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Explaining Relationships Between Stress and Resilience in Pharmacy Students

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A Dissertation Submitted to The Graduate School at the University of  
Missouri – St. Louis in partial fulfillment of the requirements for the degree  
Doctor of Philosophy in Education with an emphasis in  
Educational Leadership and Policy Studies

August 2020

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### ABSTRACT

Stress is a growing issue on college campuses, and students in a professional pharmacy program may be at an even greater risk for problems associated with it. The purpose of this exploratory study was to gain information about resilience and its relationship with stress, high-risk behaviors, and grade point averages (GPAs) in college students who recently completed their first professional (P1) year of a pharmacy program. The research questions for this study are: 1) What is the relationship between levels of stress and level of resilience in pharmacy students who recently completed their P1 year at MSPU?; 2) What is the relationship between high-risk behaviors and level of resilience in pharmacy students who just completed their P1 year at MSPU?; and 3) What is the relationship between GPA and level of resilience in pharmacy students who recently completed their P1 year at MSPU?

A quantitative study was utilized to address the research questions. The three measurement tools used included the Visual Analogue Scale for stress, The Resilience Scale™ (Wagnild, 1993), and the Health Behaviors Questionnaire (Ingersoll & Orr, 1989). A self-report, multiple-survey design was utilized. The Pearson product moment and t-test significance tests were used to answer the research questions. Data was collected through an online questionnaire administered through the college's email system to professional pharmacy students who just completed their P1 year at a Midwestern university. The response rate was 62%.

This study successfully uncovered baseline information regarding P1 pharmacy stress and resilience. Students reported a mid-high level of general stress, and other evidence from this dissertation suggests that stress is in fact a major area of concern on

campus. The P1 students have the heaviest usage of counseling center hours, and the topics most often shared as their presenting issues are academic concerns, anxiety/worry, and depressed mood.

However, this study also revealed promising results that students who are higher in resilience report lower stress. Those higher in resilience also were less likely to exhibit emotional risk behaviors that are considered harmful to overall health, such as feeling upset, lonely, nervous, tense, and sad. The campus community, including students, should be made aware of the benefits of formal resilience education, as well as sufficient psychological and academic support on campus. Armed with this knowledge, everyone can then work together to create a healthier environment which produces successful pharmacy professionals. The study concludes with suggestions for future research.

This dissertation is in dedicated to all the strong, red-loving women in my family who came before me, as well as my daughters. Vivian and Scarlet - I want my work on this degree to help you know that you can do big things – whatever “big” is to you.

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# **CHAPTER 1**

## **Introduction**

### **College and Stress**

College can be an extremely stressful time for students. Campus administrators must pay attention to the personal and academic stress of their students and work to make their environments a healthier place to learn and grow. College students frequently face academic stressors related to adjusting to new methods of teaching and learning, doing homework, taking exams (Ibrahim, Mohtar, Sabo, Rahim, & Affrin, 2015), and worrying about getting good grades (Persike & Seiffge-Krenke, 2012). They also often encounter stressors related to personal issues such as having to manage their own finances, loss of traditional support structure (Robothom, 2008), or working outside of school (Perna, 2010).

Levine and Dean (2012) described college students as “a generation on a tightrope” (preface). They are struggling to stay balanced as they attempt to manage the distance between their dreams and the reality of their world that is ever-changing. The current generation is characterized by little involvement in campus life, a weakness in academic skills, heavy usage of campus counseling, and a partiality to sex and alcohol (Levine & Dean, 2012). If students do not come to school with mental health issues, the stress of their college experience may increase their chance of developing them.

According to the 2018 Penn State Center for Collegiate Mental Health (CCMH) annual report, anxiety and depression continue to be the most common issues for students. Anxiety did not increase in prevalence for the first time in four years, whereas depression continued to increase. Similarly, students in the American College Health Association Fall 2018 survey reported that within the last 12 months, the top three factors

affecting their academic performance were stress (31.9%), anxiety (25.9%), and depression (16.9%). The 2018 CCMH annual report also shared that “the self-reported lifetime prevalence rates of “threat-to-self” characteristics (non-suicidal self-injury, 27.8%; serious suicidal ideation, 35.8%; and suicide attempts, 10.3%) increased for the eighth year in a row among students receiving counseling services” (p. 4). Stallman (2010) studied 6,479 college students from two universities and found that 19.2% of the student population possessed a mental health problem. This was, in fact, significantly higher than the non-college population.

Students may adopt poor self-care habits and can even have physical problems as a result of high stress. One study of college student stress revealed that students who are stressed are more likely to consume soda and junk food, but are less likely to exercise, eat breakfast, or eat fruits and vegetables (Hudd et al., 2000). In addition, stress has been associated with an increase in physical problems such as headaches (Labbe, Murphy, & O’Brien, 1997), a decrease in the ability to sleep (Peltzer & Pengpid, 2015), and suppression of the immune system (Stone et al., 1992).

If students perceive their lives as stressful and are unable to deal with the stress, it can obstruct their learning and performance (Delaney, Miller, El-Ansary, Remedios, Hosseini, & McLeod, 2015; Dunn, Iglewicz, & Moutier, 2008). A report by the American College Health Association (2018) revealed that the top two reasons students reported academic difficulty were stress (31.9%), anxiety (25.9%), and sleep difficulty (20.2%). Stressed-out students are more likely to doubt their ability to be successful in life and school (Bong & Skaalvik, 2003). Students’ belief in their ability to carry out tasks such as preparing for exams and term papers is called academic self-efficacy, and

the higher this is in a student, the better the chance of getting good grades and persisting in one's program (Zajacova, Lynch, & Espenshade, 2005).

How are institutions addressing issues related to stress in their student population?

Colleges have many support resources available for students, both academic and personal. These may include individual and group tutoring, programs to help them develop time management strategies and study skills, one-on-one meetings with faculty, fitness and recreation centers to help them stay fit, a variety of mental and medical health professionals available, and opportunities for involvement in campus organizations.

Counseling centers specifically have adopted different approaches to meet the needs of students over the years. Beamish (2005) states that in the past they may have seen their role more as simply supporters of the normal developmental struggles that college students face, such as homesickness or dealing with roommate conflicts. Because so many students now come to the counseling center with higher-level issues such as depression, anxiety, or other serious mental health issues, campus counselors have had to take a more therapeutic approach to their work in decreasing student stress.

Brunner, Wallace, Keys, and Polychronis (2017) discuss the comprehensive approach now taken by modern counseling centers by describing the four pillars of their efforts – clinical work, consultation, outreach and prevention, and training. In addition to the work to which most people are familiar – individual, couples, and group therapy, counselors also often consult with faculty, staff, friends, and parents to gain information that may be important about a student. They also may serve on behavioral intervention teams and students of concern committees on campus, as well as respond to emergency situations. In addition, they may engage in activities outside of their offices by training

campus groups about mental health issues, doing classroom outreach, and creating programs to help support the well-being of both healthy and at-risk students on topics such as resilience development (Delaney et al., 2015; Dyrbye & Shanafelt, 2012; Dunn et al., 2008). And finally, Mitchell, Oakley, and Dunkle (2019) discuss how many college mental health professionals are now more than ever collaborating with medical professionals on campus, with a goal of providing holistic care to the student population.

### **Statement of the Problem**

The strategic plan for Middle States Pharmacy University (pseudonym) states that it “aims to facilitate and sustain the professional and personal growth and well-being of the College community” (Middle States Pharmacy University, 2018). MSPU has a reputation for graduating pharmacists with a great deal of knowledge in their field, but in this effort to create technically skilled pharmacy students, it may have developed an environment in the professional program where students are experiencing potentially unhealthy levels of stress.

Students in the first professional year through the third professional year (P1, P2, P3) at MSPU are enrolled in at least 16 credit hours each semester, almost all of which are science-based (Academic Catalogue, 2018-2019). These same students are required to have labs or multiple practice experiences in and out of the classroom, and they must complete large numbers of assignments and exams – all of which have increased exponentially in number since their undergrad studies. There is also added pressure on the students because many classes are only offered once a year. If students do not get a grade of C or above, they may fall behind a year, will no longer be with their cohort of classmates, and will owe thousands more dollars in tuition. The accrediting body for the

pharmacy schools also places high expectations on student preparation, including many hours during the summer practicing at different pharmacy settings. Accreditors also require tracking of co-curricular activities during the school year that will help students become well rounded professionals (e.g. service to the community, diversity courses, etc.). All of these requirements are important for development into well rounded pharmacists who can be successful in a field that requires a tremendous amount of knowledge about medicine and its effect on the body, but it places a great deal of pressure on students.

Previous assessment of first year professional pharmacy students, or P1s, suggests that these students in particular are at risk for major problems associated with stress. A 2013 study by Geslani and Gaebelein, the only study located on P1 students and stress, revealed the presence of higher levels of perceived stress among a group of P1 students at MSPU than in groups of students from other health profession preparation programs at other institutions. Sixty-eight percent of the P1 students in their study scored at levels of stress that was determined to be extremely unhealthy.

More recent data acquired from the College Health Behavior Survey (2018), administered by multiple colleges in the state where MSPU is located, shares sobering information about the stress that all responding students report about their experience. Eleven percent of MSPU students reported that “my stress as unbearable”, compared to 4.2% of students from other schools in the state that participated in the study. Also, 17% of these students reported that “stress impacts or interferes with their academic life”, compared to 8.6% of other students.

Data pulled directly from the MSPU Counseling Center also suggests that there was a major upsurge in campus-wide counseling center usage at MSPU from the 2016/2017 to 2017/2018 school years (Hastings, 2018a). The counseling staff also saw a campus-wide increase during these same years in after-business-hours crisis intervention, as well as referrals for judicial cases associated with policy violations (e.g. alcohol and marijuana) (Hastings, 2018a). According to Hastings (2018b), P1 students have the heaviest usage of counseling in all of the grade levels/years, reporting that 44% of the counseling center demand was created by students between the age of 21 and 23, the most common age for P1 students. The topics most often shared as the presenting concern by P1s are academic concerns (16%), anxiety/worry (15%), and depressed mood (13%) (Hastings, 2018a).

Because of the desire to succeed, students often do not get enough sleep, and relationships with others may be strained. They also may turn to drugs or other unhealthy behaviors to cope. Data pulled from the previously mentioned College Health Behavior Survey (2018) indicated that 21% of MSPU students reported chronic sleep issues in the past year, in comparison to 19% of students from other schools in the state. In addition, 21% reported that stress has interfered “a great deal” with their personal life, whereas 12% of other students in the state feeling that way. Next, 2.4% of students reported drinking nine to eleven days in the past two weeks, compared to 1.2% of students in schools from the state who also reported drinking this amount. Four percent of MSPU students reported having alcohol abuse/dependency in the past year compared to 2.5% of students from other schools. Three and one half percent of MSPU students reported using benzodiazepines/sedatives without a prescription compared to 2.6% elsewhere, and

31% of MSPU students reported gambling in the past year compared to 23% of the other students.

Students who are not managing all of this stress may have mental and physical health problems, an increased chance for error in their school and work, and decreased persistence rates. Because of these issues, the struggling students may also require more teaching and educational support resources on campus, and this reduces everyone's ability to focus on their goals.

### **Purpose of the Study**

Much like other college campuses in the United States, there has been an increased demand for counseling services at MSPU, both in the counseling center and in after-hours crisis intervention. Nearly half of the usage at MSPU is by students who typically fall into the age group of 21 to 23 years, the typical age for P1 students. The most common reasons of student concern are depression, anxiety, and academic concerns. Research suggests that attention to these kinds of demands have been focused on in postsecondary institutions but less so in pharmacy institutions. The purpose of this exploratory study will be to gain information about resilience and its relationship with stress, high-risk behaviors, and GPA in first year professional students at MSPU. This group is of particular interest because the P1 year is the first year of the professional program. The study of resilience is also of particular curiosity because it has generated a great deal of attention in general higher education research, but not specifically in pharmacy education. The researcher acknowledges that the field of resilience research is quite expansive, but she would like to gain information about college student resilience that would inform possible programming directed at stress reduction in this group.



The research questions for this study will include the following:

1. *What is the relationship between levels of stress and level of resilience in pharmacy students who recently completed their P1 year at MSPU?*
2. *What is the relationship between high-risk behaviors and level of resilience in pharmacy students who just completed their P1 year at MSPU?*
3. *What is the relationship between GPA and level of resilience in pharmacy students who recently completed their P1 year at MSPU?*

This research could help administrators re-examine the types and severity of issues related to the stress experienced by first-year professional students at MSPU and create a solid starting point for the generation of solutions.

### **Significance of the Study**

Although there has been a large amount of research conducted on college students in relation to stress, high-risk behavior, and resilience, there is a lack of work in these areas with pharmacy students. The lack of information related to these students and their stress presents a large gap in knowledge within this area and drives the importance of the study.

Understanding the types and severity of issues related to stress at MSPU will help college leaders understand their students and make planning decisions that will affect pharmacy students on an individual level. What is their stress level? What unhealthy coping behaviors are they most exercising, such as substance misuse? Are the students who are most stressed the least resilient, and can we build programs to help them develop this characteristic? The college wants to graduate happier, healthier, and more skilled pharmacists. Research suggests that students' perception of high stress and their ability

to deal with it can interfere with their capacity to learn, perform clinically, and ultimately care for their patients (Delaney et al., 2015; Dunn et al., 2008). The end goal is to help the students maintain better physical and mental wellness while gaining useful pharmacy knowledge and skills.

Conducting this research could also positively affect MSPU as a whole. It is likely that helping students manage their academics will also reduce their stress, or maybe reducing their stress will help students improve academically. Either way, a decrease in student stress could increase the likelihood that students will persist through the program. Persistence and graduation affects many areas of the university such as its operating budget, graduation data that is reported to accrediting agencies, and the reputation of the institution. Also, when the faculty and staff are able to spend less time on struggling students, they may also expend greater resources toward enhanced teaching and learning for both their students and their own professional development. At the same time, faculty and staff may also experience less workplace stress if they are regularly with a population who experiences less stress. Students and alumni who are well and satisfied will also spend more time giving time, talents, and financial contributions back to the college, as well as recommend that new students seek admittance. Finally, MSPU administration can use knowledge of the above effects in its decision making as it relates to P1 students and beyond. Examples of issues may include the right balance of difficult classes offered at one time, the amount of information expected to be acquired in each class, the types and numbers of support services being offered, or even the number of days provided to study for final exams.

How might this study affect society? Multiple studies have been conducted on pharmacists and job-related stress, suggesting that high stress extends beyond pharmacy student preparation. Boyle and colleagues (2016) stated that pharmacy practice, especially in the community setting, is faced with a wide variety of stressors including time pressures and a constant need for accuracy. The ability to train pharmacy students to manage stress will increase the accuracy of their work as professional pharmacists, decreasing the risk of medication errors in practice settings out in the community and increasing their ability to support their patients.

### **Definition of Terms**

*Academic Self-Concept:* A student's knowledge and perceptions about his/her own academic ability (Bong & Skaalvik, 2003).

*Adversity:* This is what sets resilience apart from other processes or traits. A person must experience challenge, change, or stress in order for resilience to occur (Earvolino-Ramirez, 2007).

*Distress:* A general term used to describe unpleasant feelings or emotions that impact your level of functioning.

*Eustress:* Positive stress; to a certain point, stress can be a motivator, but when a person has reached a specific amount of stress, productivity declines (Selye, 1975).

*Health-Related Quality of Life:* A person's physical, psychological, and social domains of health, seen as distinct areas that are influenced by a person's experiences, beliefs, expectations, and perceptions (Testa & Simonson, 1996, p.835).

*High-risk Behavior:* Behaviors such as smoking, hazardous alcohol consumption, and unprotected sexual intercourse.

*Late Adolescence:* Stage of human development between the ages of 18 and 21

(American Academy of Pediatrics, 2017).

*Medical Student:* A student enrolled at a medical school, who is training to become a physician.

*Mental Illness:* Psychiatric disorder that is stressful for the student but also may cause disruption to the living and learning communities to which a student belongs (Beamish, 2005).

*Positive Adaptation:* The ability to manage a stressor and return to a level of performance that sets the standard for success Earvolino-Ramirez (2007).

*Positive Psychology:* The study of people's strengths and virtues. It suggests that the nature of humans is to be physically and mentally well (Emmons, 2007).

*Resilience:* The ability to face a challenge and then cope with it, which can actually help increase the ability to handle later stressors and trials in life (Rutter, 2006, 2012).

*Self-Esteem:* A belief that they can achieve great things.

*Stress:* A physical, chemical, or emotional factor that causes bodily or mental tension and may be a factor in disease causation (Merriam-Webster Dictionary, 2018).

*Student History, Behaviors, and Resources:* Information gathered within the study questionnaire, including number of hours students worked per week, involvement in extracurricular activities, resources used, persons on whom they primarily rely for support, etc. (see Table 1).

### **Summary**

College can be a stressful time for many students. There are adversities such as academic and social pressures, as well as emotional struggles. Many in this age group

are also likely to involve themselves in risk-taking behavior such as alcohol and drug consumption. Knowing that students in a standard college setting such as undergraduate liberal arts institutions are likely to experience a high level of stress and mental illness, administrators in academically rigorous colleges or universities such as pharmacy schools may need to be even more attentive to their students' wellness.

Studies have revealed that students in pharmacy schools carry extremely high levels of stress (Alzaeem, Sulaiman, & Wasif Gillani, 2010). Students may encounter struggles such as heavy workload, long hours of study, the pressure of exams, worry about grades, and financial issues. Those who are not able to manage their stress in healthy ways may have mental and physical problems, a higher chance for error in their school and work, and a decreased chance of graduating. At the same time these struggling students may also require the use of more teaching and educational support resources on campus, reducing everyone's ability to focus on their goals.

The purpose of this quantitative study will be to gain an understanding of the stress levels, high-risk behaviors, and resilience to stress in a population of students who attend a MSPU professional pharmacy program. Possession of this knowledge will give the college a baseline of information to determine problem areas, preparing for next steps in the creation of a healthier environment for its students. A healthier environment should in turn produce happier, healthier, and more skilled pharmacists, better prepared to positively impact patients, their families and friends, and society.

### **Organization of the Study**

This study consists of five chapters. Chapter One is the introduction and includes the background and purpose of the study, including research questions. It also includes

the significance of the study and definitions of terms. Chapter Two includes a literature review covering stress and resilience in college students, specifically college students in pharmacy programs. Chapter Three discusses the research method used in the study, data collection, and method of analysis, as well as the research questions. Chapter Four discusses the results and discussion of the findings, and Chapter Five explains the conclusions and recommendations of the study.

## CHAPTER 2

### Literature Review

It is important to examine the stress experienced by college students, as this can affect their success in college. There are many sources and levels of stress in this group, ranging from daily irritants to major events in their lives (Fletcher & Sarkar, 2013). Small levels of stress can be healthy and contribute to success (Selye, 1975), but stressors can also create challenges to physical and mental health (Labbe, Murphy, & O'Brien, 1997; Peltzer & Pengpid, 2015; Stone et al., 1992), with poor academic performance as a possible result. At the same time, the added pressure on students could also increase the likelihood of them turning to risky behaviors such as alcohol or drug use in order to cope with the stress (Frick, Frick, Coffman, & Dey, 2011).

To highlight one especially high-stress area of higher education, the culture of professional schools such as medicine and pharmacy can support the notion that a student's work should come before personal wellness (Dyrbye & Shanafelt, 2012). Many of these students enter college with high GPAs or standardized exam scores, but they experience difficulty because they do not possess the necessary psychological resources to help them cope with stressors that accompany demanding curricula. Students often sacrifice sleep, nutrition, and personal relationships in order to maximize time spent studying, in hopes they will receive a desired grade.

Pharmacy programs are a specific group in medical education that can be a breeding ground for high stress. The material is difficult, there are many high-stakes exams, students often believe they do not have enough time to complete everything, and it typically takes at least seven years of college to graduate. If students perceive their

lives as stressful and are unable to deal with the stress, it can get in the way of their learning and performance (Delaney et al., 2015; Dunn et al., 2008). These students are more likely to doubt their ability to be successful (Bong & Skaalvik, 2003), and their general quality of life is often decreased (Gaebelein & Geslani, 2013; Gupchup, Borrego, & Konduri, 2004; Hirsch, Do, Hollenbach, Manoguerra, & Adler, 2009; Konduri, Gupchup, Borrego, & Worley-Louis, 2006; Payakachat, Gubbins, Ragland, Flowers, & Stowe, 2013). If they do not come to school with mental health issues, the stress of the program may increase their chance of developing them.

Armed with the knowledge that their students may be at risk physically and mentally, pharmacy schools should closely examine students' stress level and high-risk behavior. Faculty, staff, and administrators should search for any frequently encountered risk factors, as well as the potential means for helping them overcome these stressors. Resilience research is a promising way to do so, through investigation of internal and external resource development (Masten and Reed, 2002). Programs can be created to help students develop personal characteristics such as self-esteem (a belief that they can achieve great things) (Earvolino-Ramirez, 2007; Hunter & Chandler, 1999), an awareness that humor can get them through tough times (Earvolino-Ramirez, 2007), and the ability to utilize the emotional response that best matches the level of adversity that is faced. Other programs can encourage ways to build supportive relationships with classmates, faculty, and staff on campus, all which can be important external protective factors (Tinto, 1975).

The purpose of this study was to learn more about the current stress level, resilience, and coping behaviors of Doctor of Pharmacy students after their first



professional year (P1) at a Midwestern pharmacy college. It aimed to examine demographics such as GPA, race, and sex as examples, but it also investigated levels of stress, high-risk behaviors, and levels of resilience of these students. To support the research goals of this investigation, this chapter shares a literature review which starts out discussing how stress can be harmful to the mind and body. It also shares the many reasons college students often experience high stress and how it can affect their academic performance. Pharmacy student stress is emphasized, as their curricula are often associated with extremely difficult coursework, demanding schedules, and high pressure. The chapter also reviews the main concepts that have emerged from resilience research, including definitions and common themes. Using these main ideas, the chapter concludes with a discussion of how efforts to develop resilience can be a practical step in helping students be successful in a high-stress, high stakes academic environments. No research has been done on the relationships between stress and resilience, high-risk behaviors and resilience, and GPA and resilience in first year professional (P1) pharmacy students. The content being shared in this chapter sets the structure for future work in this area.

The foundational framework of this study is supported by research and theories related to positive psychology, the tendencies for students to engage in high-risk behaviors, the high prevalence of adversity in college students, and the even higher risk of stress in those who attend pharmacy education programs. Resilience is seen as something that is ordinary in human beings, is both internal and external to all, and is available to help students cope with the stress they encounter in their lives. Pharmacy educators can use all of this knowledge to provide training and resources which will help students be successful, both academically and personally. This study extended the

dissertation work completed by Dr. Nancy Ahern (2007), whose aim was to do research with community college students in an area not yet examined by many at the time – resilience in healthy adolescent college students.

### **Stress**

First described by Selye (1936), stress is a set of physical and psychological responses to negative conditions or influences. Stresses can be external (i.e. environmental, psychological, or social), or they can be internal (e.g. in relation to an illness or medical procedure), and the result can be damage to one's mental and/or physical health (Definition of Stress, 11/21/15). Stress-related problems are among the most frequent and damaging medical conditions in the U.S., and instances of this have increased over the past 100 years (Emmons, 2007). Emmons said these problems could be affected by a variety of influences, including being overweight, environmental toxin exposure, a lack of vitamins and minerals, consumption of improper kinds of fats, lack of sleep, and lack of exercise. The way people respond to stress varies by individual (Davis et al., 2009; Rutter, 2006), but stress has been shown to increase headaches (Labbe, Murphy, & O'Brien, 1997), decrease the ability to sleep (Peltzer & Pengpid, 2015), and suppress the immune system (Stone et al., 1992).

Any definition of stress should also include positive stress, or what Selye (1975) called, "eustress." To a certain point, stress can be a motivator, but when a person has reached a specific amount of stress, productivity declines. At this point stress can be detrimental (O'Sullivan, 2010). Le Fevre, Matheny, and Kolt (2003) said this "distress" occurs when the demands placed on the body and mind overcome a person's ability to maintain the energy for homeostasis, or balance.

**The general college student and stress.** It is important to examine more closely how high stress can be a risk factor for college student physical and mental health, as well as their academics. Levine and Dean (2012) describe the current group of college students as “a generation on a tightrope” (preface). They are struggling to stay balanced as they attempt to manage the distance between their dreams and the reality of their world that is ever-changing. Levine and Dean (2012) also stated that there are many similarities among the current generation of college students and those in the past, but there are also many differences which could increase stress. The current generation shares tendencies in common with those from the past such as little involvement in campus life, a weakness in academic skills, heavy usage of campus counseling, and a partiality to sex and alcohol. There are also differences which include the tendency for this generation to be weaker in face to face communication skills, better able to manage new technologies, and more dependent on their parents. Levine and Dean (2012) stated that parents of this generation did not allow their children to “skin their knees” (p. xiii), thus making children more reliant on their caregivers. Parents, schools, and employers therefore have much work to do in reversing this dependence.

Another major stressor for today’s college student is the need for some students to work a significant amount of time outside of school (Perna, 2010). Studies show that students who work a moderate number of hours per week (10 to 15) actually have a higher retention rate than those who do not work at all, but those who work more than fifteen hours per week tend to face more difficulties (Perna, 2010). No matter the reason for working, students who are employed a large number of hours are less likely to

matriculate, as balancing multiples roles such as student, parent, and/or employee often creates high levels of stress (Perna, 2010).

Coupled with the challenges just mentioned, college students often encounter academic stress related to adjusting to new methods of teaching and learning, doing homework, taking exams (Ibrahim et al., 2015), and worrying about getting good grades (Persike & Seiffge-Krenke, 2012). Researchers Turner and Thompson (2014) talk about the current challenge in higher education to help millennial freshmen college students persist and graduate. Turner and Thompson use the Rickes (2009) definition of millennials as anyone born between 1982 and 2002, and in their definition of the group they describe them as confident, achievers, feeling special, and pressured. Lowery (2004) stated that they have an unrealistic idea of their academic skills and do not know their true ability to be academically successful.

According to the 2018 Penn State Center for Collegiate Mental Health (CCMH) annual report, anxiety and depression continue to be the most common issues for students. Anxiety did not increase in prevalence for the first time in four years, whereas depression continued to increase. Similarly, students in the American College Health Association Fall 2018 survey reported that within the last 12 months, the top three factors affecting their academic performance were stress (31.9%), anxiety (25.9%), and depression (16.9%). The 2018 CCMH annual report also shared that “the self-reported lifetime prevalence rates of “threat-to-self” characteristics (non-suicidal self-injury, 27.8%; serious suicidal ideation, 35.8%; and suicide attempts, 10.3%) increased for the eighth year in a row among students receiving counseling services” (p. 4).

Students may adopt poor self-care habits and can even have physical problems as a result of high stress. One study of college student stress revealed that students who are stressed are more likely to consume soda and junk food, but are less likely to exercise, eat breakfast, or eat fruits and vegetables (Hudd et al., 2000). In addition, stress has been associated with an increase in physical problems such as headaches (Labbe, Murphy, & O'Brien, 1997), a decrease in the ability to sleep (Peltzer & Pengpid, 2015), and suppression of the immune system (Stone et al., 1992).

If students perceive their lives as stressful and are unable to deal with the stress, it can obstruct their learning and performance (Delaney, Miller, El-Ansary, Remedios, Hosseini, & McLeod, 2015; Dunn, Iglewicz, & Moutier, 2008). A report by the American College Health Association (2018) revealed that the top two reasons students reported academic difficulty were stress (31.9%), anxiety (25.9%), and sleep difficulty (20.2%). Stressed-out students are more likely to doubt their ability to be successful in life and school (Bong & Skaalvik, 2003). Students' belief in their ability to carry out tasks such as preparing for exams and term papers is called academic self-efficacy, and the higher this is in a student, the better the chance of getting good grades and persisting in one's program (Zajacova, Lynch, & Espenshade, 2005).

**Pharmacy students and stress.** This section reviews the potential effect that academic self-concept can have on pharmacy student stress, pharmacy students' self-reported sources of stress, the likelihood of a lower health-related quality of life, and the resulting tendency for pharmacy students to focus on short term learning and engage in unhealthy behavior to cope with their stress. If students in a standard college setting, such as undergraduate liberal arts institutions, are likely to experience a high level of

stress, colleges or universities known for even greater academic rigor, such as pharmacy schools, may need to be even more attentive to the sources and levels of their students' adversities. Some research has been conducted on professional program pharmacy students and stress, but this is an area that could use more attention.

Studies have revealed that students in pharmacy schools do carry extremely high levels of stress (Alzaeem et al., 2010). To understand a potential source of this, one might examine the high school experience of many high achieving students, such as those typically attending pharmacy schools. Academic self-concept, or a student's knowledge and perceptions about his/her own academic ability (Bong & Skaalvik, 2003), can affect academic and personal success. During high school, it likely did not take too much effort for these academically talented students to stand out. The change from high school to a professional college environment, such as a pharmacy school, could be more challenging because there may be a significant increase in volume of work and level of academic difficulty (Beck, Hackett, & Srivastava, 2007; Geslani & Gaebelein, 2013). Students may no longer earn the top grades in their classes as expected, and to make matters worse, they are not accustomed to using available support resources such as tutors or advisors (Wratcher, 1991). One result of all of this challenge can be a decreased sense of student self-worth, which is frequently tied to academic achievement (Kadison & DiGeronimo, 2004). Kadison and DiGeronimo (2004) state that, "Too many students who get a B on a test overgeneralize and assume that one misstep will lead to a disastrous life" (p. 36).

Beck, Hackett, Srivastava, McKim, and Rockwell (1997) shared that the most commonly self-reported stressors in pharmacy students were heavy workload, long hours

of study, tests and grades, lack of leisure time, difficult coursework, negative perceptions that other medical professionals had of the pharmacy profession, financial struggles, bad personal habits, poor response from college administration, and competition between peers. Because of these stressors, students are at an increased risk for lower health-related quality of life (Gaebelein & Geslani, 2013; Gupchup et al., 2004; Hirsch et al., 2009; Konduri et al., 2006; Payakachat et al., 2013). Health-related quality of life can be defined as “physical, psychological, and social domains of health, seen as distinct areas that are influenced by a person’s experiences, beliefs, expectations, and perceptions” (Testa & Simonson, 1996, p. 835), and multiples studies have been conducted on this topic with pharmacy students.

Henning, Ey, and Shaw (1998) found that a higher percentage of health professions students as a group experienced greater psychiatric levels of distress than the average student, and pharmacy students were at the greatest risk for psychological distress (Henning et al., 1998). Half the pharmacy students reported levels of distress that were similar to those reported by psychiatric populations, and in comparison, 29.7% of dental students, 21.1% of medical students, and 21.3% of nursing students reported levels of distress in the clinical range (Henning et al., 1998).

Konduri, et al. (2006) also looked at the association of stress, health-related quality of life, and perceived academic success of this student population. The researchers addressed eight stress categories: (a) academic (e.g. tests, faculty, or classes), (b) time (e.g. long hours studying or sitting in class a long time, or not having time for self), (c) fear of failing (e.g. getting low grades or failing out), (d) classroom stress (e.g. lack of positive feedback or professor saying something negative to them), (e) economic

stress (e.g. student loans or not paying bills), (f) world stress (e.g. terrorism or war), (g) environmental stress (e.g. moving to another country or looking for roommate), and (h) miscellaneous (e.g. fighting with significant other). Results revealed that pharmacy administration students who had higher stress also had lower health-related quality of life scores, and they perceived less academic success. They also discovered that: the total stress score, the fear of failing, academic stress, and student-faculty interaction stress components were negatively and significantly related to self-reported GPA (Konduri, et al., 2006).

Geslani and Gaebelein (2013) also conducted a study that revealed the presence of higher levels of perceived stress among Doctor of Pharmacy students in their first year of professional school than in groups of students from other health profession preparation programs. Sixty-eight percent of the students in their study scored at levels of stress that were determined to be unhealthy. Both males and females ranked academic issues (namely exams) as their top stressors.

Awe, Gaither, Crawford, and Tieman (2016) point out that all of this stress can affect students' ability to focus on learning. Because of the pressure to learn so much in a short period of time, they may settle for short-term knowledge acquisition. This in turn can affect their ability to perform well on assessments. Both Geslani and Gaebelein (2013) and Votta and Benau (2013) found that lower GPA was significantly associated with higher stress, and a literature review by LeBlanc (2009) suggested there is a strong connection between stress and memory. Because stress can negatively affect the ability to store, retain, and retrieve information in some situations, it is important for medical students to avoid the situations that make it difficult to retain important information.



This pressure on pharmacy students also increases the likelihood of turning to alcohol and drugs in order to cope with the stress. Frick, Frick, Coffman, and Dey (2011) distributed a survey to pharmacy students in an accelerated pharmacy program and found that 30.5% of respondents used prescription or non-prescription drugs to decrease stress or get sleep, and 41.1% used alcohol for stress. On top of this, Oliver, McGuffey, Westrick, Jungnickel, and Correia (2014) discovered that students who use alcohol as a coping mechanism had an increased chance of using it in dangerous amounts.

In summary, high stress in college students can be a risk factor for decreased physical and mental health, as well as struggles with academics. This population faces multiple issues such as the necessity to work many hours outside of school, the difficulty of learning study skills and managing time, and the challenge of navigating life on their own with mental health challenges such as depression. Those preparing for a medical profession such as pharmacy may have an even higher chance of feeling the effects of the multiple stressors (Alzaem et al., 2010), as they encounter challenges such as an extremely heavy course workload, large numbers of high-stakes exams, a lack of leisure and rest time, and a lack of positive feedback from instructors.

### **Resilience**

Resilience, the ability to face a challenge and then cope with it, is an area of higher education research that may be helpful in preventing or combating the effects of stress on college students. Rutter (2006, 2012) supports this notion when stating that resilience can help increase the ability to handle later stressors and trials in life.

According to Masten (2001), a resilience framework may suggest that students can be successful in college if they are able to use protective factors, such as personal qualities

or social support systems, which will support them in situations of high stress. Knowing that resilience can affect college student persistence, it is important to investigate the history and descriptions of resilience revealed through research.

**History of general resilience research.** Early resilience studies focused on children born to adults with mental illness and/or those raised within extremely negative environments (Cicchetti, 2010; Grafton, Gillespie, & Henderson, 2010; Richardson, 2002). Focusing on personality traits, investigators such as Werner and Smith (1992) observed those raised in negative environments to determine the likelihood of developing mental health issues. Additionally, these authors concluded that not all children in these scenarios were destined for extreme dysfunction. Seventy-two of the 200 children they studied were growing up mentally healthy, despite their challenges. Factors such as the children's personal strengths and the effects of their family and on social environments led to their ability to overcome stressors and persevere. Knowing that many children grew up healthy despite the challenges of their environment, early researchers wanted to discover factors that protected an individual from stressors and to differentiate between young people who adapted to tough situations and those who did not (Fletcher, 2013).

A mixed-methods study done by Hunter and Chandler (1999) explored resilience in an older group – adolescents in grades 10 and 11, specifically a group from an inner city vocational high school on the east coast. Results revealed that girls saw themselves as less resilient, and they scored lower on self-esteem and self-efficacy. Latinos and Blacks saw themselves as more resilient, and all the students' idea of their resilience level changed over the span of their research group participation. At first the students seemed to be using resilience as a means for survival – they wanted to seem invincible, isolate

their feelings, act out with violence, and stay away from those who could harm them. As the group progressed, they became better at communication and saw each other as a support. Hunter and Chandler suggested, therefore, that resilience may exist along a continuum from less than optimum to optimum resilience. Not all adolescents have the protective factors to achieve optimum resilience, but they are still responding to adversity and growing.

Many resilience studies have been completed since these early studies with children, but they set the stage for future resilience investigation within a multitude of populations and areas of interest. The following sections of this literature review will dig deeper into modern thinking about resilience theory and then move into how resilience comes into play with stress and academic persistence in pharmacy students.

**Themes in modern resilience literature.** Two common conceptualizations emerged from a review of more modern resilience research: adversity and positive adaptation (Cicchetti, 2010; Davis, Luecken, & Lemery-Chalfant, 2009; Fletcher & Sarkar, 2013; Rutter, 2006). The first theme, adversity, can be defined a couple of ways. The first way is as the type of life challenge that is statistically connected with major adjustment disorder difficulties (Luthar, Cicchetti, & Becker, 2000), such as chronic illness (Wells & Schwebel, 1987). This description of adversity is dependent upon reaching a level of stress that puts an individual at major risk for mental or physical harm (Bonanno, 2004; Fletcher & Sarkar, 2013; Luthar & Cicchetti, 2000; Luthar et al., 2000). Other definitions of resilience to adversity state that adversity is less common in the realm of major disasters, and more often in the form of daily stressors and hassles (Davis et. al., 2009). Combining both notions, researchers like Davydov, Stewart, Ritchie, &

Chandieu (2009) place importance on the kinds of stressors associated with both mild and serious life struggles. With either definition of adversity, both mild and major, a person must experience challenge, change, or stress in order for resilience to occur (Earvolino-Ramirez, 2007).

Positive adaptation is the second common theme that emerged within resilience literature, and it is described as what happens after a person responds with resilience. Positive adaptation, as defined by Luthar and Cicchetti (2000), is the ability to exhibit socially competent behaviors and successfully complete appropriate developmental tasks. Earvolino-Ramirez (2007) explained that it is the ability to manage a stressor and return to a level of performance that sets the standard for success. An example may be an adolescent freshman college student's ability to overcome homesickness after moving away to college or his/her success in rebounding emotionally after receiving a flunking grade on an exam.

Knowing that there must be adversity and then positive adaptation for resilience to occur, it is important to examine how individuals may move from the former to the latter. There appears to be processes both within and outside of people that help them deal with stress. Fergus and Zimmerman (2005) focused on how to enhance the assets and resources a person can use to get through stressful situations. Hartley (2011) describes intrapersonal and/or interpersonal resilience as the means of reaching positive adaptation, and Masten and Reed (2002) described protective factors as either internal or external. Processes and traits that may occur within a person can include high expectancy/self-determination, flexibility, sense-of-humor, self-esteem or self-efficacy (Earvolino-Ramirez, 2007). Other researchers state that highly resilient individuals

utilize emotional stability, extraversion, openness, agreeableness and conscientiousness (Hjemdal, Friborg Stiles, Rosenvinge, & Martinussen, 2006). Resilience can also be supported through positive relationships with others: friends, family, and other social networks (Earvolino-Ramirez, 2007).

**Other general resilience findings from the literature.** Research has revealed that resilience comes from basic and ordinary abilities in a person's mind, body, and environment (Masten, 2001), and this sheds a positive light on a person's ability to make it through hard times. For issues that are less stressful, the resilience process can happen in our minds in just a few seconds. But it also can take years for a person to adapt to an adverse experience, depending on one's developmental stage and psychological processes that take place at key turning points in life (Rutter, 2006; Rutter, 2012). Interestingly, most people who are exposed to highly stressful events do not exhibit major psychological difficulties like Post Traumatic Stress Disorder (Bonanno, 2004). When viewing someone over his or her life, any positive life experiences as an adult can do much to balance out difficult childhood experiences.

In addition, the way the body and mind respond with resilience depends on the type of stressor being presented (Davydov et al., 2010). Mild stressors may include a college student having to manage two exams in one day, or having to confront a residence hall roommate for eating his or her food. Examples of more serious stressors might be the loss of a parent while in college or losing the ability to pay tuition. One stressful situation may lead to positive adaptation because of the person's ability to find humor in the adversity, for example. Another may require other behavioral factors, such

as the ability to look at a stressor as a learning opportunity or the willingness to reach out for social support.

Research also revealed that higher resilience and lower perceived stress leads to higher life satisfaction (Abolghasemi & Varaniyab, 2010; Cazan & Truta, 2015; Kjeldstadli, Tyssen, Finset, Hem, Gude, Gronvold, Ekeberg, & Vaglum, 2006). In addition, Cohn, Brown, Mikels, and Conway (2009) found that positive emotions, not general feelings of life satisfaction, increased resilience. When resilience increased over time, so did life satisfaction (Cohn et al., 2009). However, life satisfaction is not just the addition of positive and negative feelings over time. Life satisfaction is dependent on growth in resilience, a “multifaceted skill involving emotion regulation, problem solving, and the ability to change perspective” (Cohn et al., 2009, p. 366). The way people respond to stress varies by individual (Davis et al., 2009; Rutter, 2006), and response to stress varies upon the person’s experience and life span (Rutter, 2006). Someone who is resilient doesn’t necessarily have a low vulnerability to stress. It may mean that he or she has the ability to recover from negative events (Garmezy, 1991).

Rutter (1993) and Greenspan (1982) both suggest that the protective factors of resilience should look different in each stage of life, and Masten (2001) states that resilience should be defined as the ability for a person to reach the developmental milestones of a particular stage, as defined by his or her culture or society. She explains that different groups have different expectations for behaviors of children at specific ages and in specific situations.

### **Resilience and Academic Persistence**

Two major points have been made thus far in this chapter. First, college students as a group are exposed to a great deal of stress, and second, resilience is a means for counteracting stress. It is therefore important to investigate the research which suggests that resilience to stress can lead to greater academic persistence in college students.

Tinto's (1975) theory of student departure connects to the idea that students need to manage the stress of the collegiate experience in order to be successful. He suggested that college persistence is affected by academic and social integration. Academic integration was described as students' propensity to go to class and study, and social integration was the ability to build and utilize social support, or making important personal connections with peers or college faculty and staff (Tinto, 1975).

As previously discussed, Hartley (2011) used Tinto's Theory of Student Departure as a basis for looking at the relationships between interpersonal resilience, intrapersonal resilience, and mental health, and he studied these in relation to academic and social integration. The results of Hartley's study indicated that the higher the score on the intrapersonal factor of tenacity, or the ability to work hard and not give up, the higher the student's grade point average (GPA). Hartley (2013) also looked at academic persistence in relation to measures of inter- and intrapersonal resilience within college students who had challenges related to mental health. He was interested in cumulative GPA and time taken to degree completion. Results revealed that there was a significant interaction between mental health and intrapersonal resilience (Hartley, 2013). Among those who had the highest level of psychological distress, those who had higher intrapersonal resilience completed their credits more quickly (Hartley, 2013).

Previous research also suggests that flexible or active coping skills can lead to greater resilience in college students, and this will help them adapt (Galatzer-Levy, Burton, & Bonnano, 2012; Li, 2008). Li (2008) defines active coping as utilizing strategies, both behavioral and cognitive, to help people solve problems, seek support from others, and alter stressful situations. Galatzer-Levy et al. (2012) explain that this active coping process takes place when individuals focus on a stressor and then moves his or her attention away from it. This can involve optimism, or a positive focus toward the future, and it can appear in activities such as positive expression of emotion or remaining actively engaged socially.

Finally, resilience can have a positive effect on socially prescribed perfectionism in college students (Klibert et al., 2012), something that can be a significant source of academic and personal distress for many (Sherry, Hewitt, Flett, & Harvey, 2003). Socially prescribed perfectionism stems from the belief that significant others in a person's life are setting unrealistic standards for them, evaluating them based upon these standards, and generally putting pressure on them to be perfect (Hewitt and Flett, 1991). Persons who possess this often overachieve and will not change their approach during difficult times, hoping to maintain their un-blemished image (Klibert et al., 2012). This means that those who score high in perfectionism also tend to indicate that they have more difficulties handling stress and adversity (Klibert et al., 2012). It has been discovered that resilience can act as a mediator to perfectionism; thus decreasing the negative effects of the latter (Klibert et al., 2012).

**Medical and pharmacy student persistence and resilience.** Some researchers take resilience investigation beyond the general college student population and study it in



relation to medical and pharmacy students. Resilience can be especially important for these groups to succeed (Bahadir-Yilmaz & Oz, 2015; Dyrbye & Shanafelt, 2012; Howe, Smajador, & Stöckl, 2012). The perception of the stress in their lives, and their ability to deal with it, can interfere with their capacity to learn, perform clinically, and ultimately care for their patients (Delaney et al., 2015; Dunn et al., 2008). In addition, students who are not handling their stress well may require more teaching and educational support resources.

To help explain the resilience process in medical students, researchers (Dunn et al., 2008) shared ideas behind the Coping Reservoir (Appendix A), a model of medical student well-being. They described this model by saying that medical students experience a variety of inputs, both positive and negative, and these can either fill or drain the reservoir. Positive input examples may include psychosocial support or mentoring programs with clinical preceptors, and examples of negative input might be stress or demands that drain time and energy. These factors, in combination with the structure of the reservoir itself, (e.g. level of resilience student brings when entering the program) can lead to positive or negative outcomes. Positive results of this process could include resilience, or better mental health, and negative could be failure or burnout. Dunn et al. (2008) suggest that attention should be given to each student's coping reservoir in order to help promote skills and practices to help the student succeed.

Several studies have reviewed the effects of resilience on medical students. One study on third year medical school students suggested that resilience helped them overcome a substantial amount of stressful and traumatic situations (Haglund, aan het Rot, Cooper, Nestadt, Muller, Southwick, & Charney, 2009). Researchers examined the

monthly stress levels of these medical students through risk and resilience factors, and students indicated if they had experienced traumatic events. The authors also measured if they had depression, anxiety, and posttraumatic stress symptoms, as well as, if they had experienced personal growth Haglund et al. (2009). Results revealed that although they experienced some non-clinically relevant anxiety and depression, these students exhibited resilience, and they successfully coped with and grew from traumatic situations in their experiential training (Haglund et al., 2009).

Another study by Kjeldstadli et al. (2006) looked at life satisfaction and resilience in medical school. Although life satisfaction decreased during the program, the students who found time for their social and personal life were more satisfied. In addition, those with lower levels of academic disappointment and wishful thinking were assessed as more satisfied.

An online search of the literature on pharmacy students and resilience found only one study specifically related to resilience. It suggested that pharmacy students at a university in Turkey had lower resilience scores than most other health professionals' groups (Bahadir-Yilmaz & Oz, 2013). Medical students scored the highest in resilience, health science was second, pharmacy held third, and last was dentistry. The authors did not discuss possible reasons why some groups scored lower than others – only why health sciences scored the lowest when starting school, but ended up the highest scores. This research also revealed that males in these health professions scored higher than females, student resilience increased when parent education levels decreased, and resilience was lower for students who had an illness.

In sum, resilience is an exciting area of research to investigate in hope of uncovering clues about how we might support academic persistence in college students, specifically those in a pharmacy setting. Academic and social integration (Tinto, 1975; Hartley, 2011) are outside factors that are key to helping students get through the stress of college, and flexible or active coping skills (Galatzer-Levy, Burton, & Bonnano, 2012; Li, 2008) are two internal factors that can lead to greater resilience in this group. One study on third year medical school students suggested that resilience helped them overcome a substantial amount of stressful and traumatic situations (Haglund et al., 2009), but there has been no such study on pharmacy students.

### **Theoretical Framework**

Two main ideas establish the foundation of the current study – the science of positive psychology and the theory of college student departure. Positive Psychology, a segment of psychology that has emerged in the early 21<sup>st</sup> century, is a scientific approach to human functioning that lies at the basis of this dissertation work. Knowing that psychological approaches in the past may have focused on pathologies, or people's problems, positive psychology is a study of people's strengths and virtues. It suggests that the nature of humans is to be physically and mentally well (Emmons, 2007). "The field of positive psychology at the subjective level is about valued subjective experiences: well-being, contentment, and satisfaction (in the past); hope and optimism (for the future); and flow and happiness (in the present)" (Seligman & Csikszentmihalyi, 2000, p. 5). It does not ignore the healing that must take place after someone has faced trouble - an illness or unhealthy relationship, for example. Positive psychology researchers tend to focus on four areas – (a) positive experiences, (b) enduring psychological traits, (c)

positive relationships, and (d) positive institutions (Peterson, 2009). These four areas of positive psychology provide a framework for investigating resilience in the current study. When applying positive psychology to higher education, researchers and practitioners focus on strengths-based programming, learning, and success - not grades. They emphasize self-reflection, increasing intrinsic motivation, self-actualization, and connection to larger groups such as family, school, community, and society (Williams, Horrell, Edmiston, & Brady, 2018).

The second framework within this study, Tinto's (1975) theory of college student departure, connects to the idea that students need to manage the stress of the collegiate experience in order to be successful. He suggested that college persistence is affected by academic and social integration. This integration referred to academics, such as students' propensity to go to class and study, as well as social support, such as making important personal connections with peers or college faculty and staff (Tinto, 1975). One way to connect Tinto's ideas to resilience is to look at the work of Masten (2001). Masten's research uses a resilience framework to suggest that resilience is a quality that is ordinary in everyone, and students can increase their chance of success if they are able to use protective factors such as a sense of humor, motivation level, and social support. She proposes that all of these resources will support students in high-risk conditions.

Working from the theories mentioned above, this extension study furthers the dissertation work completed by Dr. Nancy Ahern (2007), whose aim was to do research on resilience in healthy 18 to 20-year-old adolescent community college students ( $n = 166$ ). Ahern wanted to gain an understanding of resilience and its effect on stress in this population. She examined the personal characteristics, levels of stress, high-risk

behaviors, and levels of resilience of these students, and then she used exploratory model testing to examine the relationship between all of the variables. Ahern's study included a demographic questionnaire, the Visual Analogue Scale (Lesage, Berjot, & Deschamps, 2012) for measuring perceived stress, the Health Behaviors Questionnaire (Ingersoll & Orr, 1989), and the Resilience Scale (Wagnild, 1993). Ahern's conceptual model for research was Hunter and Chandler's (1999) Continuum of Resilience in Adolescence. This model suggests that resilience can move along a continuum, going from less than optimum to optimum resilience.

Results of the Ahern study revealed that the students were more stressed by major life events, not daily hassles. Females reported more behavioral risks, and males reported more risks of an emotional nature. This was different than the literature Ahern uncovered. Also, resilience levels for this community college population, at a medium level, were lower than those in the literature. Viewing age and ethnicity, Hispanics in this group were more likely to be stressed. When looking at relationships between the variables studied, there was a positive relationship between stress and high-risk behaviors, and there was a negative relationship between high-risk behaviors and resilience.

Dr. Ahern did not complete any follow-up studies to this work with community college students and resilience to stress. A wide variety of studies have since been done by other researchers in the area of resilience in community college students. Many were focused on specific populations such as athletes, single mothers, Mexican-Americans, and Hurricane Katrina survivors, while others focused on the community college population and resilience in general.

### Conclusions

A wealth of research has been conducted on stress, as well as resilience to stress, in both individuals and groups. Definitions and the main characteristics of resilience differ somewhat from author to author, but there is agreement that in order for resilience to occur, some level of adversity or stress, as well as the presence of supportive factors within individuals, must be present. Is social support a key factor? This also isn't consistent within the research, but most include the importance of getting support from friends, family, or the community in order to be resilient.

Research on resilience has moved from studying children in adverse living conditions, to studying healthy, well-adjusted individuals, to examining those with mental health challenges such as depression. A fair amount of research has been performed on resilience in health professions preparation programs, such as medical and nursing student's programs. At least one study on a group of medical students showed that resilience helped them overcome a substantial amount of stressful and traumatic situations (Haglund et al., 2009). However, a search revealed only one study that investigated pharmacy student resilience to stress. Bahadir-Yilmaz and Oz (2015) conducted a study which uncovered the resilience levels of first-year medical, dentistry, pharmacy, and health sciences students. The lack of research in the area of resilience in pharmacy education is a strong indication that it is an untapped area of investigation; however, there is a critical need to investigate given its high stress environment. Pharmacy education leaders should understand that although resilience was previously seen as something people were (or were not) born with, research now suggests that individuals can develop the ability to better manage stressful situations. Earvolino and

Ramirez (2007) state that the most recent wave of resilience investigation looks at ways to create proactive interventions for individuals and groups, to help prepare them for adversity. Researchers can explore how can educators help prepare pharmacy students manage the often high-stress environment of pharmacy school, given the relationship between these environments and high-risk behaviors.

### **Summary**

There are many sources and levels of adolescent freshman college student stress and distress. Small levels of stress can be healthy and contribute to success, but most stressors can create challenges to physical and mental health, with poor academic performance as a possible result. The culture of some higher education programs, such as medical programs, supports the notion that a student's work should come before personal wellness (Dyrbye & Shanafelt, 2012). Many of these students enter college with high GPA's or standardized exam scores, but they experience difficulty because they do not possess the necessary psychological resources to help them cope with stressors. Students often sacrifice sleep, nutrition, and personal relationships in order to maximize time spent studying, in hopes they will receive a desired grade. They also, sometimes because of their place in adolescent development, will engage in high-risk behaviors to cope with the stress in their lives.

Pharmacy education programs can be breeding grounds for high stress and adversity. The material is difficult, there are many high-stakes exams, and students often believe they do not have enough time to complete everything. If they perceive their lives as stressful, and they are unable to deal with the stress, it will get in the way of their learning and performance (Delaney et al., 2015; Dunn et al., 2008). These students are

more likely to doubt their ability to be successful (Bong & Skaalvik, 2003), and their general quality of life is often decreased (Gaebelein & Geslani, 2013; Gupchup et al., 2004; Hirsch et al., 2009; Konduri et al., 2006; Payakachat et al., 2013). If they do not come to school with mental health issues, the stress of the program may increase their chance of developing them.

Armed with this knowledge, pharmacy schools should examine students' stress level, high-risk behaviors, and overall mental health. They should search for any risk factors that their students frequently encounter, as well as the potential means for helping them overcome these stressors, through internal asset and external resource development. Resilience research is a promising way to do so. Programs can be created to help students develop personal characteristics such as self-esteem, a belief that they can achieve great things, the idea that humor can get through tough times, and the ability to utilize the emotional response that best matches the level of adversity that is faced. Other programs should encourage ways to build supportive relationships with classmates, faculty, and staff on campus, important external protective factors. There is an old African proverb that states, "It takes a village to raise a child", but in this case, it's a college student, specifically those going through pharmacy programs. Pharmacy schools can help their students grow to be well-educated, mentally and physically healthy professionals, and resilience research is one promising way to help achieve this.

What follows in the later part of this dissertation is an explanation of the research study to be completed. This includes a description of participants, research design, method of study measurement, data analysis, and a hypothesis of the study's outcomes.



## CHAPTER 3

### Methodology

College can be an extremely stressful time for students. Campus administrators must pay attention to the personal and academic stress of their students and strive to make their environments an optimal place to learn and grow. Supporting this idea, the strategic plan for Middle States Pharmacy University (pseudonym), or MSPU, states that it “aims to facilitate and sustain the professional and personal growth and well-being of the College community” (Middle States Pharmacy University, 2016, p. 6). MSPU has a reputation for graduating pharmacists with a great deal of clinical knowledge in their field, but in this effort to create technically skilled pharmacy students, the professional program may have developed an environment where students are potentially experiencing unhealthy stress levels.

Studies have revealed that students in pharmacy schools in general do carry extremely high levels of stress (Alzaem et al., 2010). Beck et al. (1997) shared that the most commonly self-reported stressors in pharmacy students were heavy workload, long hours of study, tests and grades, lack of leisure time, difficult coursework, negative perceptions that other medical professionals had of the pharmacy profession, financial struggles, bad personal habits, poor response from college administration, and competition between peers.

Much like other college campuses in the United States, there has been an increased demand for counseling services at MSPU, both in the counseling center and in after-hours crisis intervention. Nearly half of the usage at MSPU is by students who typically fall into the age group of first-year professional students (P1s), and the most common reasons

of student concern are depression, anxiety, and academic concerns. Research reveals that attention to these kinds of demands have been focused on in postsecondary institutions but less so in pharmacy institutions.

Resilience is a major focus of this study because it has generated a great deal of attention in general higher education research, but not specifically in pharmacy education. Some of the existing studies have suggested that resilience can be especially important for success in medical programs like pharmacy (Bahadir-Yilmaz & Oz, 2015; Dyrbye & Shanafelt, 2012; Howe et al., 2012). The perception of stress in their lives, and their ability to deal with it, can interfere with their capacity to learn, perform clinically, and ultimately care for their patients (Delaney et al., 2015; Dunn et al., 2008). In addition, students who are not handling their stress well may require more support resources from the college.

The purpose of this exploratory study was to gain information about resilience and its relationship with stress, high-risk behaviors, and GPAs in pharmacy students who recently completed their P1 year at MSPU. The researcher wanted to better understand if students who score high on the resilience scale also likely to score lower on the perceived stress scales. Also, do students with higher resilience scores receive lower scores on the health behaviors scale, indicating that they are less likely to engage in unhealthy behaviors or thinking? Finally, is a student's GPA typically higher when they are more resilient?

The study extended the dissertation work completed by Dr. Nancy Ahern (2007), whose aim was to do research with community college students in an area not yet examined by many at the time – resilience in healthy adolescent college students. Email

communication with Dr. Ahern about using her study as the basis of the current study is provided in Appendix B.

To address the purpose of the study, the following three research questions were asked:

1. *What is the relationship between levels of stress and level of resilience in pharmacy students who recently completed their P1 year at MSPU?*
2. *What is the relationship between high-risk behaviors and level of resilience in pharmacy students who recently completed their P1 year at MSPU?*
3. *What is the relationship between GPA and level of resilience in pharmacy students who recently completed their P1 year at MSPU?*

This chapter provides an overview of the research methodology for this study on pharmacy students who recently completed their P1 year. It started by describing the research design, setting and participants, information about IRB approval, and the data collection process, including the contents of the questionnaires. It then describes data analysis procedures, as well as the study's potential limitations. The chapter ends with final summary of all information discussed.

## **Research Design**

### **Setting and Participants**

MSPU, the urban institution where this study was administered, is located in the Midwestern section of the United States. MSPU provides the opportunity to achieve a bachelor's degree, and those who are accepted into and complete the professional program receive a Doctor of Pharmacy degree. There are approximately 180 total students in the program who recently completed their P1 year. Most students enter the

university as freshmen undergraduate students, but some transfer in at different levels of the program from other institutions. In the past three years, an average of 45 students have transferred into the professional program at the P1 level (Registrar's Office, 2019).

Participants of the study included all students at MSPU who recently completed their P1 year at the institution. They voluntarily responded to a set of surveys that were administered at the start of their P2 year. A former P1 population was previously studied at the institution by two researchers, Geslani and Gaebelein (2013), and they found that self-reported student stress levels were elevated above other comparison groups that had previously been investigated in research. Mental health scores exceeded the threshold for frequent mental distress, and examinations were reported to be the primary source of stress. Geslani and Gaebelein discussed this stress as a likely result of the switch from the undergraduate program to the professional, including new, more rigorous courses that were directly related to pharmacy. The current study was another way to examine the stress that may still be experienced by P1 students at MSPU.

### **IRB Approval and Participant Consent**

Approval to conduct the study was granted by the Institutional Review Board (IRB) of the administration where the study took place, as well as by the IRB at the university where the researcher was working on her doctorate (see Appendix C for IRB approval information), and both institutions declared the student to be "Expedited" because it requested some amount of sensitive information from students. This study involved human subjects and was compliant with the U.S. Department of Health and Human Services Code of Federal Regulations, 45 CFR § 46.102 (2018).

The researcher was permitted time during professional orientation to introduce the study and invite the participants to complete the surveys that the researcher was to email to them. Information regarding important topics related to the study was included in a letter of consent, shared at the start of the study's email to all the P2 students (see Appendix D for letter of consent). Students were told that the study would take approximately 15 minutes to complete. It was not mandatory, there was no benefit or risk for participation, and they could end their involvement in the study at any point if they choose. Also, completion of the questionnaires was an indication of informed consent to be included in the study, and they would have one week to complete the surveys after the date of distribution. The email also shared that the researcher would be working with the school's information technology department to access additional demographic data on the population from the student record system. Once the data was obtained from the surveys and the school's student record system, the two sets of information would be combined via student email address. The student emails will then be de-identified. The students' responses would remain confidential, and the information they shared would also not be reported on an individual basis. Additionally, their participation or lack of participation would not affect their grades or relationship to MSPU. All data from the study was to be kept in a computer that was password protected, and information from the study would be stored for three years. Students were told how to contact the researcher if any questions arose after participation in the study or if they wanted to inquire about results. Finally, they were informed that there would be a link at the end of the email where they could confidentially submit their name to be entered into a raffle for one of two fifty-dollar Amazon gift cards.

### **Data Collection**

This study utilized a four-part questionnaire that was distributed through the MSPU campus email system. The researcher sent the email to all current P2 students through her college staff email account, as faculty and staff have access to class-specific email distribution lists that are created by the institution. The email to students contained both the letter of consent and a link to an online questionnaire administered through Survey Monkey.

### ***Questionnaire Contents***

Like in the Ahern (2007) dissertation, data were collected using three primary instruments. All were combined into one questionnaire for ease of distribution. Included the Visual Analogue Scale (Lesage, Berjot, & Deschamps, 2012) for perception of stress, the Health Behaviors Questionnaire (Ingersoll & Orr, 1989), and the Resilience Scale (Wagnild, 1993). Each individual instrument was evaluated per its specific instructions.

***Student History, Behaviors, and Resources.*** At the start of the instrument administered to the former P1 students was a set of questions (see Appendix E) aimed at gathering information on variables such as extracurricular activities, study habits, number of hours working, and social support. In addition, the researcher aimed to gather statistics such as newly P2 students' GPA, ethnicity, race, age, and transfer status from the school's student information system. All information was gathered to help describe the sample, attempt to identify its characteristics, and to try to control for extraneous variables. GPA scores were especially important because this gathered information about one of the study's research questions regarding resilience and grades.

***Perceived Stress Scale.*** The first main questionnaire administered to the students was a perceived stress scale (see Appendix E). No research could be found on the origin of the Visual Analogue Scale (VAS), but it is a global measure of perceived stress, often used by healthcare professionals, that quickly and efficiently quantifies the intensity of stress (Lesage, Berjot, & Deschamps, 2012). Just as in the Ahern dissertation, two horizontal lines will be presented to students for them to indicate at which point on the line they would put their stress level. These two lines are necessary because the scale is unidimensional. The first line was for the stress they were feeling when they completed the scale (right now), and the second was to indicate how much stress they feel on most days in general (stress in general). Studies by Lesage and Berjot (2011), Lesage, Berjot, and Deschamps (2011), and Lesage, Chamoux, and Berjot (2009) reveal that the VAS shows satisfactory stability and high inter-rater reliability and that it correlates well with other well-known tools to assess stress, such as the fourteen-item Perceived Stress Scale by Cohen, Kamarck, and Mermelstein (1983). Different from the Ahern dissertation, which measured students' stress with the use of paper and pencil, the current study included the Perceived Stress Scale within the online Survey Monkey questionnaire. The two horizontal lines, one to indicate the level of stress of stress "right now", and the other for stress in life "in general", was set up on a scale from zero to 100. On both of the stress scales, zero indicated that the student was experiencing no stress, and 100 meant extreme stress. Students placed their cursor along the line to determine where their stress level fell on the continuum.

***Health Behaviors Questionnaire.*** The second questionnaire administered to the students was the Health Behaviors Questionnaire (see Appendix E). There have been two

versions of the Health Behaviors Questionnaire (HBQ), and for the purpose of this study the second will be used. The first version was by Hibbard, Brack, Rauch, Orr, 1988; Ingersoll & Orr, 1989; Orr, Wilbrandt, Brack, Rauch, & Ingersoll (1989).

The most recent version of the HBQ is similar to the older version but consists of 27 Likert-type Scale questions instead of 32. It was developed by Ingersoll and Orr (1989) to group items for behavioral and emotional risks. Working from the original HBQ, they further developed questions from the Rosenberg Self-Esteem Inventory (Rosenberg, 1965) and the Hunt Paragraph Completion Method Test (Hunt, Butler, Noy, & Rosser, 1978). This new version of the HBQ originally contained eight demographic questions, but these were moved to the start of the larger study questionnaire for the current dissertation work. There was no mention of validity statistics in the work by Ingersoll and Orr (1989). They did discuss factor analysis in their results, stating that they used a principal components analysis to examine willingness to participate in problem behaviors and a tendency to experience emotional symptoms.

The HBQ examined sexual and high-risk behaviors, asking subjects to indicate the degree to which they engaged in particular behaviors and the frequency at which they experienced a particular emotion in the last 12 months. Items in the questionnaire covered topics such as sexual activity, drugs and alcohol, delinquent behaviors such as gambling, the nature of relationships with others, and emotion management. Examples of questions included, "I have difficulty sleeping" and "I have smoked marijuana/pot". Most response options fell on a 5-point Likert-type scale: 1 = never, 2 = less than monthly, 3 = monthly, 4 = weekly, and 5 = daily. Five final items had a different option of "never" or "at least once" in relation to their lifetime. These last five questions were in



regard to major life events and were only used as a part of the total scale score. Consent from Dr. Ingersoll to use the Health Behaviors Questionnaire in the current study can be found in Appendix E.

***Resilience Scale***<sup>TM</sup>. The third questionnaire administered to the students was the Resilience Scale (RS) (see Appendix E). It was developed by in 1987 by Wagnild and Young, researchers in the field of nursing. Though it now contains 25-items, the original RS was a 50-item psychometric evaluation of resilience, aimed at measuring a person's propensity for emotional stamina (Wagnild & Young, 1990), or the ability to utilize courage and adaptability in the face of difficult situations. Wagnild and Young saw a lack of research examining relationships between resilience and psychosocial adaptation, which limited their ability to apply it to nursing. The creation of the RS was in response to the absence of a direct way to identify individuals who were resilient or had the capacity for resilience.

The RS used a Likert-type Scale from one to seven, starting with "Strongly Disagree" for number one and ending with "Strongly Disagree" for number seven. Questions were positively worded and included items such as "I usually manage one way or another" and "I can get through difficult times because I've experienced difficulty before". Scores on the RS could range from 25 to 175, and the higher the score, the higher one's resilience.

The total scale scores were categorized by Wagnild (2009) into very low (25-115), moderately low to moderate (116-145), and moderately high to high (146-175) resilience levels. Those who score between 25 and 115 exhibit low resilience, but this does not mean they do not have any. They likely report a lot of depression and anxiety, and they

likely lack some meaning in their lives. They also are probably pessimistic and feel like their lives are at least a little out of control. A score between 116 and 144 likely indicates that someone exhibits anxiety and depression now and again, but they try to resolve their problems. They may not move forward in life with excitement, but at least they are moving forward. They spend some time dwelling on the negative, and at the end of the day they usually feel somewhat tired and drained. Scores between 146 and 175 indicate higher resilience. Depression and anxiety are rare, and in general they find life to have meaning. They enjoy being with others, others see you as optimistic, and you can look at situations from a variety of perspectives.

The RS was developed and formally evaluated on a population of 810 older women from the Northwest who responded to a survey request from the readership of a major periodical for senior citizens. Females were the target population of this study, but the RS was intended to also eventually be used to survey males and a wide variety of ages. When doing the research with these older women, the subjects were asked to respond about their experience with major loss in their lives. Researchers aimed to investigate the relationship between resilience and measures of adaptation including moral, life satisfaction, depression, and somatic health. The narrative shared by the women revealed information about what Wagnild and Young (1993) state are the five components of resilience: equanimity, perseverance, self-reliance, meaningfulness, and existential aloneness. These were determined by reviewing literature that shared the common definitions and perspectives on resilience.

Wagnild and Young (1993) conducted a factor analysis on the RS and revealed two main factors, “personal competence” and “acceptance of self and life” (Wagnild and

Young, 1993). Concurrent validity of the RS was established when positive correlations were identified between the adaptational outcomes of physical health ( $r = -.26$ ), morale ( $r = -.28$ ), and life satisfaction ( $r = -.30$ ). Negative outcomes were also connected to depression ( $r = -.37$ ) (Wagnild and Young, 1993).

Wagnild (2009) later wrote a review of the RS, examining 12 completed studies that had used it as a measure of resilience. She focused on those studies that used RS scores, gave descriptions of samples, and did a test of the relationships between the RS and the study variables under examination. Wagnild stated that the studies in her examination supported internal consistency reliability of the RS, as they showed Cronbach's alpha coefficients ranging from 0.72 to 0.94. Construct validity was also supported, since there was a connection between the RS and the various study variables including health promoting activities, stress, and anxiety. Finally, Wagnild found that in the studies she examined, the RS has been used on a wide variety of individuals who are from different socioeconomic status, age, and educational background. Email communication with Dr. Wagnild in regard to using the Resilience Scale in the current study can be found in Appendix B.

### **Data Analysis**

Once the deadline for completing the questionnaire was reached and all possible data was collected in Survey Monkey, this would then be combined with the demographics pulled from the school's information system, and the data would be transferred and analyzed through the Statistical Package for the Social Sciences (SPSS) within Windows (Version 24). Descriptive statistics were gathered for all sample variables, including stress, high-risk behaviors, and resilience, and frequency counts and

percentages were used to describe all characteristics. The data was used to answer the following three research questions: “What is the relationship between levels of stress and level of resilience in pharmacy students who recently completed their P1 year?”, “What is the relationship between high-risk behaviors and level of resilience in pharmacy students who recently completed their P1 year?”, and “What is the relationship between GPA and level of resilience in pharmacy students who recently completed their P1 year?”. Within these questions, the independent variable was resilience, and the dependent variables were levels of stress, high-risk behaviors, and GPA. The research questions and the way the questionnaire’s resulting data was analyzed is to follow.

### ***Research Question One***

What is the relationship between levels of stress and level of resilience in pharmacy students who recently completed their P1 year at MSPU?

***Data Analysis.*** A Pearson product moment correlation was used to examine this first research question. This significance test was chosen to measure the strength of the linear association between the two continuous variables of stress and resilience. The Pearson product moment correlation attempted to draw a line of best fit through the data of these two variables, and the Pearson correlation coefficient, or “r”, showed how far the data points fall from the best line of fit. The researcher was interested to know if those who scored high on the Resilience Scale (Wagnild, 2009) tended to score lower on the Visual Analogue Scale for stress.

### ***Research Question Two***

What is the relationship between high-risk behaviors and level of resilience in pharmacy students who recently completed their P1 year at MSPU?

**Data Analysis.** Two different significance tests were used to investigate this second research question, where high-risk behavior was a categorical variable and resilience was a continuous variable. The first test was a Pearson correlation, and the second was a t-test. Two different tests needed to be done because within the survey for high-risk behaviors there were two sections with different response groupings/options. For the first section, asking about students' behavior in the past 12 months, study participants could respond by indicating "Never", "Less than Monthly", "Monthly", "Weekly", or "Daily". A Pearson correlation was utilized to examine relationships.

In the second section of the health behaviors questionnaire, which asked about students' behavior in their lifetime, there were two possible responses levels – "Never" or "At Least Once". Because there were just two levels, a t-test was run. A t-test is a special type of ANOVA used when there are two levels of means that need to be compared. In general, the researcher was most interested to know if those who have higher scores on the Resilience Scale (Wagnild, 2009) have a lower likelihood of scoring low on the Health Behaviors Questionnaire (Ingersoll & Orr, 1989).

### ***Research Question Three***

What is the relationship between GPA and level of resilience in pharmacy students who recently completed their P1 year at MSPU?

**Data Analysis.** A Pearson product moment correlation was also used to examine the third research question. This significance test was chosen to measure the strength of the linear association between the two continuous variables of GPA and resilience. The Pearson product moment correlation attempted to draw a line of best fit through the data of these two variables, and the Pearson correlation coefficient, or "r", showed how far the

data points fall from the best line of fit. The researcher was most interested to know if those who score higher on the Resilience Scale (Wagnild, 2009) tended to be more successful academically, showing higher GPAs than those who were low in resilience.

### **Limitations of the Study**

There were a number of potential limitations that could impact the interpretation of findings from this research. First, the stress, resilience, and health behaviors surveys were all self-reported, so results could not be independently verified. Where a student marked their stress level on the longitudinal line of the Perceived Stress Scale, for example, could vary somewhat by individual. They also reported retrospectively after the completion of their P1 year, so the potential to remember incorrectly was present. Students may also not have remembered specific events, may not have felt comfortable sharing negative information, or may have exaggerated their ability to manage a particular behavior, as examples. Another limitation was that this is a very specific population of professional pharmacy students. Only one institution was being surveyed, so that limited the sample size. Similarly, because the study was on just one institution, findings may not be generalizable to a larger population of college students. Finally, it was possible that there will be a low number of survey respondents, making it difficult to find significant relationships within the data. Students receive many surveys from the institution, so they may have been experiencing survey fatigue. The pharmacy curriculum is also very demanding, so students may not have felt like they had time to complete the questionnaire. The time in the semester when the researcher distributed the questionnaire may make a difference. For example, it is not advisable to distribute the questionnaire close to final exam dates.

### Summary

This study examined resilience and its relationship to stress, high-risk behaviors, and GPA within a pharmacy student population who just completed their P1 year at an urban, professional pharmacy school. To answer its three research questions, this quantitative study utilized an exploratory model testing design. The dependent variables of stress level, high-risk behaviors, and GPA were tested against the independent variable of resilience. A one-time self-report multiple-survey design was utilized, and multiple significance tests were run by using Pearson product moment correlations and a t-test. Three tools were used for measurement, including the Visual Analogue Scale for stress, The Resilience Scale™ for resilience (Wagnild, 1993), and the Health Behaviors Questionnaire (Ingersoll & Orr, 1989) for health behaviors such as feeling tense and use of drugs or alcohol. Data was collected for this study through the use of an online questionnaire, administered through the online survey software, Survey Monkey. Data was then entered and analyzed through the Statistical Package for the Social Sciences (SPSS) within Windows. In the next chapter, chapter four, the results of the study will be shared.

## CHAPTER 4

### Results

Middle States Pharmacy University (MSPU) has a reputation for graduating pharmacists with a great deal of clinical knowledge in their field, but in this effort to create technically skilled pharmacy students, the professional program may have developed an environment where students are potentially experiencing unhealthy stress levels. The purpose of this exploratory study was to gain information about resilience and its relationship with stress, high-risk health behaviors, and GPAs in students who recently completed their P1 year at MSPU. The researcher wanted to better understand if students who score high on the resilience scale also likely to score lower on the perceived stress scales, suggesting that those who are higher in resilience are lower in stress. Also, do students with higher resilience scores receive lower scores on the health behaviors scale, indicating that they are less likely to engage in unhealthy behaviors or thinking? Finally, is a student's GPA typically higher when they are more resilient?

#### **Description of Sample and Responses to History, Behaviors, and Resources**

There were approximately 180 total students in the MSPU program who had recently completed their P1 year. Most students entered the university as freshmen undergraduates, but some transferred into different levels of the program from other institutions. In the past three years, an average of 45 students have transferred into the professional program at the P1 level (MSPU Registrar's Office, 2019). Participants of the study included students at MSPU who recently completed their P1 year at the institution. They voluntarily responded to a one-time, self-report questionnaire sent to all 180 students and administered during the first weeks of their P2 year. The questionnaire



included questions describing student history, behaviors, and resources, two stress scales, a resilience measure, and a questionnaire related to health behaviors.

After the collection period for the questionnaire ended, the data was analyzed for accuracy, outliers, missing information, and distributions. Responses were obtained from 111 of the 180 students, a 62% response rate. Ten of the 111 responses were then removed from the database because they were missing a significant amount of data, leaving 101 responses to analyze. If a respondent answered most questions but failed to answer one or two, the average of that individual's other responses on similar questions was taken and inserted in its place. Responses to the stress questionnaire that were under 10 were eliminated, as well as one low resilience score of 26. Descriptive statistics were gathered for all sample variables, using frequency counts and percentages.

The first section in the questionnaire distributed was a set of questions asking for information about when they entered MSPU, number of hours they worked per week, involvement in extracurricular activities, support resources used, average number of hours spent studying per week, and persons on whom they primarily rely for support. Frequency counts and percentages of these responses can be found in Table 1 below.

Table 1

*Frequency Counts and Percentages on History, Behaviors, and Resources of P1 Students*

*(N=101)*

Variable	n	%
Year entered MSPU		
Freshman	66	64.1
Sophomore	5	4.9
Junior	11	10.7
P1	19	18.4
Hours employed per week		
None	12	11.7
One to ten	35	34.0
Eleven to twenty	49	47.6
More than twenty	7	6.8
Number of extracurricular activities at MSPU		
Zero	11	10.7
One to two	45	43.7
Two to three	26	25.2
Four or more	21	20.4
Support resources used at MSPU		
Tutoring	89	86.4
Counseling – on or off campus	24	23.3

Table 1 cont.

Variable	n	%
Faculty/Staff for academics	51	49.5
Faculty/Staff for personal (not counseling office)	22	21.4
Other	4	4.0
None	6	5.8
Study hours per week		
Zero to ten	11	10.7
Eleven to twenty	40	38.8
Twenty-one to thirty	40	38.8
Thirty-one to 40	8	7.8
More than 40	2	1.9
Primary personal support source		
Family member	41	39.8
Friend/peer	24	23.3
Spouse/significant other	36	35.0
Other	2	1.9

The majority of the P1 students surveyed enter MSPU in their freshman year (64%) and are employed 11-20 hours per week (48%). Forty-four percent were involved in 1-2 extracurricular activities at MSPU, and tutoring was the support resource used at MSPU by 86% of the students. These P1 students tended to study 11-30 hours per week (68%)

with the majority receiving primary personal support from family members (40%) or spouse/significant other (35%).

### **Results of Visual Analogue Stress Scale**

The Visual Analogue Scale (VAS) was the measure of self-perceived stress that quantified the intensity of P1 student stress (Lesage, Berjot, & Deschamps, 2012). Two horizontal lines with a slider scale from zero to 100 were presented to the students through a section in Survey Monkey. They were asked to move the slider to the point on the line where they thought was an indication of their stress level. The first line was for the stress they were feeling when they completed the scale (right now), and the second was to indicate how much stress they feel on most days in general (stress in general) (see Appendix E). Zero indicated that the student was experiencing no stress, and 100 meant extreme stress. To adjust for high deviation scores when looking at the results when using a simple one to 100 scale, the researcher categorized the stress right now and stress in general responses into four groups: category one was zero to 25 (low stress), category two was 26 to 50 (mid-low stress), category three was 51 to 75 (mid-high stress), and category four equaled 76 to 100 (high stress). The results of the stress scale are reported in Table 2.

Table 2

*Means, Medians, and Standard Deviations of Perceived Stress Level and Frequency Counts and Percentages on Reported Stress Right Now and Stress in General – With Categories (N=101)*

Variable	$\bar{x}$	<i>M</i>	<i>SD</i>
Stress right now	2.60	3.00	.939
Stress in general	2.67	3.00	.939

Variable	n	%
<b>Stress Right Now</b>		
Low (0-25)	13	12.6
Mid-Low (26-50)	33	33.0
Mid-High (51-75)	36	35.9
High (76-100)	19	18.4
<b>Stress In General</b>		
Low (0-25)	12	11.7
Mid-Low (26-50)	31	39.0
Mid-High (51-75)	39	37.9
High (76-100)	21	20.4

Mean scores for “stress right now” and “stress in general” both fell in the middle of the continuum at 2.60 and 2.76, respectively. This suggests that most students reported stress at a mid-low level. The median, or mid-point of, scores in both scales fell at 3.0.

This suggested a report of mid-high stress from students on both scales, stress right now and stress in general.

The majority of the students reported that both their stress right now and stress in general as a student is either mid-low or mid-high (68% and 76% respectively). In addition, 18.4% reported high stress at the time of the study, and 20.4% reported high stress in general.

### **Results of Resilience Scale (RS)**

Resilience was measured by the RS total scale and subscale scores. The RS used a Likert-type Scale from one to seven, starting with “Strongly Disagree” for number one and ending with “Strongly Agree” for number seven. The total scale scores were categorized by Wagnild (2009) into very low (25-115), moderately low to moderate (116-145), and moderately high to high (146-175) resilience levels.

Those who score between 25 and 115 exhibit low resilience, but it does not mean they do not possess any. They likely report a lot of depression and anxiety, and they likely lack some meaning in their lives. They also are probably pessimistic and feel like their lives are at least a little out of control. A score between 116 and 144 likely indicates that someone exhibits anxiety and depression now and again, but they try to resolve their problems. They may not move forward in life with excitement, but at least they are moving forward. They spend some time dwelling on the negative, and at the end of the day they usually feel somewhat tired and drained. Scores between 146 and 175 indicate higher resilience. Depression and anxiety are rare, and in general they find life to have meaning. They enjoy being with others, others see you as optimistic, and they can look

at situations from a variety of perspectives. Results of the Resilience Scale are reported in Table 3.

Table 3

*Frequency Counts, Percentages, Mean, Median, and Standard Deviation of Resilience Scale (N=101)*

Variable	n	%	
Very Low Resilience (25-115)	9	9.0	
Moderately Low to Moderate Resilience (116-144)	42	42.0	
Moderately High to High Resilience (145-175)	50	50.0	

Variable	$\bar{x}$	<i>M</i>	<i>SD</i>
Resilience Scale Total Score	141.36	145.00	17.22

Nine students fell into the very low resilience group. They likely report a lot of depression and anxiety, and they likely lack some meaning in their lives. They also are probably pessimistic and feel like their lives are at least a little out of control. Forty-two students were in the moderately low to moderate resilience category. This group likely exhibits anxiety and depression now and again, but they try to resolve their problems. They may not move forward in life and schoolwork with excitement, but at least they are moving forward. They spend some time dwelling on the negative, and at the end of the day they usually feel somewhat tired and drained. And last, 50 of the students fell into the moderately high to high resilience category. Depression and anxiety are rare in this group, and in general they find life to have meaning. They enjoy being with others,

others see you as optimistic, and they can look at situations from a variety of perspectives.

Looking at the group as a whole, the resilience scale total mean score result was 141.36. This means that on average they fall into the moderately low to moderate resilience category. They likely exhibited anxiety and depression now and again, but they try to resolve their problems. They may not move forward in life and schoolwork with excitement, but at least they are moving forward. They spend some time dwelling on the negative, and at the end of the day they usually feel somewhat tired and drained. The median was 145, just into the moderately high and high category. Depression and anxiety are rare for those who fall into the middle of the scores, and they find that life has meaning. They enjoy being with others, others see you as optimistic, and they can look at situations from a variety of perspectives. The standard deviation of the group score was 17.22, suggesting a high variance in responses.

### **Results of Health Behaviors Questionnaire**

High-risk health behaviors were measured by the Health Behaviors Questionnaire (HBQ) (Ingersoll & Orr, 1989). The HBQ consisted of 27 Likert-type Scale questions. Most response options fell on a 5-point Likert-type scale: 1 = never, 2 = less than monthly, 3 = monthly, 4 = weekly, and 5 = daily. The five final items had a different scale option of “never” or “at least once” in relation to their lifetime. A factor analysis performed by Ingersoll and Orr (1989) yielded two subscales, and they placed more importance on the subscales than the total HBQ score. The first subscale was related to behavioral risk, and it is supported by the variables of smoking cigarettes, using marijuana, using alcohol, engaging in sexual activity, getting arrested, getting pregnant or



impregnating someone, running away, riding with a drunk driver, driving drunk, driving reckless, and being suspended from school. The second subscale was emotional risk, and that was shown through the variables of feeling upset, feeling lonely, feeling nervous, feeling tense, feeling sad, difficulty sleeping, difficulty making friends, thoughts of dropping out of school, and consideration of self-harm. The higher the score within the subscales, the higher the chance of risk in general. Frequency response scores for the behavioral risk subscale are reported in Table 4.

Table 4

*Frequency Response Scores of HBQ Individual Subscale Items – Behavioral Risk**(N=101)*

Variable	n	%
Smoked cigarettes		
Never	95	94.1
Less than monthly	5	5.0
Monthly	0	0.0
Weekly	1	1.0
Daily	0	0.0
Used marijuana		
Never	76	75.2
Less than monthly	20	19.8
Monthly	4	4.0
Weekly	1	1.0
Daily	0	0.0

Table 4 cont.

Variable	n	%
Used alcohol		
Never	15	14.9
Less than monthly	18	17.8
Monthly	29	28.7
Weekly	32	31.7
Daily	7	6.9
Engaged in sexual activity		
Never	28	27.7
Less than monthly	15	14.9
Monthly	24	23.8
Weekly	29	28.7
Daily	5	5.0
Rode with drunk driver		
Never	52	52.5
Less than monthly	38	37.6
Monthly	8	7.9
Weekly	2	2.0
Daily	0	0.0

Table 4 cont.

Variable	n	%
Drove drunk		
Never	71	70.3
Less than monthly	27	26.7
Monthly	3	3.0
Weekly	0	0.0
Daily	0	0.0
Drove reckless		
Never	63	62.4
Less than monthly	21	20.8
Monthly	10	9.9
Weekly	6	5.9
Daily	1	1.0

Table 4 data shows that very few students, only 6 percent, have smoked cigarettes. Twenty-six percent of them, however, have smoked marijuana. Eighty-five percent of students have drunk alcohol, with 32 students doing so weekly and seven daily. Seventy-two percent have engaged in sexual activity, with the highest percentage (29%), doing so weekly. When it came to riding with someone who is drunk, the percentage was 48 percent, and ten percent do so monthly or weekly. Thirty seven percent of students have driven drunk themselves. While zero reported doing so weekly, three said they do monthly and 27 less than monthly. Thirty eight percent drive recklessly, with 21 less

than monthly, ten monthly, six weekly, and one every day. Of all the health behaviors, smoking cigarettes, using marijuana, and driving drunk have the highest percentage of responses of no usage. The variables of getting arrested, getting pregnant or impregnating someone, running away, and being suspended were not reported because too few students indicated that they exhibited these behaviors.

The emotional risk individual sub-scores for the HBQ subscales are reported in Table 5.

Table 5

*Frequency Response Scores of HBQ Individual Subscale Items – Emotional Risk*

(N=101)

Variable	n	%
Felt upset		
Never	4	4.0
Less than monthly	31	30.7
Monthly	25	24.8
Weekly	32	31.7
Daily	9	8.9
Felt lonely		
Never	16	15.8
Less than monthly	39	38.6
Monthly	26	25.7
Weekly	13	12.9
Daily	7	6.9

Table 5 cont.

Variable	n	%
Felt nervous		
Never	3	3.0
Less than monthly	17	16.8
Monthly	23	22.8
Weekly	32	31.7
Daily	26	25.7
Felt tense		
Never	9	8.9
Less than monthly	16	15.8
Monthly	25	24.8
Weekly	29	28.7
Daily	22	21.8
Felt sad		
Never	5	5.9
Less than monthly	39	38.6
Monthly	29	28.7
Weekly	17	16.8
Daily	10	9.9

Table 5 cont.

Variable	n	%
Difficulty sleeping		
Never	17	16.8
Less than monthly	19	18.8
Monthly	30	29.7
Weekly	26	25.7
Daily	8	7.9
Difficulty making friends		
Less than monthly	39	38.6
Monthly	13	12.9
Weekly	7	6.9
Daily	5	5.0
Thoughts of dropping out of school		
Never	52	51.5
Less than monthly	22	21.8
Monthly	17	16.8
Weekly	5	5.0
Daily	5	5.0

Table 5 cont.

Variable	n	%
Thoughts of self-harm		
Never	85	84.2
Less than monthly	10	9.9
Monthly	4	4.0
Weekly	2	2.0
Daily	0	0.0

When comparing the behavioral and emotional risk portions of the scale, more students report struggles with emotional issues. One can give special attention to the “weekly” and “daily” categories to support this. For weekly behaviors, 32% of students feel upset, 13% feel lonely, 32% feel nervous, 29% feel tense, 17% feel sad, 26% have difficulty sleeping, 7% have difficulty making friends, 5% have thoughts of dropping out of school, and 2% consider self-harm. When examining the response of daily, 9% feel upset, 7% feel lonely, 26% feel nervous, 22% feel tense, 10% feel sad, 8% have difficulty sleeping, 5% have difficulty making friends, and 5% have thoughts of dropping out of school. Zero students report daily desires for self-harm. For combined responses for weekly and daily, the behaviors that are highest and most worrisome are feeling upset (40.6%), feeling nervous (57.4%), and feeling tense (50.5%).

### **Preliminary Screening Procedures Prior to Testing the Hypothesis**

Univariate normality was assessed via the skewness and kurtosis indices of the variables measured using an interval or ratio scale. Per Kline (2015), a variable is

normally distributed if its skewness index (i.e., skewness statistic/ SE) is below three and its kurtosis index (i.e., kurtosis statistic/SE) is below 20. As shown in Table 6, the overall risk, general stress, and current stress variables had univariate normality. However, the emotional risk, behavioral risk, and resilience variables were highly skewed. Upon examination of the histograms (see Appendix F), skewness for emotional risk and resilience appeared to be determined by one or two outliers. When these outliers were removed (described in the next section), skewness for both variables were within acceptable range (i.e., they were 1.50 and -2.00 respectively). Note, however, that the behavioral risk variable remained severely skewed even when outliers were deleted. Moreover, transformation did not solve the problem of non-normality (see Table 6). Therefore, this variable was recoded into a binary measure: those who scored zero ( $n = 85$ ) vs. those who score one or more ( $n = 16$ ). This binary variable was used in Research Question 2, seeking to determine the relationship between high-risk behaviors and level of resilience in pharmacy students.



Table 6

*Results Assessing the Univariate Normality of the Study Variables (N = 101)*

Variable	Skewness		Kurtosis	
	Statistic	Index	Statistic	Index
Overall Risk	.037	1.54	-.06	0.12
Emotional Risk	1.32	5.55	3.77	7.98
Behavioral Risk	4.07	17.10	19.88	45.12
Resilience	-1.86	7.81	8.00	16.95
Stress Right Now	-0.23	0.95	-0.53	1.12
Stress in General	-0.45	1.87	-0.49	1.04

*Note.* SE for skewness statistic = .24. SE for kurtosis statistic = .47.

### **Checking for Univariate Outliers**

All variables were standardized, which means z scores were created to identify univariate outliers. Thereafter, per Tabachnick and Fidell (2018), cases whose standardized values fell above the absolute value of 3.29 were deemed to be outliers.

### **Descriptive Statistics for Study Variables**

Descriptive statistics and Cronbach's alpha for the major study variables are shown in Table 7. Per Nunnally and Bernstein (1994), a measure is moderately reliable if its Cronbach's alpha is .70. Given this criterion, the emotional risk and resilience measures were reliable but the behavioral risk measure was not reliable. Descriptive statistics for the study variables can be found in Table 7.

Table 7

*Descriptive Statistics for the Study Variables (N = 101)*

Variable	$\alpha^*$	Range	$\bar{x}$	SD
Emotional Risk	.86	7.00 to 53.00	28.34	9.40
High-Risk Behaviors	.61	.00 to 2.00	0.19	.046
Overall Risk	.79	7.00 to 53.00	28.52	9.48
Resilience	.88	3.62 to 6.77	5.47	.66
Stress Right Now	NA	.00 to 100.00	53.93	24.34
Stress in General	NA	3.00 to 100.00	56.78	23.43

### Results of Research Questions

#### Research Question One

The first research question evaluated the relationship between levels of stress and level of resilience in pharmacy students who recently completed their P1 year at MSPU. A Pearson correlation procedure was conducted to answer this; a two-tailed alpha of .05 was utilized. The findings in Table 8 reveal that stress in general was negatively associated with resilience,  $r = -.29, p < .01$ . This magnitude is considered a significant but weak negative, or downhill, correlation. The more resilient the students were, the less general stress they experienced. Also, the correlation between stress right now and resilience was not statistically significant,  $r = -.13, p > .05$ , so one cannot use resilience to predict its relationship to stress.

Table 8

*Two-Tailed Pearson Correlations between the Stress Variables and Resilience (N = 101)*

Variable		Stress in General	Stress Right Now	Resilience
Stress in General	<i>r</i>	1		
	<i>p</i>			
Stress Right Now	<i>r</i>	.49**	1	
	<i>p</i>	.00		
Resilience	<i>r</i>	-.29**	-.13	1
	<i>p</i>	.003	.18	

\*\* . Correlation is significant at the 0.01 level (1-tailed).

### **Research Question Two**

The second research question sought to determine the relationship between high-risk behaviors and level of resilience in pharmacy students who recently completed their P1 year at MSPU. First, an independent *t* test procedure was conducted to answer this research question with behavioral risk, which was previously re-coded as a binary variable; a two-tailed alpha of .05 was specified. The findings in Table 9 show that resilience scores did not differ significantly across behavior risk groups,  $t(99) = .82$ ,  $p = .416$ ., so no inferences can be made about the relationship between resilience and behavioral risk.

Table 9

*Means, Standard Deviations, and Independent t Test Results for Resilience and Behavioral Risk Groups (N = 101)*

Variable	$\bar{x}$	SD	<i>df</i>	<i>t</i>
Resilience			100	.82
No Behavioral Risk	5.49	.64		
One or More Risks	5.34	.75		

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Note:  $n = 85$  for No Risk;  $n = 16$  for One or More Risks

Next, a Pearson correlation was conducted to answer this research question with emotional risk; a two-tailed alpha of .05 was specified. The findings in Table 10 reveal that emotional risk was negatively associated with resilience,  $r = -.510$ ,  $p < .001$ . This is considered a significant but moderate negative, or downward, correlation. The more resilient the students were, the less emotional risk they experienced.

A Pearson correlation was also conducted to answer the second research question with regard to overall risk, and a two-tailed alpha of .05 was specified. The findings in Table 10 reveal that overall risk was negatively associated with resilience,  $r = -.512$ ,  $p < .001$ . This is a significant but moderate downhill relationship, suggesting that the more resilient the students were, the less they experienced the combination of emotional and behavioral risk.

Table 10

*Two-Tailed Pearson Correlations between Resilience, Emotional and Behavioral Risk, and Overall Risk (N = 101)*

Variable		Emotional Risk	Behavioral Risk	Overall Risk	Resilience
Emotional Risk	Pearson Corr.	1	.160	.999**	-.510**
	Sig. (2-tailed)		.110	.000	.000
Behavioral Risk	Pearson Corr.	.160	1	.207*	-.132
	Sig. (2-tailed)	.110		.038	.187
Overall Risk	Pearson Corr.	.999	.207*	1	-.512**
	Sig. (2-tailed)	.000	.038		.000
Resilience	Pearson Corr.	-.510**	-.132	-.512**	1
	Sig. (2-tailed)	.000	.187	.000	

\*\* . Correlation is significant at the 0.01 level (2-tailed)

\* . Correlation is significant at the 0.05 level (2-tailed).

c. Listwise N=101

### Research Question Three

The third question looked at the relationship between GPA and level of resilience in pharmacy students who recently completed their P1 year at MSPU. The researcher was unable to gather information related to individual respondent's GPA.

### Summary

One hundred and eleven of the 180 students who recently completed their P1 year responded to a questionnaire which contained questions about student history, behaviors, and resources, perceived stress, resilience, and high-risk health behaviors. Ten of the 111

responses were then removed from the database because they were missing a significant amount of data, leaving 101 responses to analyze. Sixty one percent of these students entered MSPU as freshmen, and 18% started in their P1 year. Almost 50% of the students are employed from 11 to 20 hours per week, and 34% work one to 10 hours. Most students are involved in extracurricular activities on campus, with 44% engaging in two to three different activities. Almost 87% of students report using the tutoring program, while 50% see faculty and staff for academic support. About one-fourth of students use the campus counseling center, while another 21% utilize other faculty or staff for personal support needs. About 40% of students study 11 to 20 hours a week, and the same number study about 21 to 30 hours. The highest number of students use family as their primary outside support resource (39.8%), with spouses/significant others and friends/peers following.

The Visual Analogue Scale (VAS) was the measure of self-perceived stress in the study. Mean scores for “stress right now” and “stress in general” both fell in the middle of the continuum at 2.60 and 2.76, respectively. This suggests that most students reported stress at a mid-low level. The median, or mid-point of, scores in both scales fell at 3.0. This suggested a report of mid-high stress from students on the variables stress right now and stress in general. The majority of the students reported that both their stress right now and stress in general as a student is either mid-low or mid-high (68% and 76% respectively). In addition, 18.4% reported high stress at the time of the study, and 20.4% reported high stress in general. Descriptive statistics were also utilized to extract means and standard deviations related to perceived stress right now versus stress in general. A significant correlation was found between the two.

The results of the Resilience Scale showed that nine students fell into the very low resilience group. They would likely report a significant amount of depression and anxiety and lack meaning in their lives. Forty-two students were in the moderately low to moderate resilience category. This group likely exhibits anxiety and depression now and again, but they try to resolve their problems. And last, 50 of the students fell into the moderately high to high resilience category. Depression and anxiety are rare in this group, and in general they find life to have meaning.

Looking at the group as a whole, the resilience scale total mean score result was 141.36. This means that on average they fall into the moderately low to moderate resilience category. They likely exhibit anxiety and depression now and again, but they try to resolve their problems. They may not move forward in life and schoolwork with excitement, but at least they are moving forward. The median was 145, just into the moderately high and high category. Depression and anxiety are rare for those who fall into the middle of the scale, and they find that life has meaning. They enjoy being with others, others see them as optimistic, and they can look at situations from a variety of perspectives. The standard deviation of the group score was 17.22, suggesting a high variance in responses.

The examination of high-risk health behaviors through the HBQ (Ingersoll & Orr, 1987) revealed both behavioral and emotional response information. For behavioral risk, very few students, only 6%, have smoked cigarettes. Twenty-six percent of them, however, have smoked marijuana. Eighty-five percent of students have drunk alcohol, with 32 doing so weekly and seven daily. Seventy-two percent have engaged in sexual activity, with the highest percentage (29%), doing so weekly. When it came to riding

with someone who is drunk, the percentage was 48%, and ten percent do so monthly or weekly. Thirty-seven percent of students have driven drunk themselves. While zero reported doing so weekly, three said they drove drunk monthly and 27 less than monthly. Thirty-eight percent drive recklessly, with 21 students doing so less than monthly, ten monthly, six weekly, and one every day. Of all the health behaviors, smoking cigarettes, using marijuana, and driving drunk have the highest percentage of responses of no usage. The variables of getting arrested, getting pregnant or impregnating someone, running away, and being suspended were not reported because too few students indicated that they exhibited these behaviors.

There are more responses of concern for emotional risk than for the behavioral risk categories. One can give special attention to the “weekly” and “daily” groups to support this. For weekly behaviors, 32% of students feel upset, 13% feel lonely, 32% feel nervous, 29% feel tense, 17% feel sad, 26% have difficulty sleeping, 7% have difficulty making friends, 5% have thoughts of dropping out of school, and 2% consider self-harm. When examining the response of daily, 9% feel upset, 7% feel lonely, 26% feel nervous, 22% feel tense, 10% feel sad, 8% have difficulty sleeping, 5% have difficulty making friends, and 5% have thoughts of dropping out of school. If one examines combined responses for weekly and daily, the behaviors that are highest and most worrisome are feeling upset (40.6%), feeling nervous (57.4%), and feeling tense (50.5%).

The first research question sought to determine the relationship between levels of stress and level of resilience in pharmacy students who recently completed their P1 year at MSPU. A Pearson correlation procedure was conducted to answer this; a two-tailed alpha of .05 was specified. The findings reveal that general stress was negatively



associated with resilience,  $r = -.29, p < .01$ . The more resilient the students were, the less general stress they experienced. This magnitude is considered a significant but weak negative, or downhill, correlation. The more resilient the students were, the less general stress they experienced. Also, the correlation between stress right now and resilience was not statistically significant, so one cannot use resilience to predict its relationship to stress.

The second research question sought to determine what the relationship was between high-risk behaviors and level of resilience in pharmacy students. The study examined both behavioral risk and emotional risk. First, an independent  $t$  test procedure was conducted to answer this research question with behavior risk, which was previously re-coded as a binary variable; a two-tailed alpha of .05 was specified. The findings show that resilience scores did not differ significantly across behavior risk groups, so no inferences can be made about the relationship between resilience and behavioral risk. Next, a Pearson correlation was conducted to answer this research question with behavioral and emotional risk. The findings revealed that emotional risk was negatively associated with resilience. The more resilient the students were, the less emotional risk they experienced. A Pearson correlation was also conducted to answer the second research question with regard to overall risk (behavioral and emotional combined). Overall risk was negatively associated with resilience, so the more resilient the students were, the less they experienced the combination of emotional and behavioral risk.

The third research question looked at the relationship between GPA and level of resilience in pharmacy students who just completed their P1 year at MSPU. The

researcher was unable to gather information related to individual respondent's GPA, so this question will be saved for future studies.

## **CHAPTER 5**

### **Conclusion**

It is impractical for leaders at a pharmacy school to attempt to completely eliminate student stress, and really they should not try. Research suggests that some stress is productive and necessary for growth (Selye, 1975). However, college faculty and staff should investigate sources, levels, and means of counteracting stress in their campus groups to ensure that it doesn't reach unhealthy levels. Resilience is an important area of related research because when possessed by professional pharmacy students, it could help them navigate their way through a demanding academic program. Resilience and college student development theorists have a lot in common when it comes to the foundational ideas behind why increasing student resilience is important. Both topics shine a light on how the resilience process happens within both the individual and within groups.

### **Purpose of Study**

Three primary research questions formed the foundation of this quantitative study. The first asked about the relationship between levels of stress and levels of resilience in pharmacy students after their P1 year at MSPU. The second investigated the relationship between high-risk health behaviors and level of resilience in this group, and the third asked about the relationship between students' GPA and their resilience. By answering these questions, faculty, staff, and students could examine the types and severity of issues related to the stress experienced by first-year professional students at MSPU and create a solid starting point for the generation of solutions to manage stress in this group.

The study utilized a questionnaire that was distributed to all students who had just completed their P1 year. Responses were obtained from 111 of the 180 students in the

class. Three primary instruments were utilized – the Visual Analogue Scale (Lesage, Berjot, & Deschamps, 2012), the Health Behaviors Questionnaire (Ingersoll & Orr, 1989), and the Resilience Scale (Wagnild, 1993). Data analysis was performed for the first question through a Pearson correlation, and a Pearson correlation and t-test were utilized for question two. Descriptive statistics were gathered for all sample variables in the study, and frequency counts and percentages were used to describe all characteristics - categorical, nominal, and ordinal. All data was collected in Survey Monkey and then transferred and analyzed through the Statistical Package for the Social Sciences (SPSS).

### **Interpretation of Findings**

#### **Stress**

Though this study placed the self-reported scores of the VAS into categories instead of reporting one number, one can compare it to the results to the Ahern (2007) dissertation from which it was extended. The community college students' median score for "stress right now" was 48.8, and the "stress in general" median was 48.9. In the current study, the median score fell within category three, with stress ratings from 51 to 75 out of 100. This suggests that the pharmacy students' perceived level of stress was higher than those within the Ahern study. This can likely be explained by the fact that the MSPU students are in the first year of a more difficult professional program than the one at the community college.

#### **Resilience**

The Resilience Scale (Wagnild, 1993) results revealed the number of MSPU students who fell into specific categories of resilience. The mean and median scores for this sample were 141.36 and 145.00, respectively. The mean score falls into the upper

end of the “moderately low to moderate” resilience category (116-144), as shared by Wagnild (2009), and the median score falls into the lower part of the “moderately high to high resilience” category (145-175). The Ahern dissertation (2007) reported that the total scale mean score for resilience within the student population was 139.8, which also falls into the “moderately low to moderate” resilience category (116-144). One would expect scores from a professional student to be higher than those from adolescent freshmen, because as age of a respondents increases, so does their scores (Wagnild, 2009). Older students have had more opportunities in college and life to develop coping mechanisms, so this seems logical.

Most of the P1 students were in their early twenties. Wagnild (2009) reported that for the 18 to 29 age group of respondents in her resilience study, the mean and median scores for responses was 132.8 and 134.8 respectively. Since the mean and median scores for the P1 students was 141.36 and 145.00, on the whole they scored at least eight points higher in resilience than the 420 subjects in Wagnild’s research. Approximately 68% of Wagnild’s respondents had an undergraduate degree and at least some courses toward a master’s degree, so it appeared to be a fairly well-educated population like the MSPU group.

### **High Risk Behaviors**

When comparing the behavioral and emotional risk response categories of the Health Behaviors Questionnaire (Ingersoll & Orr, 1989), more students shared reports of having higher difficulty with emotional risk than behavioral risk. This is consistent with the findings of the Ahern (2007) dissertation as well. Both studies also show that feeling tense and feeling nervous were the top two emotional risk behaviors reported. All of this

falls in line with what the College Health Behavior Survey (2018) and MSPU Counseling Center (2018) report. The former shares sobering information that 11% of MSPU students say that “my stress is unbearable”, compared to 4.2% of students from other schools in the state. Also, 17% of MSPU students reported that “stress impacts or interferes with their academic life”, compared to 8.6% of other students (Partners in Prevention, 2018). The MSPU Counseling Center similarly reports that the most common presenting problems shared by P1’s are academic concerns (16%), anxiety/worry (15%), and depressed mood (13%) (Hastings, 2018a). Ingersoll and Orr (1989) do not report values for the subscales of emotional and behavioral risk for their Health Behaviors Questionnaire, so no comparisons can be made between that and the current study.

### **Research Question One**

The researcher revealed a negative relationship between P1 pharmacy students’ resilience and their general stress, suggesting that students who are higher in resilience have lower stress. This matches the findings in the Ahern (2007) dissertation with community college students, as well as other studies that have been done on this relationship between resilience and stress (Aronowitz, 2005; Blum & Ireland, 2004).

### **Research Question Two**

The results of the second research question were that students higher in resilience were less likely to exhibit emotional risk behaviors that are considered harmful to overall health, such as feeling upset, feeling lonely, feeling nervous, feeling tense, feeling sad, difficulty sleeping, difficulty making friends, thoughts of dropping out of school, and

consideration of self-harm. This also was consistent with the findings of the Ahern (2007) dissertation.

There was not a significant relationship between resilience and the likelihood of high-risk behaviors such as smoking, drinking alcohol, and using marijuana or other drugs. The Ahern dissertation did not report on this, and the researcher did not uncover any other studies that would do so.

### **Research Question Three**

The study could not answer research question three because GPA for the students could not be accessed.

### **Conclusions**

The researcher originally chose the topic of stress and resilience because of her many years of work with professional students in a pharmacy program. She has consistently wondered why so many of the students experience such high levels of anxiety and depression, and she is always looking for ways to increase academic and mental wellness for this population. The literature review of the study revealed that resilience happens when people are presented with the right combination of adversity and positive adaptation. Is MSPU reaching this balanced level of challenge and support for optimal growth to occur in its population, or is it producing pharmacists who have learned to acquire necessary medical information but not live a healthy, balanced life? Both the medical knowledge and the personal wellness are important.

This study uncovered baseline information regarding P1 student stress and resilience. It shed light on P1 students' history, habits, and support resources used, as well as their general stress, resilience, and health behaviors. Building upon these basics,

knowledge was gained about relationships between resilience and stress, as well as between resilience and high-risk behaviors and emotions.

The findings of this study revealed that students who recently completed their P1 year reported a mid-high level of general stress - stress is a major area of concern. These students reported higher rates of emotional risk behaviors such as feelings of tension or nervousness more than taking part in high risk behaviors such as drinking or smoking. P1 students tend to have the heaviest usage of counseling center hours, and the topics most often shared as their presenting issues are academic concerns, anxiety/worry, and depressed mood. Moreover, they are working many hours, involved in numerous extracurricular activities, and spending a lot of time studying. This suggests that a large part of the population is experiencing emotions that go well beyond the healthy “eustress” that is mentioned in the literature review, a low level of stress that can help students feel motivated.

Despite these stress-related issues, there is hope. In this study, students who scored higher in resilience reported a lower level of general stress. As stated in the literature review, those with lower stress are shown to be more successful, both academically and personally (see Konduri, et al., 2006). Results of this study by Konduri et al. revealed that pharmacy administration students who had higher stress also had lower health-related quality of life scores, and they perceived less academic success. They also discovered that the total stress score, the fear of failing, academic stress, and student-faculty interaction stress components were negatively and significantly related to self-reported GPA. The work of Konduri et al. supports the idea that by building resilience



and decreasing stress, MSPU can increase the chance of academic success in the P1 population.

Also, about half of the students in this study scored at a high level of resilience, so not everyone fell into a category that could require intense intervention from the campus. Anyone can benefit from increased resilience, but educators can use knowledge of the warning signs of those with low resilience to intervene sooner and at a higher level. This can be accomplished through a wide variety of interventions and programs on campus.

A challenge to the work of building up support systems is an all-too frequent tendency for students to avoid asking for help. Within the culture of medicine there exists a “dichotomy between those who provide care and those who receive it” (Dunn, et al., 2008). Asking for help is often seen as a sign of weakness. Making matters worse, there is a stigma on mental illness, which may make it difficult to accept one’s circumstance and seek support. Both of these issues likely also exist within pharmacy schools, suggesting that no matter how many programs or outreach efforts are produced by faculty and staff, students may need help realizing the value of asking for help.

Tied to parent education, colleges could take these family education efforts one step back by working with families of high school students, or maybe even younger. Some experts in the field of psychology and counseling claim that college students in general are less resilient than in past generations. Gray (2015) writes about how more and more students are having emotional crises over problems with everyday life such as roommate challenges or getting a grade that is lower than an A. The author of this study would agree that this is a major issue with her students. Gray talks about how the well-known phenomenon of “helicopter parenting” has played a role in this. Could colleges

do more to help educate families about the importance of allowing younger students to become more independent, face challenges, and learn how to bounce back from failure? The researcher agrees with Gray that there needs to be a balance of challenge and support to help students reach their potential.

This study also revealed that students are working many hours while studying in a demanding professional program. The majority reported having jobs, and about one half work 11 to 20 hours a week. Managing work and school can be difficult, and previous research shows that students who are employed a large number of hours are less likely to matriculate, as balancing multiples roles such as student, parent, and/or employee often creates high levels of stress. Interestingly, students who work a moderate number of hours per week actually have a higher retention rate than those who do not work at all, but those who work more than fifteen hours per week tend to face more difficulties (see Perna, 2010). Campus faculty and staff could track and provide support to those who work a large number of hours outside of their studies. Examples of how to do so could include education on improving time management, how to better manage stress, and techniques for studying more efficiently.

The aggregate results of this study should be shared with the MSPU community, as there are signs of growing interest in changing the wellness of students, faculty, and staff on campus. The researcher has never seen so much discussion about it in her over 16 years at MSPU. There is more wellness support at all levels of the institution, including mindfulness training sessions, examination of physical places on campus to provide stress relief zones, and the building up of tracking and support for students in academic trouble.

This study can support the development of policies, procedures, and budgets that will keep this momentum going.

There is much more work to be done in both research and practice related to stress and resilience in pharmacy students, as there is not a lot about this in the literature. Armed with information from this study as well as others, MSPU can help students become healthier and increase their academic success. In the end this will help them have a more positive effect on their patients and society after graduation.

### **Limitations**

First, the stress, resilience, and health behaviors questionnaires were all self-reported, so results could not be independently verified. Where a student marked their stress level on the longitudinal line of the Visual Analogue Scale (Lesage, Berjot, & Deschamps, 2012), for example, could vary somewhat by individual. They also reported retrospectively after the completion of their P1 year, so the potential to remember incorrectly was present. Students may also not remember specific events, may not feel comfortable sharing negative information, or may exaggerate their ability to manage a particular behavior, as examples.

Another limitation was that this was a very specific population of pharmacy students. Only one institution is being surveyed, so that limited the sample size. Similarly, because the study was at just one institution, findings may not be generalizable to a larger population of college students.

Finally, the time in the semester when the researcher distributed the questionnaire may have affected results. When beginning the study process, the researcher was concerned about distributing the questionnaire when the semester was too stressful.

Since it was the start of the semester, students may have actually felt less stressed than if they had greater demands on them when a bit further into their courses.

### **Recommendations**

With the goal of helping increase students' ability to manage the stress of a rigorous professional program, this study provides multiple recommendations for change.

1. Faculty, staff, and students can follow the lead of those who already study resilience and college student development and shared recommendations.

Researchers and practitioners speak of the benefit of strengthening internal and external resources for students. Masten (2001) stated that an increase in resilience can help students be successful in college if they are able to use protective factors, such as personal qualities or social support systems, which will support them in situations of high stress. Non-classroom programs can be enhanced or created to help students develop personal characteristics such as self-esteem (Earvolino-Ramirez, 2007; Hunter & Chandler, 1999), an awareness that humor can get them through tough times (Earvolino-Ramirez, 2007), and the ability to utilize the emotional response that best matches the level of adversity that is faced. Other programs can encourage ways to build supportive relationships with classmates, faculty, and staff on campus, all which can be important external protective factors (Tinto, 1975). Avenues such as increased campus counseling, enhanced advising and academic support, and general wellness programming can certainly be incorporated.

2. Other colleges, including medical programs, are already starting to build in creative, formal ways to support resilience development in their communities. Of

recent discussion at MSPU has been how the University of California, San Francisco medical program has incorporated wellness practices into their curriculum. Examples include a resilience medicine certificate course, administering a quality of life survey, and creating strong partnerships with the counseling and student health departments on campus. MSPU may not have to “invent the wheel” to develop more formal efforts.

3. It also was discovered in this study that a high number of students use family versus peers as their main support resource. Less than one half of students use their parents as their primary support person. MSPU may need to put more energy into connecting with parents, to help them know how to be the best support their pharmacy student.

### **Future Research**

The recommendations for future study and practice on stress and resilience in a pharmacy education setting seem almost limitless to the researcher, but the following ideas emerged as priorities after this study:

1. Although the Visual Analogue Scale (VAS) was used in the dissertation from which this study was extended, the use of a different stress scale would be considered. Though the VAS was simple to use and quick to administer because it involved students placing a cursor on a line between one and 100, there are many stress scales out there that could help the researcher gain further insight into the specific elements of stress reported by individuals, as well as decrease the chance of inconsistency in reporting between students. In addition, the researcher would administer the survey at a different time – probably toward the

end of the second semester of the P1 year. The stress levels of the students would likely be high, but not at its highest, as it would likely be in finals. Next, a scale to assess social desirability of responses such as the Balanced Inventory of Desired Responding (BIDR) would be utilized. Including this in the methodology could have supported more accurate data interpretation, as it checks for socially desirable response style. And finally, the researcher would correct her errors in setting up Survey Monkey so that the research question examining grade point average (GPA) and resilience could be investigated. Would the research suggest that those MSPU students who are higher in resilience also receive higher grades? GPA is the most common measure of success in programs and could have shared valuable insights.

2. Research could focus on the wellness behaviors of pharmacy students. This is an area of pharmacy that seems to be growing around the country. How can we help our students be less stressed? The researcher sees a great deal of unhealthy behavior in P1 students during her practice doing student academic and personal support. When the going gets tough with exams and other demands, the tough seem to sacrifice their physical and mental health first. Higher education professionals know that students need a well-rounded experience on campus that includes time to relax and socialize, but this can be difficult to plan on the MSPU campus because so many students spend most of their time studying. This study didn't ask about topics related to sleep, exercise, meditation, or healthy eating, or other means of self-care while going through the program. How do the students who make time for wellness behaviors rate in terms of stress, resilience, and

GPA? If the results suggest that it increases resilience, then this may support the need to focus attention on helping students grow in this area.

3. Investigators may also want to continue this same research longitudinally, possibly at different points in their time at MSPU, the P1 year, and/or other years of the professional program. Pharmacy schools incorporate full-time experiential work in the final year of study, for example. That is a very different experience for students than their didactic work and would likely provide some interesting data. There certainly would also be value in running this same study on stress and resilience within other pharmacy programs. Do MSPU students experience stress at a higher or lower rate than others? Do they possess more resilience, or less? Is there any evidence suggesting why some programs excel at maintaining a lower-stress student body?

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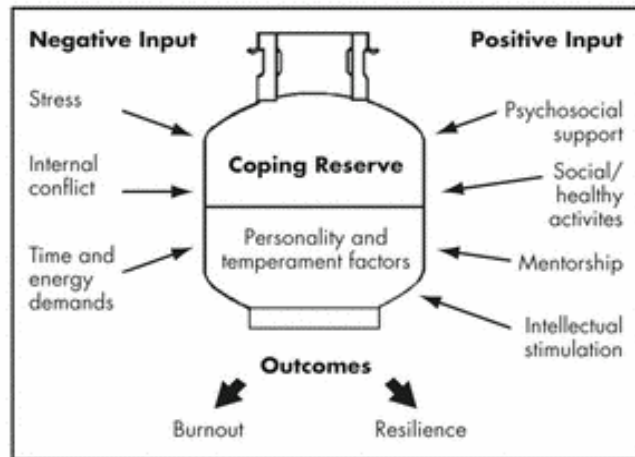
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Appendix A

Coping Reservoir



Appendix B

## Approval for Study Advancement &amp; Questionnaire Approval

Not a problem. Let me know if I can help in any way. Nancy

Sent from my iPhone

On Aug 27, 2016, at 5:30 PM, Jones, Rebecca <[Rebecca.Jones@stlcop.edu](mailto:Rebecca.Jones@stlcop.edu)> wrote:

Hello Dr. Ahern. I am a doctoral student at the University of Missouri – St. Louis, and I have begun my dissertation on the topic of resilience to stress in pharmacy students. Like in nursing, pharmacy students go through a rigorous program and experience high stress. My advisor and I came across your dissertation this week, and we think it would be a great model for my work with a different population from your community college group. Are you comfortable with the idea of me doing a replication study?

Thank you for your consideration.

**Rebecca Jones**

Director of Academic Support

2128 Residence Hall

314.446.8352 (office)

314.446.8350 (fax)



Dear Rebecca,

Thank you again for choosing the Resilience Scale for your graduate research.

The licensing agreement gives you the use of the Resilience Scale (2016-2020) for your dissertation study and the digital and password protected User's Guide. Your password is:

All the continued best,

Gail

*Gail Wagnild, RN, PhD*

*The Resilience Center*

[www.resiliencecenter.com](http://www.resiliencecenter.com)

[www.resiliencecenter.health](http://www.resiliencecenter.health)

**From:** Jones, Rebecca [<mailto:Rebecca.Jones@stlcop.edu>]

**Sent:** Saturday, February 27, 2016 11:29 AM

**To:** [gwagnild@resiliencecenter.com](mailto:gwagnild@resiliencecenter.com)

**Subject:** Use of The Resilience Scale

Hello Dr. Wagnild. I'm a PhD student at the University of Missouri - St. Louis and also work in academic support at St. Louis College of Pharmacy. My dissertation topic is related to resilience to stress in pharmacy students, and I am looking for a scale to assess my students' resilience. I'm excited about The Resilience Scale because it uses Strengths as a basis. We've been developing a Strengths program at the College for the past two years, and we are passionate about it. I'd like information about the possibility of utilizing The Resilience Scale in my research. Any help is appreciated.

Thanks, and take care.

Rebecca

**Rebecca Jones**

Director of Academic Support

314.446.8352 (office)

314.446.8350 (fax)

**From:** Ingersoll, Gary M. <ingersol@indiana.edu>  
**Sent:** Thursday, November 3, 2016 9:12 AM  
**To:** Jones, Rebecca <Rebecca.Jones@stlcop.edu>  
**Subject:** Re: HBQ

Absolutely. Best wishes

**Gary M. Ingersoll, Ph.D.**

Professor Emeritus, Department of Counseling and Educational Psychology

Professor Emeritus, Department of Pediatrics

Indiana University

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**From:** Jones, Rebecca <[Rebecca.Jones@stlcop.edu](mailto:Rebecca.Jones@stlcop.edu)>  
**Sent:** Wednesday, November 2, 2016 7:10 PM  
**To:** Ingersoll, Gary M.  
**Subject:** RE: HBQ

Dr. Ingersoll,

Thank you for letting me know. Take care.

**Rebecca Jones**

Director of Academic Support

2128 Residence Hall

314.446.8352 (office)

314.446.8350 (fax)

**From:** Ingersoll, Gary M. [<mailto:ingersol@indiana.edu>]  
**Sent:** Wednesday, November 02, 2016 1:48 PM  
**To:** Jones, Rebecca <[Rebecca.Jones@stlcop.edu](mailto:Rebecca.Jones@stlcop.edu)>  
**Subject:** HBQ

Dear Rebecca

I got your request and have multiple times culled through old files to see if I could find the Health Behaviors Questionnaire. I haven't used in in more that 25 years and my files from those days are in an early version (I think) of Word Perfect. You probably wouldn't know how we had to label files in those days, but the upshot is I can't find the file or even to open some of those files from the late 1980's.

Sorry to not be able to help you.

gmi

Appendix C

IRB Approval Information, University of Missouri – St. Louis  
& St. Louis College of Pharmacy

Please note that University of Missouri-St. Louis IRB has taken the following action on IRBNet:

Project Title: [1370468-3] Examining Relationships Between Stress and Resilience in Pharmacy Students  
Principal Investigator: Rebecca Jones

Submission Type: Amendment/Modification

Date Submitted: August 25, 2019

Action: APPROVED

Effective Date: August 31, 2019

Review Type: Expedited Review

Should you have any questions you may contact Carl Bassi at [bassi@umsl.edu](mailto:bassi@umsl.edu).

Thank you,  
The IRBNet Support Team

DATE: August 31, 2019

TO: Rebecca Jones

FROM: University of Missouri-St. Louis IRB PROJECT

TITLE: [1370468-3] Examining Relationships Between Stress and Resilience in Pharmacy Students

REFERENCE #: SUBMISSION TYPE: Amendment/Modification ACTION: MODIFICATIONS

APPROVED DECISION DATE: August 31, 2019

EXPIRATION DATE: August 4, 2020

REVIEW TYPE: Expedited Review

This modification was approved by the University of Missouri-St. Louis IRB for the term of this protocol. The University of Missouri-St. Louis IRB must be notified in writing prior to major changes in the approved protocol. Examples of major changes are the addition of research sites or research instruments. An annual report must be filed with the committee. This report should indicate the starting date of the project and the number of subjects since the start of project, or since last annual report. Any consent or assent forms must be signed in duplicate and a copy provided to the subject. The principal investigator must retain the other copy of the signed consent form for at least three years following the completion of the research activity and they must be available for inspection if there is an official review of the UM-St. Louis human subjects

research proceedings by the U.S. Department of Health and Human Services Office for Protection from Research Risks. This action is officially recorded in the minutes of the committee. If you have any questions, please contact Carl Bassi at 314-516-6029 or [bassi@umsl.edu](mailto:bassi@umsl.edu). Please include your project title and reference number in all correspondence with this committee.



4588 Parkview Place  
St. Louis, MO 63110-1088  
T 314 367-8700  
F 314 446-8304  
stlcop.edu

May 4, 2020

Rebecca Jones  
Assistant Vice President, Student Affairs  
St. Louis College of Pharmacy

Dear Ms. Jones:

IRB#: 2019-17

TITLE OF PROJECT: "Examining Relationships Between Stress and Resilience in Pharmacy Students"

This project was approved by the St. Louis College of Pharmacy Institutional Review Board (STLCOP IRB) on August 16, 2019, using our administrative review procedure because the project had already been reviewed and approved by the University of Missouri-St. Louis (UMSL) IRB on August 4, 2019.

Proposed project modifications were subsequently approved by the UMSL IRB on August 21, 2019, and then by the STLCOP IRB on September 3, 2019.

This project does not require continuing review reports because it's primarily overseen by an external IRB. However, the STLCOP IRB requires follow up communication from you upon protocol changes or violations, or reports of unanticipated problems involving risk to research participants or others. The STLCOP IRB also must be notified if your methodology or intentions for use of the information gathered changes from that described in your current application.

Sincerely,

A handwritten signature in black ink that reads "Richard P. McCall".

Richard P. McCall, Ph.D.  
Chair, STLCOP IRB

Appendix D

## Letter of Consent

Dear Student,

You are invited to participate in a doctoral research study conducted by Rebecca Jones, Assistant Vice President for Student Affairs at STLCOP and PhD student at University of Missouri – St. Louis. The purpose of this research is to learn more about students who just completed their P1 year at St. Louis College of Pharmacy – their stress level during their P1 year, behaviors that were used to cope with stress, and their level of resilience (i. e. ability to successfully manage and learn from stress). Each of your P2 your classmates have the opportunity be involved in this research, and it should take no more than 15 minutes to complete the questionnaire.

Information from this study will be used to complete Rebecca’s PhD in Education, but it will also be useful in her efforts to help STLCOP students lead healthier lives. Rebecca will be collaborating with the school’s Assistant Vice President for Institutional Effectiveness, Dr. George Vineyard, to collect the data and to keep it confidential. Once the deadline to complete the study has passed, Rebecca will give Dr. Vineyard access to the data. Through work in STLCOP’s student record-keeping program, Jenzabar, Dr. Vineyard will then change everyone’s email address in the data to their student ID numbers. He will then match student IDs with demographics such as GPA, race/ethnicity, and age. Once all data has been de-identified by Dr. Vineyard, he will give it to Rebecca for analysis.

As an incentive for participation, two \$50 Amazon gift cards will be raffled off to those who choose to enter their student ID number into a question offered at the end of the main online survey. Student ID numbers will NOT be connected to the responses shared in the main survey. Student ID’s will only be looked up for the two people who are randomly chosen as the winners, and notification will be given by email to these winners.

Your participation will involve these steps:

1. Click on the link provided in this email to complete the attached survey. Please complete this study by the following date: Thursday, August 29<sup>th</sup>.
2. Answer the questions within the four sections of the survey:
  - a. Demographic information, which gathers basic information such as your extracurricular activities, study habits, and number of hours working.
  - b. The Perceived Stress Scale, which gathers information about your general stress level.
  - c. The Health Behaviors Questionnaire, which asks questions about troubles you have related to stress, how you may cope with this stress, and any troubles you may have experienced because of these coping behaviors.
  - d. The Resilience Scale, which gathers information about how you manage thoughts and behaviors related to stress.



3. If interested in entering the raffle for two \$50 Amazon gift cards, enter your student ID number into the separate questionnaire offered right after you have completed the main survey.
4. Click ‘Submit’ at the end of the surveys. You will receive an email thanking you for your participation and again shares contact information for those organizing the study.
5. If you are unable or choose not to complete the survey during the time set aside during your P2 orientation, you may have one week after that day to complete the questionnaire.

There are no major anticipated risks associated with this research. However, there is a chance you may experience some uncomfortable feelings when answering certain questions, depending on your life experience. For example, one question asks how frequently you may feel lonely, and this could be a sensitive subject for some. If any questions in the survey bring up issues that are difficult to resolve on your own, please remember that the STLCOP Counseling Center is available to help you.

Your participation is voluntary and you may choose not to participate in this research study. You will NOT be penalized in any way should you choose not to participate – it will not affect your grades or relationship to STLCOP or Rebecca. You also may choose not to answer any questions that you do not want to answer. Completion and submission of the survey is an indication that you consent to be involved in this study.

There are no direct benefits for you participating in this study. However, your participation will contribute to the knowledge about the topic of stress at St. Louis College of Pharmacy. This information may be used to help faculty, staff, and administration make choices about future programming and other decision making in regard to student health.

By agreeing to participate, you understand and agree that the general results of this study may be shared with other researchers and educators in the form of presentations and/or publications. In all cases, your identity will not be revealed. In rare instances, a researcher's study must undergo an audit or program evaluation by an oversight agency (such as the Office for Human Research Protection). That agency would be required to maintain the confidentiality of your data. In addition, all data will be stored on a password-protected computer.

If you have any questions or concerns regarding this study, or if any problems arise, you may contact Rebecca Jones at [rebecca.jones@stlcop.edu](mailto:rebecca.jones@stlcop.edu) or (314)446-8352. You can also contact the faculty advisor overseeing her dissertation work, Dr. Patricia Boyer. She can be reached at [boyerp@msx.umsl.edu](mailto:boyerp@msx.umsl.edu) or (314)516-7396. Finally, if you have questions or concerns regarding your rights as a research participant, you can contact the UMSL Office of Research Administration, at (314)516-5897.

Thank you.

Appendix E

## Survey Instruments and Additional Questions

Demographic Information

Please indicate the ONE response (unless otherwise indicated) which closely represents you.

1. At what year did you enter STLCOP?

Freshman

Sophomore

Junior

Pt

2. On average, how many hours a week are you employed?

None

1-10 hours a week

11-20 hours a week

More than 20 hours a week

3. How many extracurricular activities are you involved in at STLCOP (student organization, athletic team, intramurals, research, etc)?

0

1-2

3-3

4 or more

4. Which of the following support resources have you used during your time at STLCOP. Check all that apply.

<input type="checkbox"/> Tutoring - group or individual	<input type="checkbox"/> Faculty or staff for personal support (not counting counseling)
<input type="checkbox"/> Counseling - on campus or off	<input type="checkbox"/> Other
<input type="checkbox"/> Faculty or staff for academic support	<input type="checkbox"/> None

Other (please specify)

5. Which of these best describes the number of hours you study a week, on average (not counting time in class)?

- |   |   |
|---|---|
| <input type="radio"/> 10 to 15 hours a week | <input type="radio"/> 31 to 40 hours a week     |
| <input type="radio"/> 16 to 20 hours a week | <input type="radio"/> More than 40 hours a week |
| <input type="radio"/> 21 to 30 hours a week |   |

6. From whom in your life do you receive the most personal/mental support?

- |   |  |
|---|--|
| <input type="radio"/> Family Member               | <input type="radio"/> Faculty/Staff Member |
| <input type="radio"/> Spouse or Significant Other | <input type="radio"/> Other                |
| <input type="radio"/> Friend/Peer                 |  |

### Stress Scale

You will now be asked to answer two questions related to your stress level, one for as it is **RIGHT NOW**, and the next for how you **GENERALLY FEEL**.

#### 7. Stress Right Now:

Please move the slider tool to the point on the line that best describes how much stress you have right now. 0 equals None, and 100 equals Extreme. In the next question you will be asked to rate your stress in general.

0 100



#### 8. Stress in General:

Please move the slider tool to the point on the line that best describes how much stress you have in general. 0 equals None, and 100 equals Extreme.

0 100



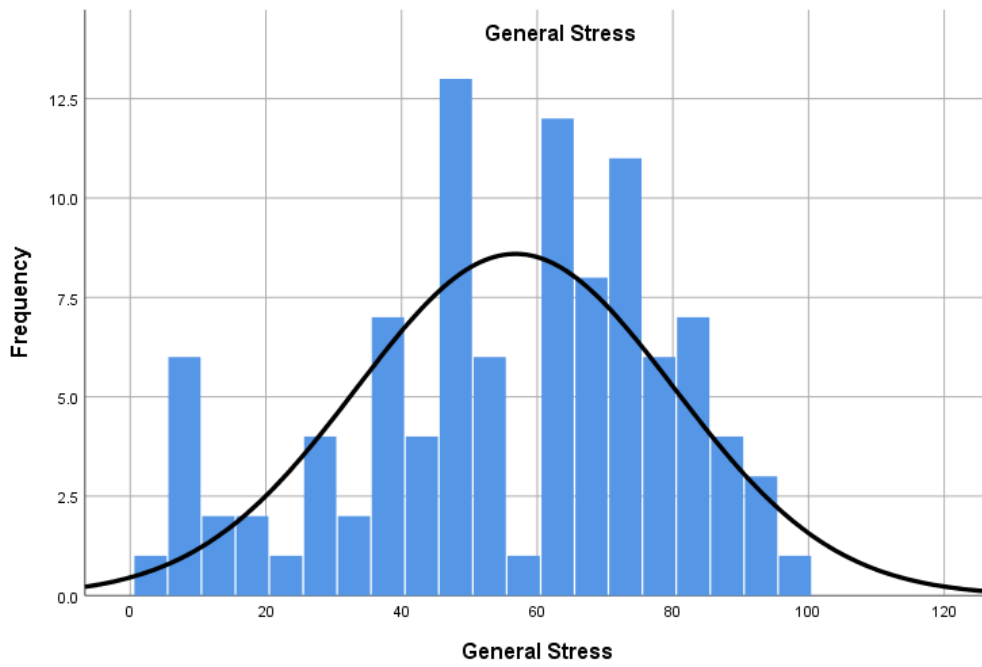


	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I can usually find something to laugh about.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
17. My belief in myself gets me through hard times.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
18. In an emergency, I'm someone people can generally rely on.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
19. I can usually look at a situation in a number of ways.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
20. Sometimes I make myself do things whether I want to or not.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
21. My life has meaning.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
22. I do not dwell on things that I can't do anything about.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
23. When I'm in a difficult situation, I can usually find my way out of it.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
24. I have enough energy to do what I have to do.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
25. It's okay if there are people who don't like me.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>	6 <input type="checkbox"/>	7 <input type="checkbox"/>
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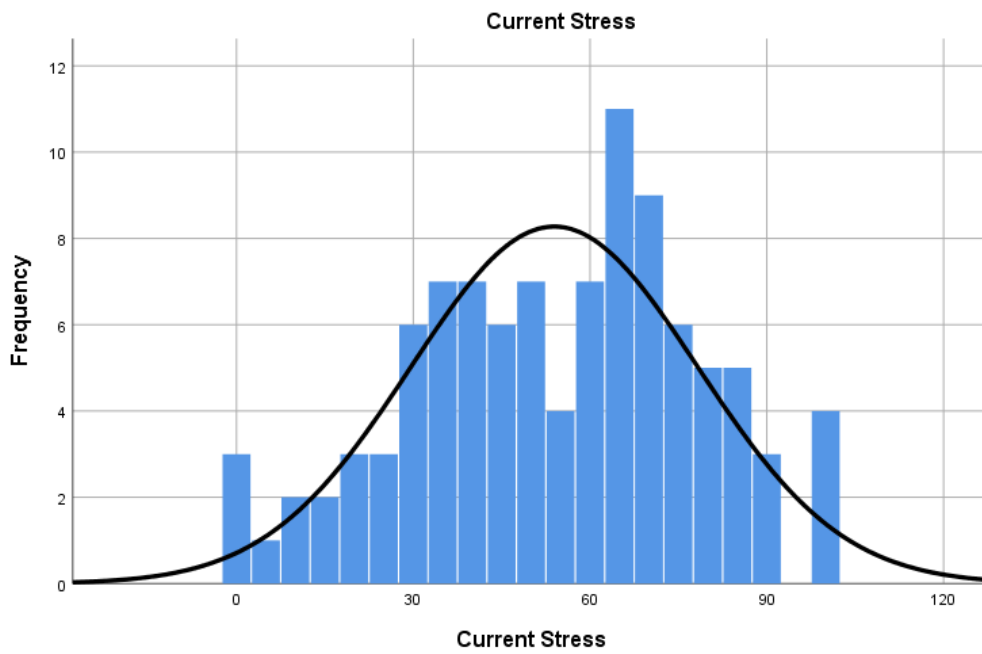
Appendix F



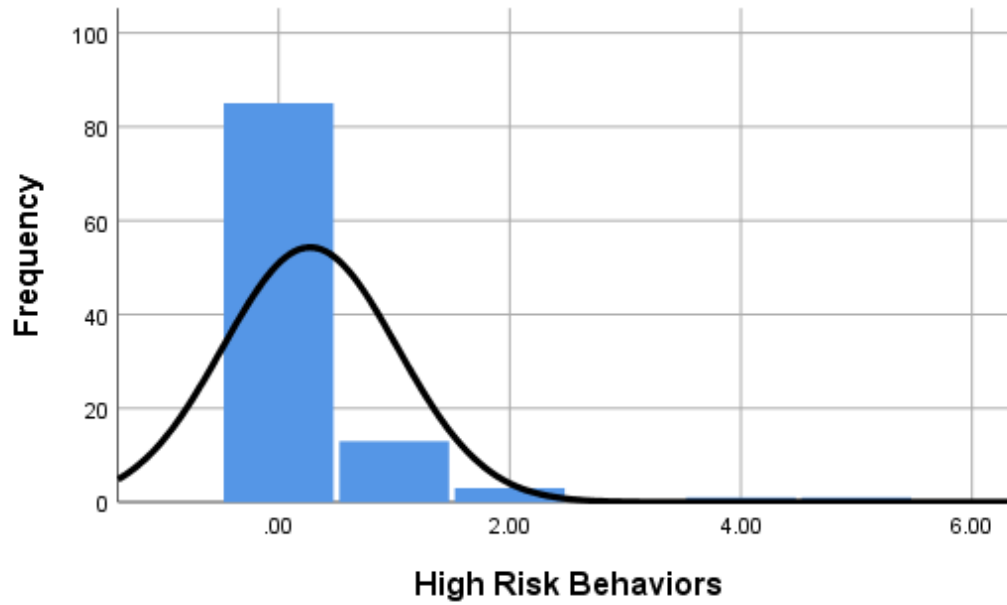
Histograms for the Study Variables



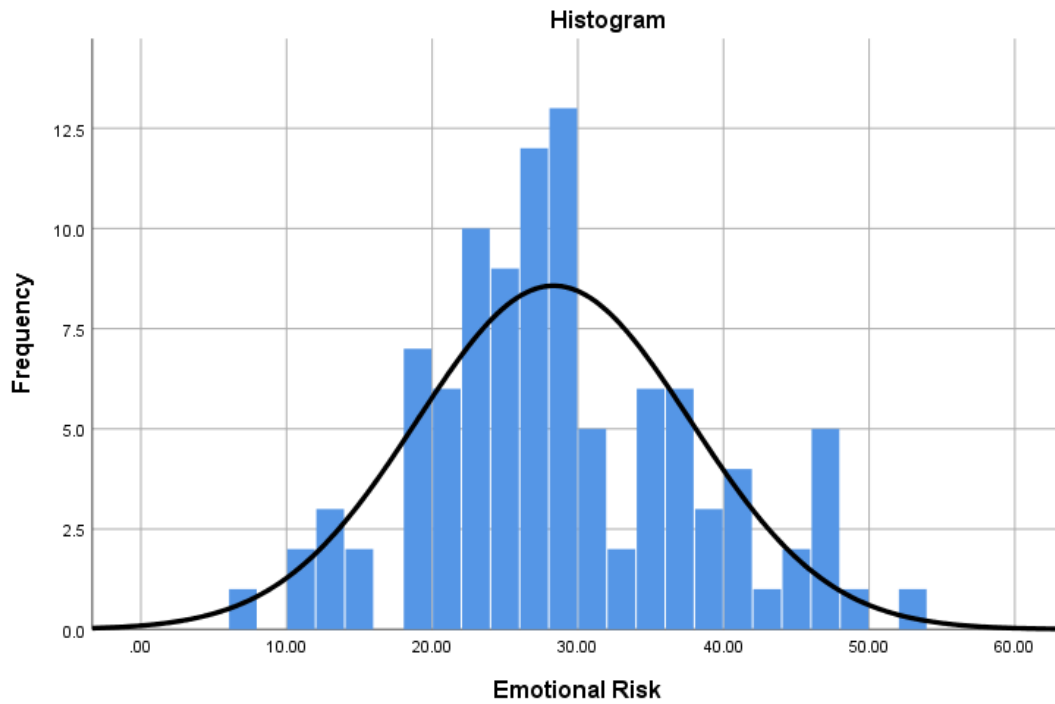
Histogram for the general stress total score.



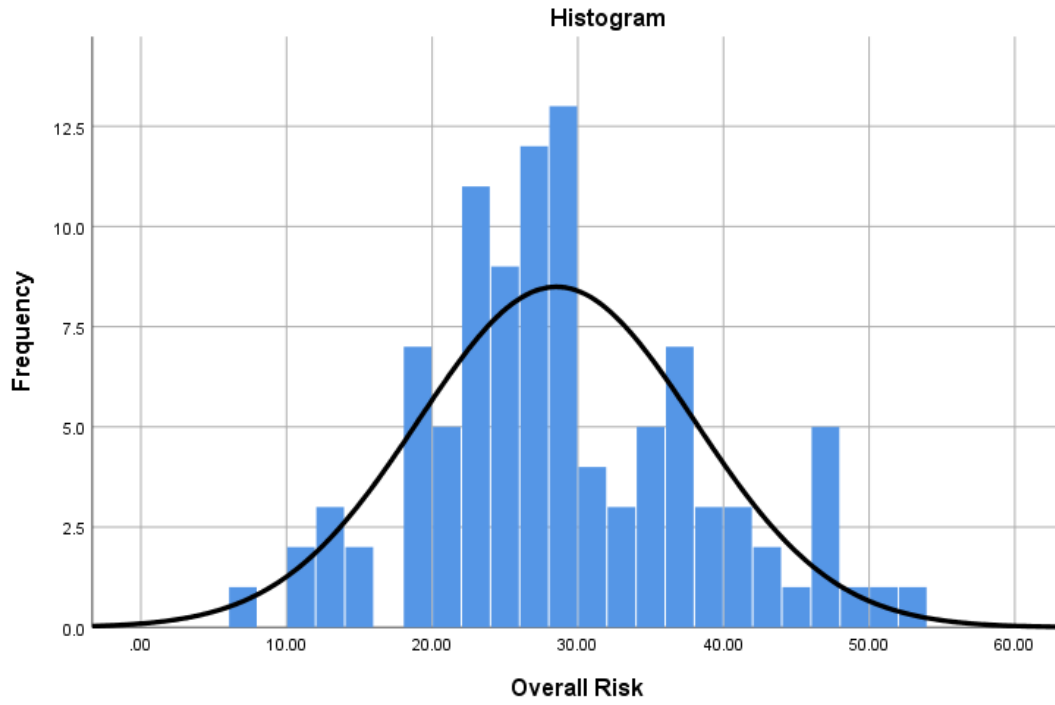
Histogram for the current stress total score.



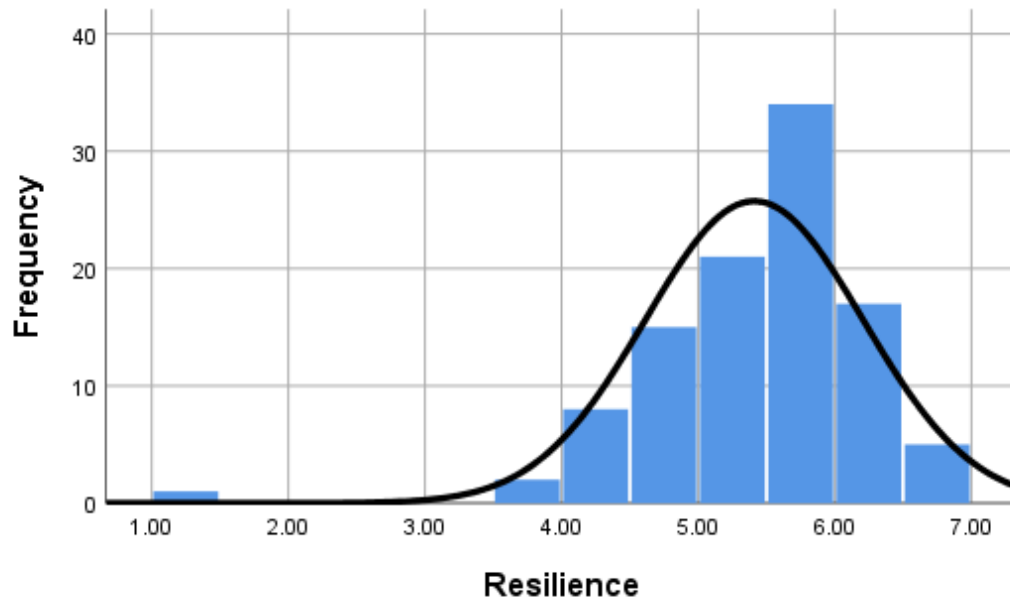
Histogram for the high behavioral risk behaviors total score.



Histogram for the high emotional risk total score.



Histogram for the overall risk score.



Histogram for the resilience total score.