarter Off		
Yes	21	17%
No	103	83%

As part of the survey, participants also completed the Grit Scale (Duckworth, 2009) and the Perceived Stress Scale (Cohen, 1983). For the Grit Scale, scores range from 1 (low grit) to 5 (high grit). Overall, the mean grit score for all participants was 3.83. For the Perceived Stress Scale, scores range from 0 (low perceived stress) to 40 (high perceived stress). The mean perceived stress score for all participants was 19.24. To analyze the correlation between grit and perceived stress, Pearson Correlation was utilized. The correlation between levels of perceived tress and grit was -0.170. While this was a small negative result, it did illustrate that increased levels of perceived stress correlated with decreased levels of grit.

Independent t-tests were then utilized to see if students who reported academic challenges as a result of the pandemic had significantly higher or lower levels of perceived stress or grit. Grit scores were not significantly different for the challenges included in this survey (listed in Table 2). Levels of perceived stress were higher amongst the students that reported experiencing those challenges. Two statistically significant results were identified. First, levels of perceived stress in students who reported that during the pandemic they found it more difficult to manage the demands of school ($M = 22.28$, SD 6.03) were significantly higher compared with levels of perceived stress in students who did not report more difficulty in handling the demands of school ($M = 15.67$, $SD = 5.6$); $t(122) = -6.387$, $p < .001$, two tailed. Second, levels of perceived stress in students who reported getting lower grades ($M = 25$, $SD = 6.8$) were significantly higher compared with levels of perceived stress in students who did not report lower grades ($M = 17.86$, $SD = 5.94$); $t(122) = -5.141$, $p < .001$, two-tailed. Ultimately, students who reported experiencing challenges as a result of the pandemic had higher levels of perceived stress and found it more difficult to handle the demands of school. Furthermore, the students who received lower than expected grades had statistically significant higher levels of perceived stress.

QUALITATIVE RESULTS

Throughout the survey, students were given the opportunity to provide written comments regarding their experiences. The students in this study were all graduate nursing students and therefore, many were working on the front lines. The comments were all consistent with the theme that balancing work, family, and school was incredibly challenging given the added stress of the pandemic. Ultimately, many students' physical and mental status suffered as a result of trying to balance them all. Several quotes that highlight this theme are as follows:

> "The stress level overall was higher, it was even harder to leave work at work, and not feel defeated when I came home, leading to having no energy or drive to get schoolwork done."

> "Dealing with COVID at work and the stress of the pandemic and then trying to balance school with that was incredibly challenging. I was still able to achieve the grades I wanted but at the expense of my mental health and wellbeing."

> "Work has been more demanding throughout the pandemic, therefore taking a physical and mental toll. It has been challenging keeping up with demands of school due to physical and mental exhaustion stemming from work."

> "I saw more death and bagged more people in the last year alone than my eight total years as an ICU nurse. Enough said."

DISCUSSION

The current study was conducted to determine the factors that impacted students' persistence in online courses during the COVID-19 pandemic. The study also aimed to explore the relationship between students' levels of grit and perceived stress with their overall persistence in their online coursework. The findings from the research revealed a correlation between students' perceived level of stress and their ability to manage academic demands. Students demonstrating increased stress levels, also reported a decrease in their earned course grades. While the majority of students in the study did not adjust their credit load or fail a course in their online program during the pandemic, concern over grades has been shown to be a consistent source of academic stress (Wang & Zhao, 2020).

Previous research shows that college students, in general, experience higher than average stress rates (ACHA, 2018). The COVID-19 pandemic exacerbated these stress levels in students. Graduate students, particularly, struggle to balance their personal, professional, and student responsibilities (Bal et al., 2020). Students in this study identified the biggest challenges faced during the pandemic were related to work, stress, and family issues. As nurses, many were working longer shifts and accruing overtime each week due to staffing needs in their hospitals. Children and other family members were all learning and working from home. This added the additional burden of assisting young children with their remote learning needs, while also limiting the time and space available for participants to work on their own coursework. These factors are consistent with those identified in research conducted by Wang and Zhao (2020). However, students in this study ranked their professional work as their greatest source of stress affecting their ability to fully engage with and concentrate on their online coursework. Unlike some of the participants surveyed by Wang and Zhao, (2020), students in this survey did not experience a transition or disruption in the course delivery format, since all students in this study were enrolled in an online graduate program with the majority completing a minimum of two online courses prior to participating in the study. As for the impact of Broadband Internet access, while an estimated 21 million Americans do not have access to Broadband Internet (FCC, 2020), there were no identified barriers related to access in this study.

A noteworthy finding in the study was the inverse relationship between students' levels of perceived stress and grit. Students with a higher perceived stress level were shown to have a lower grit level. Grit is considered a trait separate from one's cognitive ability (Kannangara et al., 2018), yet found to have a direct impact on one's academic success and achievement (Hodge et al., 2018; Pate et al., 2017) and academic motivation (Eskreis-Winkler et al., 2014). Although research indicates grit increases with age, it is also a characteristic educators can work to strengthen in students to enhance their academic success. Grit encompasses more than talent or intellectual ability. An individual's grit involves the effort, passion, and persistence one extends to achieve long-term goals when faced with challenges or obstacles (Bashant, 2014; Duckworth et al., 2007). Recognizing the relationship between grit and persistence, educators and universities, at large, can institute measures to strengthen the grit levels in students to optimize their success in the online learning environment.

IMPLICATIONS

The COVID-19 pandemic has challenged educators and students alike. Students report increased levels of stress, which directly impacts their academic engagement and success. Stress-inducing factors may be perceived differently among individuals (The American Institute of Stress, 2020). Regardless of the cause, high levels of self-reported stress are shown to negatively affect the physical, mental, and emotional well-being of students in higher education compromising their quality of life (Ribeiro et al., 2018). Recognizing the devastating impact stress has on students' overall welfare, university-wide measures of support are needed for students and educators alike. Offering student-centered support in online programs poses challenges, however, it is not impossible. Universities must adopt a holistic approach to assist students in caring for the whole person such as providing telehealth and counseling appointments with flexible scheduling including off-hour services. Additional strategies include stressing work/life balance and self-care.

When implementing services to support the students holistically, faculty must keep in mind that online graduate students often find that having to balance family, work, and school is one of the biggest causes of their increased levels of stress and inability to focus on coursework (Murphy, 2020). Therefore, the self-care resources that are offered to students need to be value-added rather than simply additional work for students. One study found that a free, self-paced, open-access mindfulness course without formally assigned meditations resulted in decreased levels of perceived stress amongst online graduate students after the students completed the first module (Murphy, 2020; Murphy, 2021). Providing on-demand, free resources to students may be a way to support them holistically so they can successfully balance work, school, and family while also achieving success in their graduate program. Flexible course policies regarding attendance and lateness may also enhance students' ability to balance their various responsibilities. By embracing these measures, faculty can enhance students' grit levels and strengthen their persistence in meeting the demands of their academic coursework. According to Duckworth et al. (2007), successful people stick with their long-term goals instead of getting distracted and keep showing up, even when it's difficult**.**

LIMITATIONS

Within this study exist several limitations that may restrict the generalization of the research findings. To begin, the sample population consisted of only graduate-level students from one university. In addition, most of the students that completed the survey identified as female. To better represent the current population of online students and generate more reliable research findings, future studies could extend the pool of participants to other online universities, including both graduate and undergraduate students, to garner greater diversity in age, gender, culture, and socioeconomic backgrounds.

Two areas of potential bias that exist in this study are the gender and age of the participants. As mentioned previously, the majority of participants were female. The age range of participants revealed that close to 70% of participants were thirty years of age or older. Research indicates that grit scores tend to be higher in females (Flaming & Granato, 2017) and increase with age (Flaming & Granato, 2017; Kannangara et al., 2018). These findings may lead to unintentional inflation of grit scores among this sample population. However, an interesting area to explore for future research is the grit level of students that seek online studies for their undergraduate or graduate education to determine, if at baseline, these levels are higher among online students, leading to a greater level of persistence.

While the research from this study provides insight into the impact students' levels of grit and perceived stress had on their academic success and persistence in online learning during the COVID-19 pandemic, one compounding variable that was not addressed in this study is the participants' current place of employment. All participants in this study were graduate-level nursing students. However, specific questions related to their professional role and/or responsibilities were not included in the survey. Since all participants were nurses, the likelihood is greater that many participants may be working on the frontlines of the pandemic, increasing their levels of perceived stress. This is a noteworthy area of future research to determine the impact the COVID-19 pandemic had on the academic success and motivation of frontline healthcare professionals.

CONCLUSION

The pandemic has led to a multitude of disruptions in the lives of individuals thrust into a state of uncertainty. This loss of routine and sense of insecurity led to increased levels of panic and stress in college students who faced competing priorities between personal, professional, and educational roles and responsibilities (Bal et al., 2020). The purpose of this research study was to survey graduate students enrolled in remote learning to determine the factors that impacted students' persistence during the COVID-19 pandemic. The study aimed to explore the relationship between students' level of grit, perceived stress, and persistence in their online coursework. The findings revealed a correlation between students' perceived level of stress and their ability to manage academic demands. Furthermore, students with higher perceived stress levels were shown to have a lower grit level.

Past research has shown grit levels to be separate from one's cognitive ability, yet has a direct impact on academic success, achievement, and motivation (Eskreis-Winklet et al., 2014; Hodge et al., 2018; Kannangara et al., 2018; Pate et al., 2017). Although research indicates grit increases with age, it is also a characteristic educators can strengthen in students to enhance their academic success and persistence. By researching the factors that impacted students' academic success, a stronger, more supportive online learning environment can be created.

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