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Stress Among Undergraduate Distance Learners: A Cross-Sectional Study

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Dissertation Submitted in Partial Fulfillment

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Abstract

There are many changes undergraduate students face when they transition to the college environment, including vacations and an increase in academic workload. Past research has found that both gender and year of study impact level and sources of stress in undergraduate students who attend traditional brick and mortar institutions. However, the relationship between gender, year of study, and stress levels in undergraduate distance learners has not been well studied. Based on the cognitive theory of emotions, this quantitative study examined what undergraduate distance learners perceive as stressful, whether or not gender and year of study impacted these stressors and whether or not there was an interaction between gender and year of study. The Higher Education Stress Inventory (HESI) and a demographic questionnaire were administered to undergraduate students enrolled in distance education (USEDE) who were in Year 1 or Year 4 of their program ($N = 321$). A 2-way analysis of variance was used to examine the overall stress levels among USEDE in Year 1 or Year 4 of their programs, gender difference effects on stress levels, and the interaction between year of study and gender. No statistical differences were found in overall stress levels between USEDE who were in Year 1 and USEDE who were in Year 4 of their programs ($F(1,84) = .679$, $p = 0.410$, $\eta^2 < .001$). There was no interaction between year of study and gender ($F(1, 317) = 0.187$, $p = .666$, $\eta^2 < .001$). There was a statistical difference between overall stress scores between males and females USEDE ($F(1,84) = 31.442$, $p < .001$, $\eta^2 = .09$). This study contributes to the field of higher education by providing details around what USEDE perceive as causes of stress, as reported on the HESI, and will bring about a level of awareness among staff, administration, and distance education students.

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Chapter 1: Introduction to the Study

Introduction

There are currently more Americans who are connected to the Internet than ever before. In the United States, nearly 76% of all households in 2011 reported having a computer, in comparison to only 8.2% in 1984 (United States Census Bureau, 2013). In addition, 71.7% of all households reported having access to the internet in 2011, in comparison to only 18.0% in 1997 (United States Census Bureau, 2013). With the rapid rise of the use and availability of the Internet, the utilization of distance education has also increased (U.S. Department of Education, National Center for Education Statistics (NCES), 2011).

Multiple researchers have studied the relationship between stress and students who attend traditional learning environments (e.g., Abouserie, 1994; D'Zurilla & Sheedy, 1991). Within the last 10 years, research regarding distance learning has increased (e.g., Boling, Hough, Krinsky, Saleem, & Stevens, 2012; Ramos & Borte, 2012). However, there have only been a limited number of reserachers who have looked at the relationship between stress and undergraduates who attend distance classes specifically. This study will help bridge the gap and examine undergraduate students enrolled in distance education (USEDE) and the specific stressors that they face and how different stages of education may impact this relationship. This study has important social implications from the standpoint of universities who provide and deliver distance education classes to their students and distance education themselves. An increase of awareness of distance students and the specific stressors that they face will allow for universities to offer tailored supports to its students and allow for

distance education students to increase their awareness of their own stressors and times of heightened risk so they can more effectively manage their stress.

This introduction to the study begins with a section describing the background of the study. Subsections include problem statement, purpose of study, research questions and hypotheses, theoretical framework for the study, nature of the study, definition of the terms, assumptions of the study, scope and delimitations, and summary.

Background

Distance education offers its students numerous benefits as it allows for knowledge and information to be exchanged quickly. Distance education and programs offers its students flexible learning opportunities as they can include live video conferencing, audio, webcasts, pre-recorded videos, the exchange of written information, and connected through the internet (NCES, 2011). However, this new form of education poses a new concern for its students.

Distance education arose as an answer to the need to provide access and services to individuals who would otherwise not have the opportunity to partake in face-to-face classes (Beldarrain, 2006). Distance education has evolved in its delivery from independent study, instruction that was computer based, video conferencing, web-based instruction, and online learning (Beldarrain, 2006). Technology has played a key part in shifting the delivery mechanisms that are available in distance education today. Technology is the key that allows learners to access education from nearly any place in the world at any time (Beldarrain, 2006). Emerging technology now also allows for the establishment of synchronous and asynchronous learning through the

use of the internet (Beldarrain, 2006). As technology continues to evolve, so does the opportunity for educators to foster collaboration and interaction among learners but also offers stressors online students must face and cope with.

Student Interaction

Researchers have examined how much interaction distance classes should provide for its students (e.g., Berge, 1999; Garrison & Cleveland-Innes, 2005). Interaction has been seen as a crucial ingredient for the success of students; it has been argued that even children can develop much more quickly and gain more advanced understanding during their interactions with other individuals, especially with those who are more experienced (Jarvis, 2005). It has been indeed found that when distance education learners perceive their interaction levels to be high, they are more pleased with instruction compared to when they there was a perceived low level of interaction (Fulford & Zhang, 1993). Interaction then can impact a learner's satisfaction (Fulford & Zhang, 1993).

With technology continuing to evolve, so does the opportunity for a learner's interaction with their instructor. New applications are continuing to be created to allow interactions to be taken to the next level. For example, social media, such as YouTube, allows professors to play video clips without setting up any devices or carrying around discs and allows students to review the same video after class (Wankel, Marovich, & Stanaityte, 2010). Video blogs can be created by professors can be shared with their students who can then watch and replay then as many time as desired (Wankel et al., 2010). As educators continue to acknowledge the necessity to foster social interaction, teaching models will emerge that integrate new technologies

that are available (Beldarrain, 2006). Through this integration, students then can have more control over their own learning, potentially providing a more effective delivery of instruction. The possibilities that are available are as wide and varied as the tools themselves (Beldarrain, 2006). However, how to best facilitate this interaction between teacher and student will require a balance between what learners want and need and what distance education programs can implement to ensure quality instruction is not compromised (Beldarrain, 2006). As distance education continues to evolve, challenges will be faced in meeting the needs to such a diverse population.

Distance Learners

The flexibility that distance education offers has been suggested as possibly helpful in encouraging individuals with various obligations, such as work and family, to pursue and finish postsecondary credentials (Kolowich, 2010). Distance education can be seen by numerous students as a key ingredient to boosting their professional prospects while still maintaining and upholding their other responsibilities. During the academic year of 2007-2008, 20% of all undergraduate students had taken at least one of their classes though distance education (Radford & Weko, 2011). This number had grown from 8% found in the academic year of 1999-2000 (Radford & Weko, 2011). Flexibility and convenience have been identified as two critical factors for students enrolling in online courses (Simonson & Schlosser, 2009). Flexibility and other responsibilities, such as work and family, make the characteristics that distance education provides very desirable.

Acceptance of Distance Education

Online education provides the opportunity to broaden the world in numerous ways, allowing access and opportunities to learners who many not otherwise be given the opportunity. However, resistance to new ideas and practices have been prevalent to higher education and it is only natural that new and non-traditional service deliveries are first met with trepidation and if successful, met with acceptance. Adams and DeFleur (2005) accessed the acceptability of job candidate's credentials that included online coursework. It was found that hiring committee chairpersons preferred applicants who acquired degrees through a traditional institution over applicants with an online degree.

The acceptance of online education and degrees is slowly changing. Guendoo (2008) found that individuals with online PhD's who are seeking a faculty position have a better chance of being hired by a community college when compared to other colleges or universities. Administrators of some of the largest community colleges in the United States reported that they would be receptive to hiring individuals who hold online doctorates, as long as they also possessed teaching experience, publications, presentations, and demonstrated professional service (Guendoo, 2008). In fact, 89.2% of the community college administrators reported that they did not view online doctoral credentials as unfavourable to the credibility of the applicant (Guendoo, 2008). Some possible explanations to this include that community colleges may be less resistant to change as they too are a relatively recent fixture in the higher education system and are not as immersed in tradition and convention (Guendoo, 2008).

Another explanation given was that a primary goal of community colleges is access to higher education and distance education provides program delivery with cost efficiencies. Lastly, community colleges typically specialize in lower-level higher education preparation and short-term preparation; they then may not be as discriminating in their selection of doctoral candidates since a master's degree has generally been the minimum academic qualification needed to instruct at this level (Guendoo, 2008). Small steps are being taken and the acceptance of online education is growing and changing.

Number of Online Programs

The first distance learning program that was offered in the United States began in the 1800s when the postal system delivered teaching lessons and texts to learners in rural areas to attain skills that were currently not being taught in public institutions (McGorry, 2003). Although not a new phenomenon, distance education has greatly grown from its humble beginnings. Today, the majority of postsecondary institutions that grant 2 year and 4 year degrees now offer online, hybrid, or blended online distance education classes (Parsad & Lewis, 2008). In the academic year of 2006-2007, 66% of all institutions offered such classes (Parsad & Lewis, 2008). Online courses had the highest enrollment, with 77% of distance education enrollments being in online courses (Parsad & Lewis, 2008). Asynchronous Internet based technology, where individuals access educational materials independently and at their own pace, were reported as the most commonly used technology for the distance education classes delivery (Parsad & Lewis, 2008). The postsecondary market in online education is $240 billion and is nearly one third of United States spending on

education (Vrasidas & Glass, 2002). Distance higher education has grown and is continuing to grow; however, research in this area, especially in relation to stress, is still needed.

There has been a trend amongst college students where there is an increase in levels of stress (Sax, 1997). There are numerous sources of stress for this population that can include changes in sleeping habits, changes in eating habits, vacations and breaks, new duties, and increases in academic workload (Ross, Niebling, & Heckert, 1999). Levels and sources of stress can be dependent on where a student is in their academic career. For example, it has been found that an increasing level of stress is experienced by nursing students as they progress in their program (Deary, Watson, & Hogston, 2003). Edwards, Burnard, Bennett, and Hebden (2010) found that self-reported stress was at the highest at the beginning of the third year for nursing students. Where a student is in their academic career and journey then can impact the level and severity of stress.

An abundant amount of research has been completed that has concentrated on stress and traditional learning settings, where learning and teaching occurs in a face-to-face setting. For example, Hudd et al. (2000) found that stressed students are not as likely to take part in health behaviours and are more likely to engage in bad habits, such as consuming junk food. In addition, they also found that students under larger amounts of stress displayed poorer levels of self-esteem and had reduced perceptions of their health status. Park, Armeli, and Tennen (2004) examined whether or not students consumed more alcohol on days of higher stress when compared to lower stress days. They found that students did indeed drink more alcohol on days that had

situations that were perceived as comparatively more stressful. It was also found that students consumed more alcohol on days where there was less utilization of problem focused coping (Park et al., 2004).

Wichianson, Bughi, Unger, Spruijt-Metz, and Nguyen-Rodriguez (2009) examined the relationship between coping, perceived stress, and night-eating syndrome in college students. It was found that there were substantial correlations between perceived stress and night-eating syndrome. Noteworthy correlations were also found between perceived stress and maladaptive coping and maladaptive coping and night-eating syndrome (Wichianson et al., 2009). It was found that individuals who felt more stress and employed coping that were less adaptive were more prone to display night-eating behaviors compared to individuals who utilized more adaptive coping. With rising enrollment in distance education, identifying and coping with stress can be difficult for distance education students and schools. An ample amount of research has been conducted that has examined the relationship between stress and traditional learning settings; the relationship between stress and online learning has not been as well studied, however. With all the information known about stress and students and traditional learning students (e.g., Wichianson et al., 2009), it is necessary to know whether or not such information is applicable to distance education students as well, especially as enrollment in distance education continues to rise (Parsad & Lewis, 2008).

Problem Statement

With enrollment in distance education rising, identifying and coping with stress can be challenging for distance education students and schools. Stress has been

found to be a major factor of participation in health behaviours (Hudd et al., 2000), academic performance (Stewart, Lam, Betson, Wong, & Wong, 1999), and overall life satisfaction (Chang, 1998). The research problem addressed the types stressors USEDE face and whether or not year of study and gender impact levels of stress. Year of study and gender were independent variables. Levels of stress, measured by the Higher Education Stress Inventory (HESI) was the dependent variable.

Purpose of the Study

The purpose of this cross sectional study was: (a) to examine the connection between stress and year of study in undergraduate students enrolled in distance education, (b) to examine whether or not gender affects levels of stress in USEDE, and (c) to examine if there is an interaction between year of study and gender.

Research Questions and Hypotheses

The research was designed to answer the following questions:

1. Based on the HESI, are there differences in overall stress levels evident in USEDE who are in Year 1 of their program and USEDE who are in Year 4 of their program?

   $H_0$1: There are no significant differences in stress scores in among USEDE who are in Year 1 compared to USEDE who are in Year 4.

   H_A1: There is a significant difference in stress scores among USEDE who are in Year 1 compared to USEDE who are in Year 4.

2. Based on the HESI, do gender differences affect levels of stress in USEDE?

   $H_0$2: Gender does not affect levels of stress in USEDE.

H_A2: Gender does affect levels of stress in USEDE.

3. Based on the HESI, is there an interaction between year of study and gender?

   $H_0 3$: There is no interaction between year of study and gender.

   $H_A 3$: There is an interaction between year of study and gender.

Theoretical Framework for the Study

In building a knowledge base regarding USEDE requires a more solid understanding of the variables (e.g., stress) that influence their behavior and success in the school setting. The term *stress* is very closely associated to Selye (1956) who first defined stress as the body's nonspecific response to any demand characterized that is placed upon it. According to Selye, every individual encompasses an alarm reaction, a stage of resistance, and a stage of exhaustion; every individual then only has a limited amount of resources that they could use in order to control stress. Selye argued that exactly how rapidly an individual uses their resources and how they adapt to stress can be dependent on a variety of different things, including hereditary and external conditions. The feeling of stress is individualistic and the exact same stressor can impact different individuals in different ways.

Attending higher education through distance learning can be potentially very stressful (Ramos & Borte, 2012; Capdeferro & Romero, 2012). Stress is an emotion that is experienced based on a cognitive appraisal an individual completes (Roeckelein, 2006). This appraisal consists of an individual's interpretation of the potential stressor that they are faced with so this appraisal can differ greatly from individual to individual (Hojat, Gonnelle, Erdman, & Vogel, 2003). An individual's

appraisal then can alter the subsequent emotion that they experience (Roeckelein, 2006). This appraisal can be either positive or negative. Stress can involve psychological, behavioral, and psychological symptoms (Furnham, 2005). If experienced negatively, stress can impact a student's academic performance (Stewart et al., 1999) and their overall life satisfaction (Chang, 1998).

Nature of the Study

Quantitative research is an empirical method that is used to collect data in numeric form (Creswell, 2014). A quantitative research method is often selected when the goal of the research is to measure variables, generally using instruments, so that numbered data can be analyzed using statically procedures (Creswell, 2014), as is the case in this present study. The independent variables for this study are year of study and gender. The dependent variable was overall stress scores on the Higher Education Stress Inventory (HESI).

Definition of Terms

For the purpose of this study, the following variables are conceptually and operationally defined.

Distance education: Learning that takes place in a context whereby students are separated from their instructors and generally from each other for a course or instructional program (Moller & Huett, 2012).

Stress: A disruptive force, whether good or bad, that impacts the homeostatic balance of an individual that activates regulatory coping mechanisms that try to restore homeostasis (Steckler, Kalin, & Reul, 2005). This variable will be measured using the HESI.

Types of stress: An event, situation, or cognition that may possibly induce a negative emotion in an individual (Drenth, Thierry & Wolff, 1998) and will be measured by the HESI.

Undergraduate student: A student registered in a 4 or 5 year baccalaureate degree program, associate degree program, or technical or vocational program below the baccalaureate (National Center for Education Statistics, 2014a).

Year 1 USEDE: An undergraduate student in their first year of study in college that is being completed through distance education.

Year 4 USEDE: An undergraduate student in their fourth year of study in college that is being completed through distance education.

Assumptions of the Study

This study was based on the following assumptions:

1. The respondents are able to understand the directions on the questionnaire. This assumption was necessary as there was no way to confirm that every single participant understands the directions and questions on the questionnaire.
2. Participants answered accurately and honestly and to the best of their capability to the survey questionnaires. This assumption was necessary as there was no way to assure that participants were answering all questions in an honest manner, to the best of their capability. However, confidentiality was preserved and it was reiterated to all participations that they may withdraw from the study at any time with no ramifications.

3. The survey instruments used were effective in eliciting attitudes regarding stress in USEDE. This assumption was necessary as although the HESI was designed specifically to capture a large assortment of stressful features that are applicable within numerous different higher education settings, validity of the HESI has not yet been thoroughly tested (Dahlin, Joneborg, & Runeson 2005).

Scope and Delimitations

The study population consisted of undergraduate students taking distance classes in the United States and enrolled on Mechanical Turk, a recent innovation where a small financial incentive is paid in return for Internet users for completing relatively short and straightforward tasks (Reis & Judd, 2014). Other distance undergraduate students, such as those in other countries, were not considered. Additional research could extend to these populations.

Limitations of the Study

The findings of this study may not generalize to other student populations, such as online graduate students, as data was only collected from USEDE in Year 1 and Year 4 of their programs. The study was also limited by the use of survey questionnaire to gather data. The use of a Likert scale and the replies that are offered to participants may be a limitation as there may have been some participants who did not provide a precise assessment regarding their behaviors, attitudes, feelings, or beliefs (Creswell, 2003). A participant may have simply provided a response that they believed to be right, a neutral response, or a response that they believed the researcher

would like, rather than how they actually felt or believed. The data that was collected then was valid only to the degree that the participants are entirely honest in answering the survey provided. Lastly, data were collected through the use of Amazon's Mechanical Turk (MTurk), a recent innovation where a small financial incentive is paid in return for Internet users for completing relatively short and straightforward tasks (Reis & Judd, 2014); there was no way to ensure that the participants were all truly USEDE in Year 1 and Year 4 of their programs.

Significance of the Study

This study generated new knowledge on the relationship between stress, gender, and year of study among USEDE. This study has important social implications from the standpoint of universities who provide and deliver distance education classes to their students. An increased awareness of distance students and the specific stressors that they face will allow for universities to offer specific and tailored support to its students. This study is also important to USEDE. This study enhanced self-awareness of the stressors and times of heightened risk of USEDE so they can more effectively manage their stress. Lastly, this study is important to other researchers. Through the communication of this study's findings, it allows for continued research to gain and advance our understanding of the development of stress among students who are taking distance education classes.

Summary

Researchers have studied the relationship between stress and students who attend traditional learning environments (e.g., Abouserie, 1994; D'Zurilla & Sheedy, 1991). Within the last 10 years, research regarding distance learning has increased

(e.g., Boling et al., 2012; Ramos & Borte, 2012). However, there have only been a few researchers who looked at the relationship between stress and undergraduates who attend distance classes specifically. This study enhanced the knowledge of USEDE and the specific stressors that they face and how different stages of education may impact this relationship.

Chapter 1 was the background of the importance of studying stress among USEDE. Pertinent information has been provided in the study regarding background information, the problem statement, the purpose of the study, research questions and hypotheses, the conceptual framework for the study, the nature of the study, definition of terms, assumptions of the study, scope and delimitations, limitations of the study, and the significance of the study. Chapter 2 will follow with a review of the literature. The remainder of the study will comprise of research method, analysis of the data, summary, conclusion, and recommendations.

Chapter 2: Review of Literature

Introduction

The number of undergraduate students taking distance education classes is growing (Radford & Weko, 2011). However, there has been an overall trend in all college students where there has been an increase in stress levels (Sax, 1997). Changes in eating habits, changes in sleeping habits, and increases in academic workloads are just a few of the changes that students in traditional learning environments face (Ross et al., 1999). This information leaves much to question in terms of the stress distance students face and its overall impact. The answer to such a question is relevant to educational institutions who offer distance learning programs as this population is on the rise. The need to retain students compels educational institutions to seek ways to help their students cope with the stress that they face.

This review of literature begins with a section on theoretical perspectives of stress. Following sections include what is currently known about stress, stress and traditional learning environment, and stress and technology. Words and descriptors used to create library search queries included: *stress, computer-mediated communication, distance learning, online learning, distance education, and higher education*. Databases used included Sage, PubMed, and PsychINFO. Strategies to gather research for the literature review always included the examination of scholarly websites and noted books on stress.

Theoretical Foundation

Cognitive Theory of Emotions

The cognitive theory of emotion proposes that an individual's appraisal of a situation is the key that occurs in an emotional episode and is accompanied by motor, behavioural, and physiological changes in the individual (Roeckelein, 1998). An individual then goes through a series of processes that mediates their response to any environmental event that they are faced with. Primary appraisal involves an individual assessing the event that leads to an emotional response (Roeckelein, 1998). For example, if an individual were in a snow blizzard, their primary appraisal of the situation may be that the blizzard is a blessing as it means that they could go skiing. However, that exact same blizzard could be appraised as stressful as there are only a few supplies in the house. How an individual appraises a situation then is dependent on the individual and could vary from individual to individual. Secondary appraisal involves an individual evaluating the resources that they have, both personal and environmental, in order to deal with the situation (Roeckelein, 1998). Lastly, reappraisal occurs when there is an evaluation of the secondary appraisal (Roeckelein, 1998)**.** Different appraisals of situations then are the reason why different people react with different emotions even though they are in the exact same situation. The different appraisals students' have then impact the specific way they react.

There has been some support to the cognitive theory of emotions. Hojat et al. (2003) conducted a longitudinal study to examine 1446 medical students and who could better cope with adversity. On a 5 point Likert scale, participants were requested to specify the degree to which each stressor (change of a family member's health,

death of a close family member, financial issues, personal injury or illness, and academic problems) affected them and whether or not any had taken place during the past 5 months. All participants were then distributed into three groups (resilient, intermediate, frail) dependent on their evaluation of stressors after they completed a 5-point scale of their appraisal of the five stressors (Hojat et al., 2003). It was found that individuals who had more negative judgments of stressful events had anxiety scores that were higher (Hojat et al., 2003). It was also found that if anxiety was past a line of a functional level for participants who experienced stressful circumstances and conveyed a large effect, this led to decreased academic performance. How the students appraised stressors then significantly impacted both anxiety levels and academic performance (Hojat et al., 2003).

Gender differences. McRae, Ochsner, Mauss, Gabrieli, and Gross (2008) studied gender differences in emotional regulation. Through the use of functional magnetic resonance imaging, it was found that although females and males did not differ with respect to their emotional reactions to an event, during reappraisal of events, they showed different brain activity. McRae et al. found that as participants tried to reduce their negative emotional reactions when shown upsetting pictures through reappraisal, relative to their male counterparts, female participants appeared to engage their in their amygdala, prefrontal cortex and ventral striatal much more during the reappraisal process. It would appear then that there are gender differences in emotional responding and reappraisal.

Year of study. Lo (2002) investigated the perception, sources of stress, and coping mechanisms used by nursing students during three years of their nursing

program. It was found that students who were in Year 1 of their studies experienced less transient stress when compared to students in Year 2. It was found that stress was experienced by 44.2% of the first year nursing students, 28.4% of the second year nursing students and 21.8% of the third year nursing students (Lo, 2002). Some students reported that developing better study techniques and skills and research, time management, and having a greater knowledge in what was expected helped to decrease stress levels.

As skills developed over time, students felt much more at ease with their academic studies (Lo, 2002). It could be argued then as students developed more skills to decrease their stress levels, they appraised and reappraised the stressors they were faced with differently. For example, as a student develops better studying techniques, an examination may be appraised as less stressful by that student that it would have been appraised when they first began their program. As students develop over time then, the appraisals and reappraisals of situations, where and individual evaluates the resources that they have, both personal and environmental, with may differ.

General Adaption Syndrome

The general adaptation syndrome theory of stress proposes that specific stressors cause specific reactions in an individual's body (Nevid, 2003). The general adaptation syndrome is a three stage process where an individual's body responds to different types of stressors that they are faced with. The first stage is the alarm stage where there is a mobilization of the body's resources to cope with the immediate stressor an individual is faced with (Nevid, 2003). The body's response allows it to

quickly and rapidly mobilize its resources to either flee or flight the stressor that an individual is faced with. The resistance stage is second stage where the body attempts to adjust or adapt to the persistent stress that it is faced with (Nevid, 2003). The body tries to go back to a normal biological state by restoring energy that had been spent and repairing damage that may have occurred. The exhaustion stage is the last stage where there is a diminution of bodily resources and a lessened resistance to stress relation conditions and disorders (Nevid, 2003). If a stressor persists, exhaustion will eventually set in and bodily reserves needed to resist stress becomes depleted.

There has been some support for the general adaptation syndrome. Law (2007) looked at the exhaustion severity in 100 undergraduate business students and its association to personal and environmental variable coursework involvement. Measures used included the Maslach Burnout Inventory, a subscale from an instrument established by Lodahl and Kejner to measure job involvement, and students reported grade point average (Law, 2007). It was found that involvement with course work was an important predictor of exhaustion in students (Law, 2007). It was also found that that there was a high mean of exhaustion scores in the students (Law, 2007). Students are constantly subject to long hours, deadlines, and assignments, making them highly susceptible to exhaustion. As the general adaptation syndrome theorizes, as stress continues and is persistent, the body will enter into a state of exhaustion (Nevid, 2003). As stress continues for students then, the body may enter into a state of exhaustion.

Literature Review to Key Variables and Concepts

Stress is a frequently talked about phenomenon in our society today. Unfortunately, major accidents, such as airplane crashes, car crashes, and fires, happen relatively frequently in industrial societies (Nezu, Nezu, Geller, & Weiner, 2003). However, they still generally take individuals by surprise, require readjustment efforts, and change the course of numerous lives. Some experiences will be life lasting and will impact both their mental and physical health; for others, it will only be a short term influence (Nezu et al., 2003). Humans all experience stress in one form or another, whether it is in school, work, home, or trying to make ends meet. Many individuals see stress as something that is negative, destructive, and disabling (Thornes, 2005).

Not all stress is bad (Thornes, 2005). For example, winning the lottery or passing ones drivers test can be seen as positive stress and may be experienced as an exhilarating event. Stress is a very complex process and there are three different, but intersecting methods to the definition of stress (Broome & Llewelyn, 1995). Stress can be conceptualized as a noxious or aversive characteristic of the environment (Broome & Llewelyn, 1995). Stress can be defined in terms of the physiological effects it produces to aversive or noxious stimuli (Broome & Llewelyn, 1995). Stress can be conceptualized in terms of the dynamic interaction between the environment and person (Broome & Llewelyn, 1995). Stress is a well-studied phenomenon and a lot is currently known about it.

Benefits of Stress

Living beings all experience stress in one form or another, whether it is in work, school, home, or with friends or family. Although many people see stress as something that is negative, bad, or destructive, stress can have some benefits (Thornes, 2005). There is evidence that stress is not always bad. Dhabhar et al. (2010) examined the short term fight-or-flight response that is experienced during immune activation in mice. Mice were exposed to ultraviolet B three times per week to study the emergence, progression, and regression of squamous cell carcinoma (Dhabhar et al., 2010). Short-term stress was administrated to one group 2.5 hours before each 10 minute ultraviolet exposer session by placing them in a ventilated plastic tube restrainer. Tumors were measured weekly and tissue samples were collected (Dhabhar et al., 2010). It was found that compared to the control group, the short term stress group showed lower tumor numbers and lower percentage of mice bearing tumors during the earlier phases of tumor development and progression. Acute stress then may have helped to enhance cellular immunity and increase resistance to ultraviolet induced squamous cell carcinoma (Dhabhar et al., 2010). Short term stress in this instance enhanced the immune responsiveness.

Effects of Stress in Overall Life Satisfaction

How an individual copes with the stressors that they are faced with can affect their physical health, mental health, and emotional maladjustment; stress can impact an individual's overall quality of life and overall life satisfaction (Hamarat et al., 2001). The relationship between overall life satisfaction and stress has been well studied (e.g., Chang, 1998; Nowack, 1991). Chang examined the relationship between

measures of perceived stress and dispositional optimism with 400 undergraduate college students. Participants were given surveys to complete that included, the Perceived Stress Scale, the Life Orientation Test, the Beck Depression Inventory, and the Satisfaction with Life Scale. It was found that dispositional optimism greatly moderated the association between psychological well-being and stress (Chang, 1998). Perceived stress was associated with lower life satisfaction and greater depressive symptoms in participants (Chang, 1998).

As one ages, there are numerous changes one is faced with, such as role changes and increased or decreased demands. In a cross-sectional investigation, Hamarat et al. (2001) looked at the relationship between perceived stress on life satisfaction and coping resources satisfaction and the difference in 189 older adults, middle aged adults, and younger adults when looking at these relationships. Participants were given the Coping Resources Inventory for Stress, the Perceived Stress Scale, and the Satisfaction with Life Scale to complete. It was found that perceived stress and coping resource effectiveness were important predictors for life satisfaction for all three groups (Hamarat et al., 1991). However, for younger adults, a better predictor for life satisfaction was perceived stress. For the middle aged and older adults group, it was found that coping resource effectiveness was a superior predictor life satisfaction (Hamarat et al., 1991). An individual's stage in life then appears to impacts the degree in which variables predict satisfaction with life. Coping resource and perceived stress are predictors of overall satisfaction with life for every age group (Hamarat et al., 1991).

Stress and Locus of Control

One factor that impacts an individual's ability to cope with stressful life event that they are faced with is their locus of control; that is the self-confidence that they have that they have some control over the happenings that form their lives (Brannon et al., 2014). Individuals who trust that they have control over their own lives have an internal locus of control. In contrast, individuals who believe that fate, luck, or the acts of others decide their lives have an external locus of control (Brannon et al., 2014). Schmitz, Neuman, and Oppermann (2000) looked at the effects of work related stress and locus of control on the burnout in 361 hospital staff nurses. All participants were given the Locus of Control Questionnaire, the Maslach Burnout Inventory, and a Work-Related Stress Inventory to complete. It was found that nurses who believed that they had limited to no control over the proceedings of their lives were more much more susceptible to stress and burnout when compared to nurses who believed that they had personal control over the proceedings in their lives (Schmitz et al., 2000). Perceived level of control then is crucial in levels of stress and burnout.

Stress and Coping Strategies

Individuals are continually trying to manage and cope with the stress in their lives. Coping strategies can generally be classified into two different categories: problem focused coping and emotion focused coping (Brannon et al., 2014). Problem focused coping involves solving the problem one is faced with (Brannon et al., 2014). Emotion focused coping encompasses managing the distressed that is associated with the stress an individual is faced with (Brannon et al., 2014).

Problem focused coping. Problem focused coping encompasses trying to decrease the stress by solving the problem one is faced with. Problem focused coping includes seeking information, taking whatever action is necessary to resolve the issue, and/or changing ones behaviour (Plotnik & Kouyoumdjian, 2014). Stoneman, Gavidia-Payne, and Floyd (2006) examined associations between stress, problem focused coping, and marital adjustment in 67 families with a young child with disabilities. Fathers who utilized more problem focused coping were more positive about their marriages (Stoneman et al., 2006). Wives reported high marital adjustment when their husbands utilized more problem focused coping strategies (Stoneman et al., 2006).

Essex, Seltzer, and Krauss (1999) examined stress and coping strategies among 133 married fathers and mothers of adults with mental retardation in a longitudinal study. Although it was found that there were no significant differences between fathers and mothers in regards to the utilization of emotion focused coping, it was found that mothers used more problem focused coping when compared to their husbands. For mothers, a higher frequency use of problem focused coping strategies and lesser utilization of emotion focused coping aided to buffer the impact of caregiving stress (Essex et al., 1999). Problem focused coping can help individuals reduce their stress by solving the problem that they are faced with.

Emotion focused coping. Attempting to reduce emotional responses to a stressful event without actually altering the situation one is faced with is emotion focused coping (Gallagher & Nelson, 2003). Emotion focused coping are designed to alter reactions to the stressor rather than change or control the stressor (Gallaher &

Nelson, 2003). Patterson (2003) examined the effect of coping and social support on distress in 233 police officers who often worked in an environment characterized by dangerous circumstances with the distribution of surveys. All participants were given a postage-paid envelope addressed to the researcher to return the questionnaires anonymously. Seeking social support in particular helped to buffer the relationship between distress and life events (Patterson, 2003). Emotion focused coping in general was found to buffer the relationship between life events and distress (Patterson, 2003).

In order to study the impact of social support and coping on the adaptation of Type II diabetes mellitus of elderly Chinese patients, Cheng and Boey (2000) interviewed 200 subjects ranging from age 60-92 using a structured questionnaire. It was found that support outside of one's family, rather than family support, was a more important part in adapting to diabetes mellitus. The psychological well-being then of the elderly diabetic patients may be enhanced through the expansion of the friend network (Cheng & Boey, 2000). Social support networks where the disclosures of negative feelings are met with support and warm acceptance may allow elderly patients to better enjoy and adapt to diabetes mellitus (Cheng & Boey, 2000).

All individuals must face stress throughout their lives, making them at risk of developing emotional problems (Kraaij, Garnefski, & Maes, 2002). An individual's coping strategies and coping resources availability impacts ones susceptibility of developing emotional problems in response to stress that they are faced with (Brannon et al., 2014). Oftentimes, problem focused coping has advantages over emotion focused coping as problem focused coping has the potential to actually change the situation; individuals are generally more likely to use problem focused coping when

they appraise a satiation as controllable (Brannon et al., 2014). For example, if an upcoming exam is causing an individual stress, an individual can make a plan to go ask their professor for some additional help if this situation is appraised as controllable. However, emotion focused coping can be very effective when stress is inescapable and finding a way to feel better may be a superior option (Brannon et al., 2014). For example, an individual who needs to go in for dental surgery has few problem focused coping strategies that they can utilize. However, complaining about the dental surgery to a friend may help to manage the stress. All types of coping strategies can be effective depending on the stressor that is faced (Brannon et al., 2014).

Stress and Traditional Learning Environment

There is currently an increase of enrollment in degree granting institutions in the United States (NCES, 2013). Between 2001 and 2011, there was an enrollment increase of 32%, increasing from 15.9 million students to 21.0 million students (NCES, 2013). College students as a whole are particularly prone to high levels of stress (D'Zurilla & Sheedy, 1991). There are numerous transitions that college students who attend traditional learning environments must adjust to including for the first time, being away from home, sustaining a high level of academic achievement, and pressures related to finding a life partner or a job (Ross et al., 1999). Ross et al. surveyed 100 undergraduate students to examine the most prevalent origin of stress among college students at a mid-sized university and the nature of the identified stressors. The Student Stress Survey was used and distributed to the participants (Ross et al., 1999). It was found that the most common sources of stress were intrapersonal

causes of stress and included sleeping habit changes and eating practices, vacation/breaks, class workload increases, and new responsibilities (Ross et al., 1999). It was also found that changes in social activities and financial difficulties were also frequently reported as stressors by participants (Ross et al., 1999).

Abouserie (1994) examined sources and levels on stress in 675 second year undergraduate students. The Academic Stress Questionnaire Life Stress Questionnaire, Multidimensional Multi-Attributional Scale Causality, and Rosenberg Self Esteem Scale were given to participants to complete. The results indicated that examinations and the results of examinations were the highest causes of stress (Abouserie, 1994). It was also found that 77.6% of students were identified to belong to moderate stress categories and 10.4% of participants were identified to belong to serious stress categories (Abouserie, 1994)

Beck, Hackett, Srivastava, McKim, and Rockwell (1997) examined sources of stress and the perception of level of stress in students in nursing, pharmacy and social work programs. A total of 552 full time university students completed the Beck-Srivastava Stress Inventory, the General Health Questionnaire, and a demographic profile in this correlational study. It was found that baccalaureate nursing students perceived higher levels of stress and more psychological and physical symptoms when compared to students in pharmacy or social work programs (Beck et al., 1997). However, it was also found that regardless of discipline, the amount of class material that had to be learned, exams, absence of free time, extensive hours of studying, grades, and difficulty of work that had to be learned were all identified as common

stressors (Beck et al., 1997). It is clear that in the traditional learning environment in a college setting, stress is prevalent and sources of stress are numerous.

Gender

Gender differences in students stress levels has been found in students in traditional learning settings. Peterlini, Tibério, Saadeh, Pereira, and Martins (2002) performed screening, follow-up, and comparative evaluation of anxiety and depression in 59 first year internal medicine residents. All participants completed the Beck Depression Inventory and the Spielberger State-Trait Anxiety Inventory in the last week of every rotation. It was found that female students had greater levels of symptoms of both anxiety and depression when compared to the male students (Peterlini et al., 2002).

Matheny, Ashby, and Cupp (2005) examined stressful life events, coping resources, and illness in 127 female and 60 male graduate students. All participants completed the Seriousness of Illness Rating Scale, the Psychiatric Epidemiology Research Interview, the Coping Resources Inventory for Stress, and provided demographic data. It was found that females reported more illness when compared to male students (Matheny et al., 2005). In fact, it was found that gender contributed more to the distinguishing of low and high illness groups than any other variable studied (Matheny et al., 2005). Gender appears to play a role in stress in students.

Effects of Stress on Academic Performance

There has been a large volume of research that has focused on the relationship between academic performance and stress. College students have numerous challenges that they must face as they are in their pursuit of higher education and

these challenges may impact academic performance. In order to examine the relationship between stress and academic performance, Stewart et al. (1999) obtained longitudinal data on 121 first year medical students before beginning classes and again eight months later. Academic performance before medical school was found to predict how individuals performed in medical school. Before and throughout medical school, academic performance was also found to be negatively related to the stress levels that were reported (Stewart et al., 1999).

Streuthers, Perry, and Menec (2000) examined the relationship between stress and course grade in 203 college students who were enrolled in a variety of different faculties. Groups of around 30 were administered questionnaires containing stress items, Student Coping Scale, motivation items, and a grades consent form. It was found that high levels of academic stress were related with lower course grades obtained by individuals (Streuthers et al., 2000). However, it was also found that students who utilized problem focused coping were likely to perform better and be motivated when compared to students who engaged in emotion focused coping. There is then a clear association between academic performance and stress in students.

To examine whether or not students who are highly resourceful are more effective at defending themselves from academic stress and its negative effects, Akgun and Ciarrochi (2003) gave 141 first year undergraduate students measures of learned resourcefulness and academic stress. Through university records, they also obtained first year grade point averages (Akgun & Ciarrochi, 2003). It was found that academic stress that was high adversely impacted grades of students who had low resourceful but had no impact on students who were found to be highly resourceful. It

is suggested then that learned resourcefulness can modify the negative impact of stress resourcefulness (Akgun & Ciarrochi, 2003). Although there is an association between stress and academic performance in students, it would appear as though that this relationship can be modified with resourcefulness. Academic stress appears to adversely impact a student's academic performance, but this relationship can be modified.

Stress and Year of Study

College is generally a transitional period of time, where students have numerous new obstacles that they must cope with, including being away from home for the first time and maintaining a high level of academic achievement (Ross et al., 1999). However, levels of stress and what is identified as a primary and high stressor does not necessarily stay stagnant throughout a student's entire college career however. Dahlin et al. (2005) gave 342 students the Major Depression Inventory and the Higher Education Stress Inventory to examine the exposure to various stressors and the frequency of depression amongst medical students who are at different levels of their education. It was found that students who were in Year 1 indicated that lack of feedback and workloads were high stressors. In comparison, Year 3 students reported that pedagogical shortcomings as a high stressor (Dahlin et al., 2005). Lastly, Year 6 students reported a climate that was non-supportive as a high stressor (Dahlin et al., 2005).

Deary et al. (2003) carried out a longitudinal study to examine the determinants and relationship among burnout, stress, and attrition in nursing students. Students were given questionnaires to complete upon beginning their program (n =

168), at 12 months (n = 124), and at 24 months (n = 90). Questionnaires included the Alice Heim 4 test, Coping Inventory for Stressful Situations, NEO Five Factor Inventory, General Health Questionnaire, Stress in Nursing Students, and Maslach Burnout Inventory. It was found that students experienced an increasing level of stress as they progressed through their programme (Deary et al., 2003). It was also found that the use of negative coping mechanisms increased as students progressed through their programs. A student's level of stress may not stay the same throughout their college program.

Strategies for Preventing Student Stress

When students attempt to cope with the vast stress that they feel by themselves, they are not always successful. Brougham, Zail, Mendoza, and Miller (2009) examined coping strategies and sources of stress in 166 college students. Measures used included Revised Cope Inventory, Student Stress Assessment, and Employment Status and Demographics. Data from participants were collected during the spring semester of 2007 (Brougham et al., 2009). Overall, it was found that college women conveyed more stress for finances when compared to college men. In addition, it was found that for both women and men, the utilization of emotion focused coping strategies was greater than problem solving strategies (Brougham et al., 2009). As the undergraduate population used in this study was found to be fairly homogenous in affluence and ethnicity, it was proposed by the authors that it be expanded to in order to improvement the generalizations of the findings to a more diverse student population.

According to Deckro et al. (2002), it is possible to reduce the stress students feel. Deckro et al. randomly assigned 128 students to either an experimental group or a waitlist control group. The experimental group participated in six 90 minute group training sessions on cognitive behavioural skills and relaxation responses. Participants completed the Perceived Stress Scale, Symptom Checklist-90-Revised, Spielberger State-Trait Anxiety Inventory, Health-Promoting Lifestyle Profile II, and a demographic and health habits survey before the intervention and the week following the final session (Deckro et al., 2002). It was found that prior to the study, students conveyed experiencing large levels of stress; more than two thirds of the participants conveyed having stress that was excessive and almost two thirds evaluated themselves as being more anxious than most individuals (Deckro et al., 2002). After attending the group training sessions, it was found that there were decreases in anxiety, psychological distress, and stress perception when compared to the waiting list control group. A six week group on cognitive behavioral skills and relaxation responses then can considerably lessen levels of self-reported psychological stress, anxiety, and stress perception (Deckro et al., 2002). Individual students need skills and techniques for lessening their stress to improve their personal well-being and function more successfully in their role as a student.

Stress and Technology

The use of technology is rapidly expanding. In the United States in 2012, 74.8% of all homes had use of internet and 78.9% of all homes had a computer (United States Census Bureau, 2014). In addition, 45.3% of all individuals 25 and older were using smart phones in 2012 (United States Census Bureau, 2014).

Computer related stress and anxiety can impact anyone who uses a computer and is aggravated by faulty system designs, poor management, inadequate training, and misunderstandings by users of what computers can actually do (Craig, 1993). Hudiburg and Necessary (1996) examined coping strategies used by computer users who experienced various degrees of computer stress in 83 college students. Participants completed a questionnaire that asked them information regarding computer use, self-esteem, computer knowledge, level of computer stress, stressful computer problems, somatization/anxiety, and the use of coping strategies. It was found that individuals who had high levels of computer stress had lower self-rated computer abilities, high levels of somatization and anxiety, and lower levels of self-esteem (Hudiburg & Necessary, 1996). Individuals with low computer stress were found to accept responsibility of coping strategies in dealing with computer problems that they were faced with and self-controlling; they adopted problem solving coping strategies in dealing with computer issues (Hudiburg & Necessary, 1996).

Smith, Conway, and Karash (1999) highlight that there have been stress that has emerged that can be directly tied to human computer interactions. These include the breakdown of technology and technology slowdowns. The effects of stress from these stressors can include increased physiology arousal, somatic complaints, mood disturbances, and diminished quality of working life (Smith et al., 1999). Carayon-Sainfort (1992) examined the impact of the utilization of computers on task characteristics and work stress in 262 office workers. It was found that an increase problems with the computer was associated with increase computer use intensity. In addition, as problems with computer and computer use intensity increased, individuals

perceived work pressure and perceived workload also increased (Carayon-Sainfort, 1992). As computer problems and computer use intensity increased, there was a decrease in perceived job control. Perceived workload, job pressure, and work pressure were all found to be identifiers of worker stress (Carayon-Sainfort, 1992). The use of computers has become indispensable in the teaching and learning environment. There are numerous aspects of the human computer interaction that can influence psychosocial stress and health of individuals (Smith et al., 1999).

Online Learning and Stress

Although online learning is still a relatively new phenomenon, there has been an abundant amount of research conducted in this area recently. Wiesenberg (2001) examined how graduate students coped with stresses of distance learning over the course of three to five years in which they were enrolled in their Master of Continuing Education program. In total, fifteen students completed three sets of measures, including the Mattering Scale for Adult Students in Higher Education, the Transition Coping Questionnaire, and demographic data was collected. It was found that as students transitioned into their programs, they coped with stressful and unfamiliar situations through using emotional focused strategies and reported that they felt their personal resources were low and that they did not have as strong of a support system as they desired (Wiesenberg, 2001). As they moved through the middle of their program, sense of control and resources available to them increased, but a strong academic support system was beginning to form (Wiesenberg, 2001). How a distance learner copes with stress that they are faced with then can change through the course of their program.

Boling et al. (2012) focused on what constitutes as effective online learning experiences from both student and teacher perspectives. In total, ten adult students who had finished either online degrees or certificate programs in diverse fields and six online course instructors participated in the study. Each participant completed a 60 minute interview that asked them to describe their course experience and the types of course content, tasks, and pedagogical approaches that they found most meaningful, educational, and productive (Boling et al., 2012). It was reported that courses with limited to no interaction with others, students described disconnect with their instructors, their classmates, and course content (Boling et al, 2010). When asked to express one or more favorite characteristics of online courses, social exchanges was reported (Boling et al., 2010). It is clear then that course design and instructional strategies can either hinder or strengthen the online experience for online learners.

Online education places a large emphasis on collaborative learning. Although it can have its advantages, it can be perceived as a frustrating experience as well (Capdeferro & Romero, 2012). Capdeferro and Romero (2012) set out to identify the sources to which online learners attributed their frustrations to computer-supported collaborative learning experiences. In total, 40 students enrolled in a university's master's degree program on e-learning completed the Online Collaborative Learning Experiences Frustration Questionnaire. It was found that student's feelings of frustration were common among students who engaged in online collaborative learning experiences (Capdeferro & Romero, 2012). Feelings of frustration stemmed from numerous different sources, including asymmetric collaboration among teammates, difficulties in group organization, lack of shared goals, imbalance of

commitment, imbalance of quality of contributions by individuals, imbalance of communication, imbalance of collective and individual grades, and difficulties in communication (Capdeferro & Romero, 2012). Although collaborative learning is can be greatly emphasised in online education, it can be a source of great frustration for students.

Distance education allows individuals the flexibility to take classes they would otherwise not be able to due to family, work commitments, or geographical constraints (NCES, 2011). However, distance education students are faced with numerous challenges as part of their schooling experience. Furlonger and Gencic (2014) examined the challenges distance education students face, academic performance, and their levels of satisfaction. A total of 295 Masters in Counselling students, who were either enrolled in on-campus or distance education participated. Demographic questionnaire, Student Satisfaction Questionnaire, Student-Life Stress Inventory, Coping Strategy Indicator, and the marks and grades from one unit of study were completed and recorded (Furlonger & Gencic, 2014). It was found that coping, student stress, and academic performance were not affected by whether or not students were on campus or distance students. However, on-campus students had greater levels of satisfaction when compared to the distance education students (Furlonger & Gencic, 2014). Although there were some differences in reported satisfaction between on-campus students and distance students, no differences were found on measures of stress or academic performance.

Comparable Studies

There have been some studies that have been conducted that have examined the impact of gender, year of study, and different types of stressors face by undergraduate students in traditional learning settings. Yumba (2010) examined the perceptions of major sources of academic stress among 100 undergraduate students. All participants were given a questionnaire to complete that consisted of 33 potentially stressful situations; the situations were divided into four categories that included relations with other people, personal sources of stress, academic sources of stress, and the environmental sources of stress. It was found that academic sources of stress to be the most stressful, largely due to increases in class workload and academic evaluations (Yumba, 2010). It was also found that first year undergraduate students reported higher levels of overall stress, largely due to major life changes. Second year undergraduate students reported lower levels of stress, possibly due to the adaptation of new responsibilities and receiving access to an academic social support network (Yumba, 2010).

Day and Livingstone (2003) examined gender differences in perceived stressfulness of five different situations and the type and source of social support that 186 undergraduate men and women from a Maritime University would seek in each situation. Five scenarios that related to family, work, friends, relationship, and school that are common and likely stressful for university students were presented to the participants to read. The participants were then to imagine themselves in the five scenarios and were asked to indicate the degree of stress they perceived and the degree to which they would turn to sources of social support (Day & Livingstone,

2003). It was found that women undergraduate students perceived the school, friend, and work scenarios to be more stressful than the male undergraduate students did. The undergraduate women and men did not differ in their perception of the family and relationship scenarios, however (Day & Livingstone, 2003). The undergraduate women reported that they would pursue support from their friends and family to a larger degree than did the undergraduate men in order to deal with stressful situations. It would appear then that undergraduate men and women from traditional learning settings differ in their perception of stressful situations and their utilization of social support (Day & Livingstone, 2003).

Ross et al. (1999) examined the major sources of stress among 100 undergraduate students from a midsized Midwestern university. All participants completed the Student Stress Survey, consisting of 40 potentially stressful situations with four categories of potential sources of stress including interpersonal sources of stress, intrapersonal sources of stress, academic sources of stress, and environmental stressors. It was found that intrapersonal sources of stress were the most common reported source of stress and overall, it was found that the top five sources of stress were change in sleeping habits, vacation/breaks, change in eating habits, increased work load, and new responsibilities (Ross et al., 1999). The five least frequently reported stressors were death of a friend, severe injury, transferred schools, engagement/marriage, and divorce between parents. Intrapersonal sources of stress then are the most common sources of stress undergraduate students from traditional learning settings face (Ross et al., 1999).

Summary

Stress has been a phenomena that has been widely studied. However, past and present research related to student stress has mostly been conducted in traditional learning settings. Identifying and reviewing the impact of stress in distance students extends in many directions. The primary goal of any distance education program is to provide flexibility and convenience to its students to allow them to attain their educational goals (Simonson & Schlosser, 2009). However, care and support are key in retaining distance students and ensuring positive mental health as educational instruction is evolving.

The review of literature has covered theoretical foundation, literature review to key variables and concepts, stress and traditional learning environments, stress and technology, and comparable studies. Chapter 3 will cover the research design including data collection and analysis.

Chapter 3: Research Method

Introduction

Stress can impact an individual's overall life satisfaction (Chang, 1998) and their academic performance (Streuthers et al., 2000) in traditional school settings. Levels of stress do not necessarily stay stagnant throughout college (Dahlin et al., 2005). The process of stress has been characterized by psychological, behavioral, and physiological consequences (Furnham, 2005). The cost of stress in distance learners can potentially be very large as the quantity of students who enrolled in no less than one class through distance education is increasing at a rapid rate (NCES, 2011). An examination of stress in undergraduate distance learners can assist in identifying possible solutions for helping college staff and administration deal with this issue in various colleges who offer distance education classes currently and in the future.

Additional research is needed in this area in order to identify further needs in providing adequate care in the fast-growing distance learning population. I investigated the types of stressors USEDE face and whether or not year of study and gender are factors. Gender was chosen as a variable as gender differences in students stress levels have been found in students in traditional learning settings (e.g., Peterlini et al., 2002). Year of study was also chosen as a variable as in traditional learning settings, it has been found that levels of stress and what is identified as a primary and high stressor does not necessarily stay stagnant throughout a student's entire college career (e.g., Dahlin et al., 2005). Examining whether or not there is an interaction between year of study and gender then becomes important to see how the effect of one

independent variable (gender and year of study) might depend on another. This chapter will cover research design, with a focus on data collection and analysis.

The research was designed to answer the following questions:

4. Based on the HESI, are there differences in overall stress levels evident in USEDE who are in Year 1 of their program and USEDE who are in Year 4 of their program?

   $H_0$1: There are no significant differences in stress scores in among USEDE who are in Year 1 compared to USEDE who are in Year 4.

   H_A1: There is a significant difference in stress scores among USEDE who are in Year 1 compared to USEDE who are in Year 4.

5. Based on the HESI, do gender differences affect levels of stress in USEDE?

   $H_0$2: Gender does not affect levels of stress in USEDE.

   H_A2: Gender does affect levels of stress in USEDE.

6. Based on the HESI, is there an interaction between year of study and gender?

   $H_0$3: There is no interaction between year of study and gender.

   H_A3: There is an interaction between year of study and gender.

Research Design and Rationale

This quantitative study examined: (a) the connection between stress and year of study in undergraduate students enrolled in distance education (b) whether or not gender affects levels of stress in USEDE and (c) if there was an interaction between year of study and gender. A demographic questionnaire was included to gather pertinent information for the study (refer to Appendix A). The research also included

one questionnaire, the HESI (refer to Appendix B), which measures stress in higher education settings.

Methodology

Population

The population for this study consisted of undergraduate students who were taking online classes and were in either Year 1 or Year 4 of their studies in the United States and were enrolled in MTurk, an open online market place for access to an on demand scalable workforce (Amazon, 2014). Members of MTurk can browse numerous tasks that can be completed at the computer and are compensated with a small financial incentive upon successful completion of the task. MTurk has been used in numerous studies that have been published in peer reviewed journals. Eriksson and Simpson (2010) recruited 850 participants through MTurk to examine gender differences in risk preferences when making financial decisions. Atler, Oppenheimer, and Zemla (2010) recruited participants for their six studies design through MTurk to examine illusion of explanatory depth, when individuals overestimate their understanding of a concept. Buhrmester et al. (2011) found that although participation is affected by compensation rates and task length, participants can still be recruited relatively inexpensively and rapidly. Lastly, it has also been found that data obtained through the use of MTurk are at least as reliable as those data obtained through more traditional methods (Buhrmester at al., 2011).

Sampling and Sampling Procedure

Undergraduate students were targeted over graduate students as there are currently about 4.5 million undergraduate students taking at least one distance course

in comparison to only 0.8 million post baccalaureate students taking distance education courses (NCES, 2011). The number of undergraduate students taking distance classes then is much wider when compared to graduate students. Although it is difficult to know exactly how many distance students are enrolled on MTurk, Buhrmester, Kwang, and Gosling (2011) found that MTurk participants are slightly more demographically diverse when compared to standard Internet samples and are significantly more diverse than typical American college samples; MTurk then can recruit a wide variety of participants. In addition, it has been found that 33% of MTurk users are either full-time or part-time students, although it is unclear what percentage are enrolled in traditional learning classes versus distance classes (Ross, Zaldivar, & Irani Tomlinson, 2010). MTurk also requires an internet connection to be an MTurk user, something that is also required for distance learners as well. Participants then will be recruited through MTurk, a crowdsourcing website that allows the general public to sign up for various tasks for a modest compensation (Crano & Brewer, 2015).

Data obtained through the use of MTurk are at least as reliable as those data obtained through more traditional methods (Buhrmester at al., 2011). After an account was set up by the researcher, the Survey Monkey link to the study was indicated and posted, and the researcher posted a set payment amount for each potential participant (Crano & Brewer, 2015). Each participant was compensated $.50USD for their time, funded by I. Reis and Judd (2014) found that a rule of thumb that has been successful is paying participants 1 cent per minute of a study (e.g., 30 cents for a 30 minute study) to yield a reasonable response rate (e.g., 10-20 people per day) on MTurk.

Participants made the decision whether or not they would like to participate in the research based on the research description provided by the researcher and the incentive offered (Crano & Brewer, 2015).

In order to determine sample size, a power analysis was completed using the program G*Power (Buchner et al., 2013). According to G*Power, using the statistical test ANOVA: Fixed effects, special, main effects and interactions, to have a power of .80 (i.e., to have an 80% chance of rejecting the null hypothesis if it is false) with a medium effect size (f = 0.25), and an alpha of 0.05, it was determined that a total of 269 subjects would be needed (Buchner, Erdfelder, & Lang, 2013). A self-selecting non-probability sample was used. It was anticipated that there would be a total of 68 participants in each group (USEDE in Year 1 and Year 4, male and female) that would be included in the sample. In order to achieve these numbers, the survey will stay posted on MTurk for two months or until the sample size has been met, whichever ever occurs first. If the sample size was not met through MTurk, the study would have been opened to the Walden University Participant Pool, a virtual bulletin that connects researchers to potential participants (Walden University, 2013).

Permission was sought from the Institutional Review Board (IRB) to ensure that the research complies with not only Walden University's ethical standards, but also United States federal regulations (Walden University, 2013). I submitted an IRB application. Presentation consisted of information that was well researched to support the need for the study. To ensure the use of ethical procedures, the data collection only take place only after IRB approval was granted.

Procedures for Recruitment, Participation, and Data Collection

I uploaded the research material to www.surveymonkey.com and posted the survey link on MTurk, an open online market place for access to an on-demand scalable workforce (Amazon, 2014). A consent form (Appendix C), a demographic information sheet (Appendix A), a copy of the HESI was included in the survey (Appendix B). The purpose of the research, procedures, and outcomes and the fact that the participation in the study was voluntary was explained to the participants in the consent form. Each participant was required to make a decision regarding his or her participation in the survey through checking the appropriate box that denoted their consent or refusal; physically signed consent records was not required. An e-mail address and for myself was provided.

The participants were asked to return the surveys to the researcher by clicking on the "submit" button configured into the end of the survey. All research information was kept securely by myself and on my own personal computer. A password was needed to not only log on to the investigators personal computer stored the data, but another password was needed to be able to access the collected data. No names or other identifying information was connected with the data. All subjects were assigned a number and all identifying information were maintained separately from the data that was linked only by number.

Instrumentation

Demographic Questionnaire. An instrument that was used in this study was a questionnaire designed by the researcher to gather demographic information about the participants (see Appendix A, Demographic Questionnaire). The instrument consisted

of eight questions. The areas covered included gender, age, marital status, academic level, part time or full time status, total number of classes enrolled in, total number of distance classes enrolled in, and ethnicity.

Higher Education Stress Inventory. The HESI was used to measure the primary dependent variable, stress. HESI was developed by Marie Dahlin, Nils Joneborg, and Bo Runeson (2005), academic researchers in the area of stress (Appendix B). Permission was obtained from its developers to use the instrument (Appendix D). It was chosen as it was specifically designed to capture a large assortment of stressful features that are applicable within numerous different higher education settings. This scale consists of 33 items on the inventory in total that contain stressful aspects that commonly occur in higher educational settings. Previous research on factor analysis (Dahlin et al., 2005) indicates it is comprised of the following subscales: worries about future endurance/competence, faculty shortcomings, non-supportive climate, workload, insufficient feedback, lack of commitment, and financial concerns.

A score was given to each of the 33 items on the HESI; an overall score was then calculated for an overall HESI score to be used in data analysis for each participant. Responses are on a 4 point Likert scale and range from 1 = *does not apply* to 4 = *applies perfectly*. The highest overall HESI score a participant could score then was 132. The lowest overall HESI score a participant could score was 33. Likert scales possess ordinal property; however, when a variable is ordinal but has sufficient levels, such as in a Likert scale, that as long as other parametric requirements are met,

it is considered appropriate to conduct parametric tests on that data (Clark-Carter, 2004).

Threats to validity. Although the validity of the HESI has not been thoroughly tested (Dahlin et al., 2005), it has been established that it corresponds well to the Perceived Medical School Stress (PMSS) scale, the inspiration behind the HESI (Vitaliano, Russo, Carr, & Heerwagen, 1984). PMSS is often utilized to monitor and examine stress among medical students (Dahlin et al., 2005). Dahlin et al. has found that the HESI has good internal consistency reliability. The seven factors (worries about future endurance/competence, non-supportive climate, faculty shortcomings, workload, insufficient feed-back, lack of commitment, and financial concerns) have been found to correspond well to those identified in the PMSS scale (Dahlin et al., 2005).

Data Analysis Plan

Data were entered into IBM SPSS Statistics 21. Univariate descriptive statistics was conducted in order to describe the demographic data that provided general information regarding the sample. These statistics included the frequency distribution, mean, and standard deviation (as appropriate).

In order to examine the set of three hypotheses, a two-way (2 x 2) between subjects analysis of variance (ANOVA) was used as it allowed for the examination of the effects of year of study, gender, and the interaction of year of study and gender on the level of stress, measured by the overall HESI score. For the analysis, there were two factors. Factor one was year of study with two levels (Year 1 and Year 4). Factor two was be gender, with two levels (male and female). An alpha level of 0.05 was

used. To demonstrate the effect size, partial eta-squared was reported, where 0.01 = small effect size, 0.06 = medium effect size and 0.14 = large effect size (Cohen, 1988).

Threats to Validity

There were some potential threats to the research validity. Specifically, sampling error was threat because certain demographic segments of some populations may have been underrepresented or not represented at all in the research (Gray, 2014). For example, MTurk participants have been found to be generally younger than the general United States population (Paolacci, Chandler, & Ipirotis, 2010). Older USEDE then may not have been accurately represented in this study. Another threat to validity that can lead to a non-representative sample was differential dropout rates among participants. Due to the methodology of using online questionnaires, technical problems, such as due to server capabilities or less sophisticated computer systems, it could lead to a higher dropout rate that can bias the final sample (Haugtvedt, Machleit, & Yalch, 2009).

Ethical Procedures

Approval to conduct this study was obtained from the IRB of Walden University. In writing, all participants were informed about the study, their level of participation, their right to refuse participation, and how the results of the study would be used to understand USEDE stress. I obtained consent from the study participants prior to administering the demographic questionnaire and the HESI. Respondents were required to make a decision regarding their participation in the study through checking the appropriate box that denoted their consent or refusal before they were

administered the demographic questionnaire and the HESI. Based on the nature of the study and the survey design being used, anonymity and confidentiality were ensured; it was not anticipated that the participants will experience any psychological distress. The anonymity and confidentiality of participants were protected. All data collected were kept securely on the researcher's personal computer where a password was required to not only to log on to the computer; but, another password was required to access the collected data. No names or other identifying information was connected with the data. All participants were assigned a number and all identifying information was maintained separate from the data and was only linked by number.

Summary

Chapter 3 discussed the research design and rational, methodology, data analysis plan, threats to validity, and ethical procedures. This section has clarified the purpose and goal of the study and has established the appropriateness of the research design. This study will focus on types of stress USEDE face and whether or not gender and year of study influence them. The presentation of the data analysis will follow in Chapter 4. Chapter 5 will include a summary, conclusions, recommendations, and discussion.

Chapter 4: Results

Introduction

The purpose of this study was: (a) to examine the connection between stress and year of study in undergraduate students enrolled in distance education, (b) to examine whether or not gender affects levels of stress in USEDE, and (c) to examine if there was an interaction between year of study and gender.

The research was designed to answer the following questions:

1. Based on the HESI, are there differences in overall stress levels evident in USEDE who are in Year 1 of their program and USEDE who are in Year 4 of their program?

   $H_0$1: There are no significant differences in stress scores in among USEDE who are in Year 1 compared to USEDE who are in Year 4.

   H_A1: There is a significant difference in stress scores among USEDE who are in Year 1 compared to USEDE who are in Year 4.

2. Based on the HESI, do gender differences affect levels of stress in USEDE?

   $H_0$2: Gender does not affect levels of stress in USEDE.

   H_A2: Gender does affect levels of stress in USEDE.

3. Based on the HESI, is there an interaction between year of study and gender?

   $H_0$3: There is no interaction between year of study and gender.

   H_A3: There is an interaction between year of study and gender.

This chapter will begin with an overview of the data collection, then present the results of the study, and concludes with a summary of findings.

Data Collection

All the data collection occurred over the period of 12 days (March 7, 2015-March 18, 2015); the total number of participants needed for this research was surpassed at that point. A screen shot of what the survey looked online is provided in Appendix E. Inclusion criteria were undergraduate students enrolled in at least one distance education class who are in either Year 1 or Year 4 of their program, located in the United States, and members of Mechanical Turk, in order to have access the survey.

There were a total of 379 respondents. However, 58 respondents either did not complete the entire study or identified that they were either in their second or third year of their undergraduate degree; their responses were not used for analysis. A total of 321 participants was then used in data analysis, all who identified that they were undergraduate students enrolled in at least one distance education class and were in either Year 1 or Year 4 of their program. Overall, 54.2% of the sample was male and 45.8% of the sample was female (Table 1). In comparison, in the United States in 2012, the total enrollment for undergraduate students was 56% female and 44% male (NCES, 2014).

In this study, there were slightly more males who participated than females, although participants were undergraduate students enrolled in distance education specifically. A chi-square goodness of fit test to test for differences in gender with undergraduate students in general with the sample was conducted. It was found that there were significant differences between the number of females and male

participants in the sample when compared to the percentage of male and female undergraduate students in the United States ($\chi^2(1) = 13.569$, $p < .0005$).

Table 1

Gender by Frequency and Percent

	Frequency	Percent
Male	174	54.2
Female	147	45.8

As Table 2 shows, the majority of the respondents in the sample were Caucasian, non-Hispanic (64.2%), followed by African American (13.7%), Hispanic/Latino American (9.7%), biracial, (8.7%), and Native American (3.7%). In comparison, American college students in 2011 was made up of 14% Hispanic students, 6% Asian/Pacific Islander students, 15% African American students, 0.9% Indian/Alaska Native students, and 61% Caucasian students (NCES, 2013).

Table 2

Ethnicity by Frequency and Percent

	Frequency	Percent
Caucasian, Non-Hispanic	206	64.2
African American	44	13.7
Hispanic/Latino American	31	9.7
Native America	12	3.7
Biracial	28	8.7

As Table 3 shows, the majority of respondents in the sample were aged 18-24(40.5%), followed by aged 25-30 (34.3%), aged 31-40 (16.8%), 46-50 (3.1%), 41-45(2.8%), and 51 or over (2.5%). In comparison, in the academic year of 2007-2008, age composition of undergraduates enrolled in distance education consisted of 44.2% who were 23 or younger, 21.9% who were 24-29, and 33.9% who were 30 or older (Radford, 2011).

Table 3

Age by Frequency and Percent

Age	Frequency	Percent
18-24	130	40.5
25-30	110	34.3
31-40	54	16.8
41-45	9	2.8
46-50	10	3.1
51 and above	8	2.5

Table 4 shows, the majority of the total sample were single (72.3%), followed by married (22.4%), and divorced/separated (5.3%). In comparison, in the academic year of 2007-2008, undergraduates enrolled in distance education consisted of 27.8% who were married, and 72.2% who were unmarried or separated (Radford, 2011).

Table 4

Marital Status by Frequency and Percent

Marital Status	Frequency	Percent
Married	72	22.4
Single	232	72.3
Divorced/Separated	17	5.3

As shown in Table 5, the majority of the sample identified that they were seniors (62.6%), followed by freshman (37.4%). As shown in Table 6, slightly above half of the sample identified that they were enrolled as full time students (57.6%) compared to part time students (42.4%). In the United States in 2012, undergraduate students who were attending 4 year institutions, 77% of the students were attending full time (NCES, 2014c). In this study then, there was a lower representation of full time students; however, only those attending distance education classes were surveyed. A chi-square goodness of fit test to test for differences in the percentage of undergraduate students in the United States enrolled in part-time or full-time studies with the sample was conducted. It was concluded that there were significant differences between the number of participants who were part-time students or full-time students when compared to the percentage of part-time or full-time undergraduate students in the United States who were attending 4 year institutions ($\chi^2(1) = 67.989$, $p < .0005$).

Table 5

Year of School by Frequency and Percent

Year of School	Frequency	Percent
Freshman	120	22.4
Senior	201	72.3

Table 6

Part-Time Versus Full-Time Students

	Frequency	Percent
Part-Time	136	42.4
Full-Time	185	57.6

Table 7 shows, 33% of the total respondents identified that they were taking four classes, followed by 23.1% taking two classes, 18.4% taking three classes, 14% taking five classes, and 11.5% taking one class. As shown in Table 8, the majority of the total sample identified that they were enrolled in one distance education class (38.6%), followed by those enrolled in two distance education classes (31.2%), enrolled in three distance education classes (15.9%), those enrolled in four distance education classes (10.9%), and those enrolled in five distance education classes (3.4%).

Table 7

Total Classes Enrolled in by Frequency and Percent

	Frequency	Percent
1	37	11.5
2	74	23.1
3	59	18.4
4	106	33.0
5	45	14.0

Table 8

Total Distance Classes Enrolled in by Frequency and Percent

	Frequency	Percent
1	124	38.6
2	100	31.2
3	51	15.9
4	35	10.9
5	11	3.4

Results

Analysis of Year of Study and Overall Stress Levels

Participants were categorized into two groups: USEDE who are in Year 1 of their program (N = 120, 37.4%) and USEDE who are in Year 4 of their program (N = 201, 62.6%), all who identified that they were taking enrolled in at least one distance education class. The HESI is composed of 33 statements indicating the absence or presence of stressful aspects to be rated on a 4 point Likert scale (1 = *does not apply at all*, 2 = *does not apply very much*, 3 = *applies fairly well*, and 4 = *applies perfectly*) and was used to measure levels of overall stress. A total stress score was calculated by totalling the scores of the HESI. Please note that for Questions 2, 6, 8, 10, 13, 17, 19, 26, 27, and 33, the order was reversed as they describe the absence of stressors.

The first research question was: Based on the HESI, are there differences in overall stress levels evident in USEDE who are in Year 1 of their program and USEDE who are in Year 4 of their program? The null hypothesis was that there are no significant differences in stress scores in among USEDE who are in Year 1 compared to USEDE who are in Year 4. The alternative hypothesis was that there is a significant difference in stress scores among USEDE who are in Year 1 compared to USEDE who are in Year 4.

The Levene's Test of Equality of Error Variances was significant ($F(3, 317) = 16.131$, $p < .001$). The subsequent results then must be interpreted with caution. The ANOVA showed no statistical difference between the USEDE who were in Year 1 of their program and USEDE who were in Year 4 of their program in their overall stress levels, $F(1,84) = .679$, $p = 0.410$, $\eta^2 = < .001$ (Table 9). The null hypothesis that there

are no significant differences in stress scores among USEDE who were in Year 1 compared to USEDE who were in Year 4 was supported. The top worries identified by USEDE who are in Year 1 of their program are shown in Table 10. The top worries identified by USEDE who are in Year 4 of their program are shown in Table 11.

Table 9

Dependent Variable: Total Score on the Higher Education Stress Inventory

Source	*SS*	*df*	*F*	*p*
Year of Study	157.826	1	.679	.410
Error	32553.467	84		

Table 10

Year 1 Top Worries in Descending Order

Worry	*M*	*SD*
As a student, my financial situation is a worry	2.72	0.980
I am worried about my future economy and my ability to repay student loans	2.66	1.104
I worry about working long hours and responsibilities in my future career	2.45	1.003
I am worried that I will not acquire all the knowledge needed for my future profession	2.44	1.011
I am able to influence the studies	2.42	0.904
The insight I have had into my future profession has made me worried about the stressful workload	2.42	0.949

Table 11

Year 4 Top Worries in Descending Order

Worry	*M*	*SD*
As a student, my financial situation is a worry	2.84	1.012
I am worried about my future economy and my ability to repay student loans	2.65	1.099
I worry about working long hours and responsibilities in my future career	2.55	0.932
Studies control my life and I have little time for other activities	2.43	0.835
As a student you are often expected to participate in situations where your role and function is unclear	2.42	0.857

Analysis of Gender and Overall Stress Levels

Students were categorized into two groups: male (N = 174, 54.2%) and female (N = 147, 45.8%), all who identified that they were taking enrolled in at least one distance education class. The HESI with 33 statements indicating the absence or presence of stressful aspects to be rated on a 4 point Likert scale (1 = does not apply at all, 2 = does not apply very much, 3 = applies fairly well, and 4 = applies perfectly) was used to measure levels of overall stress.

Research question 2 was: Based on the HESI, do gender differences affect levels of stress in USEDE? The null hypothesis was that gender does not affect levels

of stress in USEDE. The alternative hypothesis was that gender does affect levels of stress in USEDE.

The ANOVA showed that there was a statistical difference between males and females in their stress levels, $F(1,84) = 31.442$, $p < .001$, $\eta^2 = .09$ (Table 12). The alternative hypothesis that gender does affect levels of stress in USEDE was then supported. It was found that male USEDE had higher overall scores on the HESI when compared to females. As shown in Table 13, male USEDE had significantly higher total scores on the HESI than females USEDE. The top five worries males identified in descending order are shown below in Table 14. The top five worries females identified in descending order are shown below in Table 15.

Table 12

Dependent Variable: Total Score on the Higher Education Stress Inventory

Source	*SS*	*df*	*F*	*p*
Gender	7304.301	1	31.442	<.001
Error	32553.467	84		

Table 13

Comparison of Gender on Total Score on the Higher Education Stress Inventory

Gender	*M*	*SD*
Male	76.64	12.172
Female	66.56	18.170

Table 14

Male Top Worries in Descending Order

Worry	*M*	*SD*
As a student, my financial situation is a worry	2.93	0.900
I am worried about my future economy and my ability to repay student loans	2.77	1.039
I worry about working long hours and responsibilities in my future career	2.66	0.863
I am worried that I will not acquire all the knowledge needed for my future profession	2.57	0.908
As a student, you are often expected to participate in situations where your role and function is unclear	2.57	0.800

Table 15

Female Top Worries in Descending Order

Worry	*M*	*SD*
As a student, my financial situation is a worry	2.64	1.091
I am worried about my future economy and my ability to repay student loans	2.52	0.936
I worry about working long hours and responsibilities in my future career	2.34	1.037
The insights I have had into my future profession has made me worried about the stressful workload	2.27	0.931
Studies control my life and I have little time for other activities	2.26	0.930

Analysis of Interaction Between Year of Study and Gender

Research Question 3 was: Based on the HESI, is there an interaction between year of study and gender? The null hypothesis was that there is no interaction between year of study and gender. The alternative hypothesis was that there is an interaction between year of study and gender.

The ANOVA showed that there was no interaction between year of study and gender, $F(1, 317) = 0.187$, $p = .666$, $\eta^2 < .001$ (Table 16). The null hypothesis that there is no interaction between year of study and gender was then supported.

Table 16

Interaction Between Year of Study and Gender

Source	*SS*	*df*	*F*	*p*
Gender x Year of School	43.414	1	0.187	.666
Error	32553.467	84		

Summary

In examining whether or not year of study impacted overall stress levels, participants were divided into two groups, USEDE who are in Year 1 of their program (*N* = 120, 37.4%) and USEDE who are in Year 4 of their program (*N* = 201, 62.6%), all who identified that they were taking enrolled in at least one distance education class. The overall score on the HESI was used as the dependent variable. The ANOVA showed that no statistical difference was found in overall stress levels between USEDE who are in Year 1 of their program and USEDE who are in Year 4 of their program. To examine whether or not gender impacted overall stress levels, participants were divided into two groups, male (*N* = 174, 54.2%) and female (*N* = 147, 45.8%). The ANOVA found that there was a statistical difference between overall stress scores between males and females. As shown in Table 13, males had significantly higher total scores on the HESI than females USEDE.

Based on the HESI whether or not there was an interaction between year of study and gender was examined. The ANOVA showed that there was no interaction between year of study and gender.

Chapter 5 provides an interpretation of the findings, limitations of the study, recommendations for future research, and discusses the implications of these findings.

Chapter 5: Interpretation, Limitations, Conclusion, and Recommendations

Introduction

Multiple researchers have examined the relationship between stress and students who attend school in traditional learning environments (e.g., Abouserie, 1994; D'Zurilla & Sheedy, 1991). Although in the last decade research on distance education has increased (e.g., Ramos & Borte, 2012), there have only been a limited number of researchers who have examined the relationship between stress and undergraduate students who attend distance classes specifically. This study was designed to aid in bridging the gap and examine USEDE and the specific stressors that they face and how different stages of education may impact this relationship.

This study was based on three research questions that addressed the impact of year of study on stress in USEDE, the impact of gender on stress in USEDE, and the interaction between year of study and gender. Overall, the ANOVA showed no statistical difference between the USEDE who are in Year 1 of their program and USEDE who are in Year 4 of their program in their overall stress levels. The ANOVA found that there was a statistical difference between overall stress scores between males and female USEDE. Lastly, the ANOVA showed that there was no interaction between year of study and gender.

Interpretation of the Findings

The HESI was selected to be used in this study based on the fact that it was designed specifically to capture a large assortment of stressful features that are applicable within numerous different higher education settings (Dahlin et al., 2005).

The three research questions addressed stress levels perceived by USEDE and how gender, year of study, and its interaction may impact stress levels.

Year of Study

This study found that there was no statistical difference between the USEDE who are in Year 1 of their program and USEDE who are in Year 4 of their program in their overall stress levels, all who identified that they were taking enrolled in at least one distance education class. This finding was unexpected, especially due to the fact that Yumba (2010) found that first year undergraduate students report higher levels of overall stress, largely due to major life changes; second year undergraduate students were found to report lower levels of stress, possibly due to the adaptation of new responsibilities and receiving access to social support networks. There are numerous possible reasons as to why no differences were found between USEDE who are in Year 1 of their program and USEDE who are in Year 4 of their program in their overall stress levels. First, online students are generally older, have more degree programs college credit hours, and higher grade point averages when compared to their counterparts who attend traditional learning settings (Diaz, 2002). In this study, 59.5% of the participants identified that they were 25 or older. Research has indicated that students having dependents who live at home, which might have expected to add to student's roles conflicts and demands, may actually provide students with emotional and practical support; older students generally have more mature dependents (Wiesenberg, 2001). Before entering an online program then, distance students may be more likely to have a wider support system in place that they can depend on from the start of their program. In addition, adult learners are generally

practical problem solvers with life experiences that make them more autonomous and self-directed (Howell, Williams, & Lindsay, 2003).

Adult learners are generally motivated by factors such as increasing their opportunities for employment and improving their professional skills; these motivating factors can serve to promote adaptation and coping skills when faced with stress (Rogers, 2007). Lastly, the coping process is assumed to be malleable, and individuals can learn to cope better through dealing and going through problems that are appraised as stressful (Contrada & Baum, 2011). The cognitive theory of emotions proposes that an individual's appraisal of a situation is the key that occurs in an emotional episode (Roeckelein, 1998). Coping skills can then develop and become more effective over time and with age as they encounter more situations which they must appraised (Contrada & Baum, 2011). As nearly 60% of the participants in this studied identified themselves as aged 25 or older, the participants in this research then may have already had coping and adaptation skills to use when they do encounter stress from the beginning of their distance learning career.

Gender

This study found that there was a statistical difference between overall stress scores between males and females. More specifically, it was found that male USEDE had higher overall scores on the HESI when compared to USEDE females. This finding is in line with some previous research. Misra, and McKean (2000) examined the interrelationship among academic stress, anxiety, leisure satisfaction, and time management among 249 university undergraduates. It was found that time management had a larger buffering effect on academic stress and that females had

time management behaviours that were more effective than males. This then would support the finding that the USEDE females had lower overall scores on the HESI when compared to the male counterparts. However, Misra and McKean (2000) also found that females experienced higher academic stress and anxiety overall. It has been suggested that males in general have a stronger tendency to avoid using emotion focused coping approaches, in comparison to females who predominately use this approach (Lawrence, Ashford, & Dent, 2006). Undergraduate males have found to have a greater ability to separate themselves from the emotions of a situation and have a stronger inclination to bottle up emotions (Lawrence et al., 2006).

As shown in Table 14 and Table 15 above, both male and female USEDE identified their top two worries as financially related; their financial situation and their ability to repay their student loans. In comparison, Ross (1999) found that the top stressors for undergraduate students in traditional learning settings were intrapersonal sources of stress the top five sources of stress were change in sleeping habits, vacation/breaks, change in eating habits, increased work load, and new responsibilities.

Older undergraduates and those with a dependent, spouse, or full-time employment generally participate more in distance education classes (Radford, 2011). Distance education students are also more likely to be employed fulltime (Radford, 2011). The flexibility that distance education provides allows students with various responsibilities, such as work and family, to pursue postsecondary credentials (Kolowich, 2010). However, these students have strong financial responsibilities.

Mature students are more likely to discontinue university due to financial stress (e.g., Bolam & Dodgson, 2003; Gerrard & Roberts, 2006). The loss of income, particularly for males who are used to being the family bread winner, can be particularly difficult for those who are under great amounts of pressure to be a "good provider" (Stone & O'Shea, 2013). Although distance education may provide the flexibility for students with various responsibilities with the opportunity to pursue higher education, financial stress appears to be a major stressor that they face as they attempt to balance all those responsibilities.

Limitations of the Study

The use of the HESI has its limitation as it depends on the subjectivity of each participant who evaluated their own stress and their ability to understand and honestly answer all the survey questions. Even though the HESI was chosen as it was designed specifically to capture a large assortment of stressful features that are applicable within numerous different higher education settings, its validity has not yet been thoroughly tested (Dahlin et al., 2005). I used an anonymous questionnaire so there was no follow up interview for participants who did not fully complete the survey; it is unclear if this affected the findings in any way.

Recommendations

Administrators of universities who provide courses to USEDE can use this study to aid in evaluating the particular needs of USEDE. Through identifying the key stressors and determining the influence of gender and year of study on stress levels, this study will allow universities who offer distance classes to their undergraduate population to better serve this population. Decision makers of universities who

provide distance classes to their undergraduate population then can use the findings in this study to make better informed decisions when deciding what services to offer to this population. The results in this study will help decision makers consider the particular needs of the USEDE population. Additional research; however, is recommended to even further enhance our knowledge of USEDE and the stressors they face.

Further studies on the level of perceived stress in USEDE should be completed with a larger sample. Longitudinal studies on USEDE will provide additional and valuable data that can be used for an in-depth look in the educational experience of USEDE. Qualitative studies that allow for the interaction with participants, such as asking follow up questions, may provide additional perspectives that will enhance our knowledge about USEDE. As this study focused on undergraduate students, further studies on the level of perceived stress on graduate students who are enrolled in distance education classes may provide additional information on the similarities and differences these two populations have in terms of stress. Lastly, this study's finding suggest that future research on examining social economic status can provide great insight as financial worries were identified as the top stressor for both male and female USEDE in this study.

Implications

This study will provide universities who offer distance education classes to undergraduate student's data about the particular needs and stresses USEDE face as they try to successfully complete their education. This new data then will in turn help with social change by providing administrators with information to better serve their

students to hopefully aid in broad-scale economic shifts through educating more skilled workers into the economy.

Harvard President Emeritus Bok emphasised the potential of online courses in terms of economic growth:

> Online courses may turn out to do an adequate job of training students for a wide variety of jobs that can be broken down into a set of clearly specified skills and information. Government officials who view universities as essential instruments of economic growth but are dismayed by their mounting cost may be delighted to find a means of vocational training that gets the job done without expensive facilities and large overhead costs. (Harvard Magazine, 2015, "A Future for Residential Education," para. 2).

Professionals in counselling may be able to use the results of this study to expand their understanding of potential clients who face challenges of pursing higher education through distance education. Given that overall stress levels do not appear to be impacted by year of study, administrators may be able to better address the undergraduate distance students' needs by incorporating stress reduction programs throughout the entire undergraduate career to ensure there is support throughout the entire undergraduate career. Since gender appears to be a differentiator of overall stress levels, with males having higher overall stress, this knowledge could be used to design stress reduction strategies that focus on the male USEDE specifically to target this population.

Understanding the stressors that USEDE face will assist professionals prepare students attending distance education. Both male and female USEDE in this study identified their top two worries were financially related; their financial situation and their ability to repay their student loans. This knowledge may be useful in designing stress reduction strategies that focus on the financial aspect of attending distance education specifically.

Students are facing both economic and cultural shifts. Johnson (2005) highlighted that in America, for lower income individuals, the greatest equalizer for them is education; the opportunity and access to education then levels the playing field. Access and the chance for education for low income and non-traditional students should be a core mission and value that must established (Johnson, 2005).

These cultural changes are a necessity and colleges and universities are reconsidering the way learning is structured and the format in which they deliver information and who their audience really is. Even Ivy League universities, such as Harvard, have realized the potential appeal of distance learning and have begun offering online learning opportunities (Harvard University, n.d.). As Betty Leydon, Princeton Vice President of Technology emphasizes their goal of providing knowledge and education to a wider audience:

> [Our goal] is to make an array of online teaching resources widely available and to deliver academically innovative instruction, not only to our own students, but to a much broader audience that includes our alumni, the higher education community and others interested in the pursuit of knowledge (Rakoczy, 2011, para 4)

The economy is continually changing and jobs are continually lost to foreign competition every day (Modic, 2004). Universities and administrators who increase their knowledge of the stressors that their students face, including USEDE, will help to educate the skilled worker needed to stay competitive in society. This link then will aid in generating social change in our society.

Conclusion

As the way learning is structured and the format in which information is delivered to students is adapted and modified, the number of undergraduate students taking distance education classes will remain a large portion of the undergraduate student population. Distance education was and will continue to be the answer to the need to provide access and services to individuals who would otherwise not have the opportunity to partake in face-to-face classes (Beldarrain, 2006). It is imperative to provide new data and information regarding the perceived stress these undergraduate distance students face to allow colleges and universities to offer appropriate resources and services to this population. The findings from this study will aid with the distribution of new data and is an important addition to the research that has been conducted in this field.

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Appendix A: Demographic Information

1. What is your gender?
   Male
   Female

2. How old were you at your last birthday?
   18-24
   25-30
   31-40
   41-45
   46-50
   51 or over

3. What is your marital status?
   Married
   Single
   Divorced/Separated

4. What year of school are you in?
   Freshman
   Sophomore
   Junior
   Senior

5. Are you currently enrolled as part-time or full-time student?
   Part time
   Full time

6. How many classes in total are you currently enrolled in?
   1
   2
   3
   4
   5

7. How many distance classes in total are you enrolled in?
   1
   2
   3

4
5

8. What is your ethnicity?
   Caucasian, non-Hispanic
   African American
   Hispanic/Latino American
   Native American
   Bi-Racial

Appendix B: Higher Education Stress Inventory

Higher Education Inventory (HESI)	Totally disagree	Somewhat disagree	Somewhat agree	Totally agree
1. Studies control my life and I have little time for other activities	☐	☐	☐	☐
2. I feel that my teachers treat me with respect	☐	☐	☐	☐
3. I am worried that I will not acquire all the knowledge needed for my future profession	☐	☐	☐	☐
4. The studies have created anonymity and isolation among students	☐	☐	☐	☐
5. The teachers often fail to clarify the aims of the studies	☐	☐	☐	☐
6. The studies stimulate my personal development	☐	☐	☐	☐
7. The professional role presented in the training conflicts with my personal views	☐	☐	☐	☐
8. The teachers give encouragement and personal attention	☐	☐	☐	☐
9. There is a competitive attitude among students	☐	☐	☐	☐
10. I am satisfied with my choice of career	☐	☐	☐	☐
11. I feel that the studies have played a role in creating a cold and impersonal attitude among students	☐	☐	☐	☐
12. As a student, my financial situation is a worry	☐	☐	☐	☐
13. My fellow students support me	☐	☐	☐	☐
14. I worry about long working hours and responsibilities in my future career	☐	☐	☐	☐
15. The training is characterised by an atmosphere where weakness and personal shortcomings are not accepted	☐	☐	☐	☐
16. As a student you are often expected to participate in situations where your role and function is unclear	☐	☐	☐	☐
17. I am proud of my future profession	☐	☐	☐	☐
18. I feel that I am less well treated because of my sex	☐	☐	☐	☐

	Totally disagree	Somewhat disagree	Somewhat agree	Totally agree
19. I am able to influence the studies	☐	☐	☐	☐
20. The insight I have had into my future profession has made me worried about the stressful workload	☐	☐	☐	☐
21. There is too much focus on passive learning of facts and too little on active seeking of knowledge and time for reflection	☐	☐	☐	☐
22. Expectations from my family have influenced my choice of career too much	☐	☐	☐	☐
23. I am worried about accommodation	☐	☐	☐	☐
24. I feel that I am less well treated because of my ethnic background	☐	☐	☐	☐
25. I meet many future colleagues that seem dejected or dissatisfied in their profession	☐	☐	☐	☐
26. I feel that the training is preparing me well for my future profession	☐	☐	☐	☐
27. Student union activities promote a sense of community and contribute to a better working environment for students	☐	☐	☐	☐
28. I am worried about my future economy and my ability to repay student loans	☐	☐	☐	☐
29. The education is highly characterised by group activities with unclear goals and with too much responsibility placed on the student	☐	☐	☐	☐
30. The literature is too difficult and extensive	☐	☐	☐	☐
31. The pace of studies is too high	☐	☐	☐	☐
32. The training demands that I join in situations that I find unethical	☐	☐	☐	☐
33. The teachers often give feedback on the students' knowledge and skills	☐	☐	☐	☐

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Appendix C: Consent Form

You are invited to take part in a research study of stress among undergraduate distance learners. The researcher is inviting undergraduate students enrolled in distance education classes who are in either Year 1 or Year 4 of their program to be in the study. This form is part of a process called "informed consent" to allow you to understand this study before deciding whether to take part.

This study is being conducted by a researcher named Susan Hoang, who is a doctoral student at Walden University.

Background Information:
The purpose of this study is to examine the relationship between stress and undergraduates who attend distance classes specifically.

Procedures:
If you agree to be in this study, you will be asked to:

- Access the survey through Mechanical Turk
- Complete two surveys: a demographic questionnaire and the Higher Education Stress Inventory
- Click the "submit" button at the end of the survey document which will automatically forward the completed survey to the researcher

Here are some sample questions:

- What year of school are you in?
- I feel that my teachers treat me with respect.

Voluntary Nature of the Study:
This study is voluntary. Everyone will respect your decision of whether or not you choose to be in the study. No one at Walden University will treat you differently if you decide not to be in the study. If you decide to join the study now, you can still change your mind later. You may stop at any time.

Risks and Benefits of Being in the Study:
Being in this type of study involves some risk of the minor discomforts that can be encountered in daily life, such as fatigue, stress or becoming upset. Being in this study would not pose risk to your safety or wellbeing.
There are no direct benefits to you for participating in this study. I am hoping the information from this study will help universities who offer distance education classes must be better prepared to provide effective interventions to reduce and minimize stress and maximize the potential for academic success in their students.

Payment:
Each participant will be compensated $.50USD for their time. In addition, the author does intend to publish the results in an academic journal upon the completion of this study. This will provide the participants with an opportunity to read the results. The author also intends to post a summary of the results on a webpage to provide the participants with another opportunity to read the results.

Privacy:
Any information you provide will be kept anonymous. The researcher will not use your personal information for any purposes outside of this research project. Also, the researcher will not include your name or anything else that could identify you in the study reports. Your record and responses to all the questionnaires will be coded with a sequential number. Data will be kept secure by keeping research records in a locked file; only the researcher(s) will have access to the records. Data will be kept for a period of at least 5 years, as required by the university.

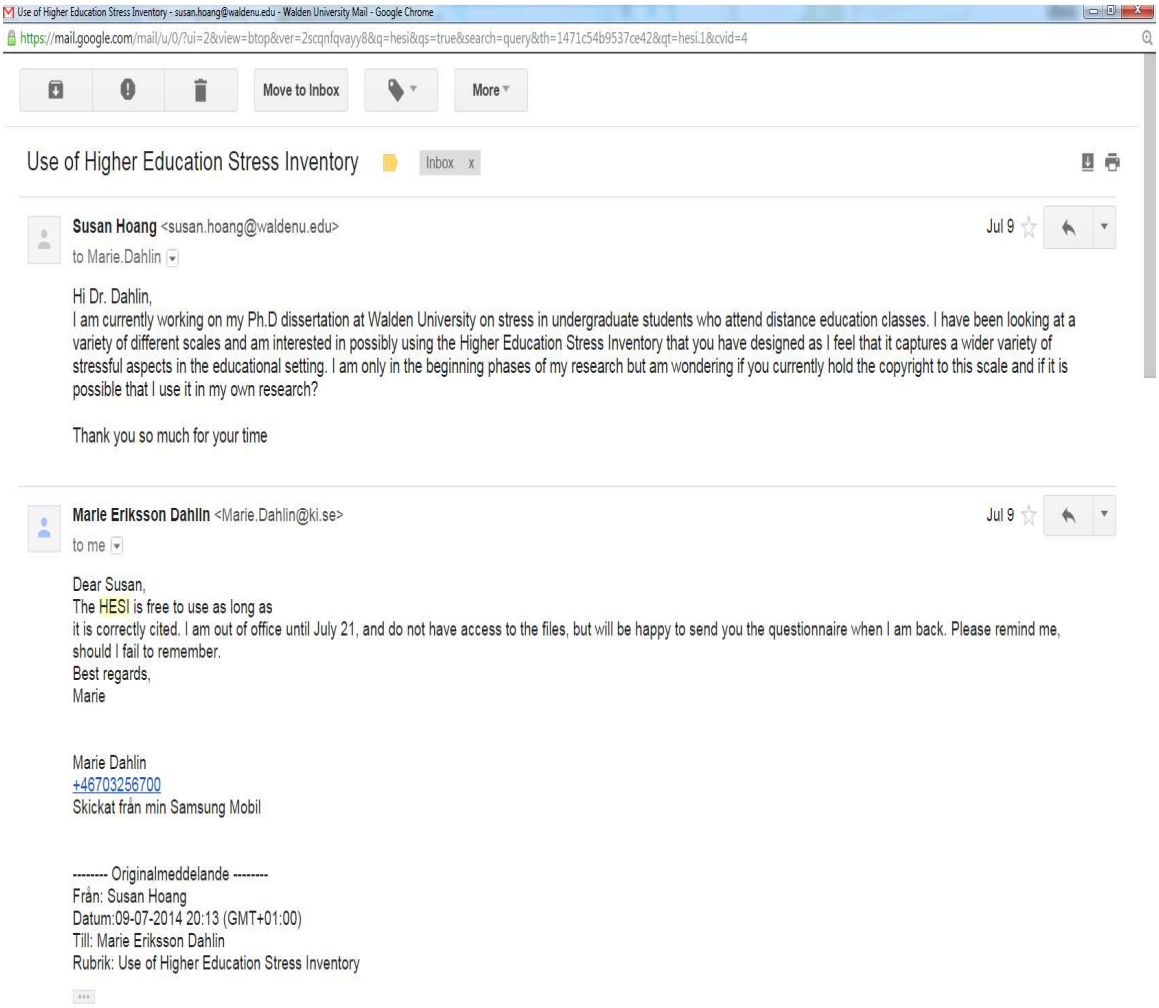
Contacts and Questions:
The researcher conducting this study is Susan Hoang. If you have questions later, you may contact the researcher via email at susan.hoang@waldenu.edu. If you want to talk privately about your rights as a participant, you can call Dr. Leilani Endicott. She is the Walden University representative who can discuss this with you. Her phone number is 612-312-1210 Walden University's approval number for this study is **03-03-15-0376423** and it expires on **March 2, 2016.**

Please print or save this consent form for your records.

Statement of Consent:

I have read the above information and I feel I understand the study well enough to make a decision about my involvement. By clicking the link below, I understand that I am agreeing to the terms described above.

Appendix D: Permission to Use Higher Education Stress Inventory



Use of Higher Education Stress Inventory - susan.hoang@waldenu.edu - Walden University Mail - Google Chrome

https://mail.google.com/mail/u/0/?ui=2&view=btop&ver=2scqnfqvayy8&q=hesi&qs=true&search=query&th=1471c54b9537ce42&qt=hesi.1&cvid=4

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Use of Higher Education Stress Inventory Inbox x

Susan Hoang <susan.hoang@waldenu.edu> Jul 9

to Marie.Dahlin

Hi Dr. Dahlin,
I am currently working on my Ph.D dissertation at Walden University on stress in undergraduate students who attend distance education classes. I have been looking at a variety of different scales and am interested in possibly using the Higher Education Stress Inventory that you have designed as I feel that it captures a wider variety of stressful aspects in the educational setting. I am only in the beginning phases of my research but am wondering if you currently hold the copyright to this scale and if it is possible that I use it in my own research?

Thank you so much for your time

Marie Eriksson Dahlin <Marie.Dahlin@ki.se> Jul 9

to me

Dear Susan,
The HESI is free to use as long as
it is correctly cited. I am out of office until July 21, and do not have access to the files, but will be happy to send you the questionnaire when I am back. Please remind me, should I fail to remember.
Best regards,
Marie

Marie Dahlin
+46703256700
Skickat från min Samsung Mobil

-------- Originalmeddelande --------
Från: Susan Hoang
Datum:09-07-2014 20:13 (GMT+01:00)
Till: Marie Eriksson Dahlin
Rubrik: Use of Higher Education Stress Inventory

Appendix E: Screen Shot of Survey Online