

Spring 2019

# Mental Health Stigma in College Students by Academic Major

Kristen Miller

Western Kentucky University, [kristen.miller276@topper.wku.edu](mailto:kristen.miller276@topper.wku.edu)

Follow this and additional works at: [https://digitalcommons.wku.edu/stu\\_hon\\_theses](https://digitalcommons.wku.edu/stu_hon_theses)

Part of the [Mental and Social Health Commons](#), [Psychiatry and Psychology Commons](#), and the [School Psychology Commons](#)

---

## Recommended Citation

Miller, Kristen, "Mental Health Stigma in College Students by Academic Major" (2019). *Honors College Capstone Experience/Thesis Projects*. Paper 787.

[https://digitalcommons.wku.edu/stu\\_hon\\_theses/787](https://digitalcommons.wku.edu/stu_hon_theses/787)

This Thesis is brought to you for free and open access by TopSCHOLAR®. It has been accepted for inclusion in Honors College Capstone Experience/Thesis Projects by an authorized administrator of TopSCHOLAR®. For more information, please contact [topscholar@wku.edu](mailto:topscholar@wku.edu).

MENTAL HEALTH STIGMA IN COLLEGE STUDENTS

BY ACADEMIC MAJOR

A Capstone Project Presented in Partial Fulfillment  
of the Requirements for the Degree Bachelor of Science  
with Honors College Graduate Distinction at  
Western Kentucky University

By

Kristen N. Miller

May 2019

\*\*\*\*\*

CE/T Committee:

Professor Amy Brausch, Ph.D., Chair

Professor Jenni Teeters, Ph.D.

Professor Sonia Young, DPT.

Copyright by  
Kristen N. Miller  
2019



I dedicate this thesis to all the strong women in my life, particularly my mother, who was strong in the face of adversity and always encouraged me to pursue my dreams.

## ACKNOWLEDGEMENTS

I would like to acknowledge my research mentor, Dr. Amy M. Brausch, for encouraging me to take on this research project and thesis. I would also like to acknowledge Western Kentucky University's Office of Research and Creativity for awarding me a Faculty-Undergraduate Student Engagement Grant, without which this research would not be possible.

## ABSTRACT

Stigma is best defined as the disapproval and shame felt by people who display characteristics not widely accepted in society. Although mental illness has become more prevalent in society through advocacy and awareness campaigns, it fails to be accepted and often individuals may feel shame that prevents them from seeking help (Dyrbye, Eacker, Durning, Brazeau, Moutier, Massie, S., *et al*, 2015; Givens & Tjia, 2002). Physicians in particular have been shown to have decreased help-seeking behaviors for psychological issues due to fear of professional repercussions (Dyrbye et al., 2015). Physicians also show increased levels of stress, anxiety, depression, and elevated rates of suicide compared to their age and gender-matched peers (Lindeman, Laara, Hakko, & Lonnqvist, 1996). Medical students also show similar levels of stress, anxiety, depression, and internalization of stigma towards mental health (Givens & Tjia, 2002; Zisook, Young, Doran, Downs, Hadley, et al., 2016). The current study aimed to replicate these findings in an undergraduate population by comparing the levels of stress, anxiety, depression, and internalization of mental health stigma between pre-professional students (pre-medicine, pre-dental, pre-physical therapy, etc.) and their age-matched peers measured via an online Qualtrics survey. Pre-professional and non-pre-professional students showed equal levels of anxiety, stress, and depression. However, pre-professional students had lower levels of awareness of mental health stigma held by the public ( $p = .025$ ) compared to their peers.

## VITA

### *EDUCATION*

Western Kentucky University, Bowling Green, KY May 2019  
B.S. in Biology – Mahurin Honors College Graduate  
Honors Capstone: *Mental Health Stigma in College Students*  
*by Academic Major*

Paul Laurence Dunbar High School, Lexington, KY May 2015

### *PROFESSIONAL EXPERIENCE*

Suicide Prevention and Risk Behaviors Laboratory, WKU Aug. 2017-  
Undergraduate Research Assistant Present

Kentucky Biomedical Research Infrastructure Network, UofL May 2018-  
Undergraduate Summer Scholar Aug. 2018

Student Athlete Success Center, WKU May 2017-  
Athletic Tutor May 2019

Genome Discovery and Exploration Program, WKU Aug. 2015-  
Student Researcher Jan. 2016

### *PROFESSIONAL MEMBERSHIPS*

Phi Sigma Pi National Honor Fraternity April 2017- Present

Alpha Epsilon Delta National Health Pre-Professional Honor Society Oct. 2016- Present

### *INTERNATIONAL EXPERIENCE*

WKU Faculty-Led: Partners in Caring: Medicine in Kenya Jan. 2019

### *AWARDS & HONORS*

Summa Cum Laude, WKU, May 2019  
Scholars in Service, WKU, Jan. 2019  
Phi Sigma Pi National Honor Fraternity Outstanding Scholarship Award, WKU, Dec. 2018  
Kentucky Academy Science Undergraduate Poster Winner: Health Sciences, Nov. 2018  
WorldTopper Scholarship to Kenya, WKU, Oct. 2018



Antoinette C. Hodes Academic Scholarship, Mental Health America of KY, Oct. 2018  
Faculty-Undergraduate Student Engagement Grant, WKU, 2018-2019  
Student Government Association Development Grant, WKU, April 2018  
Honors Development Grant, WKU, March 2018  
University of Kentucky College of Medicine Early Assurance Program, 2017-2019  
President's List for Academic Achievement, WKU, Fall 2015-Fall 2018  
1906 Founder's Scholarship for Academic Excellence, WKU, 2015-2019

### *PRESENTATIONS*

**Kristen Miller**, Yonglin Gao, Rif S El-Mallakh. Olfactory Neuroepithelial Progenitors Derived from Bipolar Subjects Are Not More Susceptible to Glutamate-Induced Apoptosis. Society of Biological Psychiatry, May 16<sup>th</sup>, 2019.

Jeffrey Powers, Jennifer J. Muehlenkamp, Ph.D., Amy Brausch, Ph.D., **Kristen Miller**. Does Implicit Association with Nonsuicidal Self-Injury Predict Concurrent and Prospective NSSI Engagement. American Association of Suicidology Annual Conference, April 26<sup>th</sup>, 2019.

**Kristen Miller**, Amy Brausch, Ph.D. Mental Health Stigma in College Students by Academic Major. Student Research Conference, Western Kentucky University, March 23<sup>rd</sup>, 2019.

**Kristen Miller**, Yonglin Gao, Rif S El-Mallakh. Olfactory Neuroepithelial Progenitors Derived from Bipolar Subjects Are Not More Susceptible to Glutamate-Induced Apoptosis. Kentucky Academy of Science, Western Kentucky University, November 3<sup>rd</sup>, 2018.

**Kristen Miller**, Yonglin Gao, Rif S El-Mallakh. Olfactory Neuroepithelial Progenitors Derived from Bipolar Subjects Are Not More Susceptible to Glutamate-Induced Apoptosis. Kentucky Honors Roundtable September 22<sup>nd</sup>, 2018. Western Kentucky University.

**Kristen Miller**, Yonglin Gao, Rif S El-Mallakh. Olfactory Neuroepithelial Progenitors Derived from Bipolar Subjects Are Not More Susceptible to Glutamate-Induced Apoptosis. KBRIN Undergraduate Biomedical Summer Research Conference, August 3<sup>rd</sup>, 2018.

Jeffrey Powers, B.S., Amy Brausch, Ph.D., Michael McClay, M.S., Jordan Gregory, **Kristen Miller**, Stephen O'Connor, Ph.D., David Jobes, Ph.D. Relationships between the Suicide Index Score, implicit suicide ideation, and reasons for living in a clinical sample of adolescents. American Association of Suicidology Annual Conference, April 20<sup>th</sup>, 2018.

Natalie M. Perkins, B.S., Anna Siewers, **Kristen Miller**, Amy M. Brausch, Ph.D. Bulimia and Body Dissatisfaction as Prospective Predictors of Suicide Ideation and Attempts. American Association of Suicidology Annual Conference, April 20<sup>th</sup>, 2018.



## CONTENTS

Acknowledgements.....	i
Abstract.....	v
Vita.....	vi
List of Tables .....	ix
Introduction.....	<b>Error! Bookmark not defined.</b>
Materials and Methods.....	<b>Error! Bookmark not defined.</b> 5
Results.....	21
Discussion.....	25
References.....	<b>Error! Bookmark not defined.</b> 9
Appendix: Title of Appendix.....	34

## LIST OF TABLES

Table 1. MANOVA and Descriptive Statistics for Depression, Stress, and Anxiety Symptoms Between Groups.....	22
Table 2. MANOVA and Descriptive Statistics for SSMIS-SF.....	23

## Mental Health Stigma in College Students by Academic Major

Student mental health has been an increasingly important topic within higher education over the past ten years. It is reportedly the third-leading cause of death among 20- to 30- year olds in the United States (Dyrbye, Thomas, & Shanafelt, 2005). However, mental illness is a disease process that doesn't occur overnight. Increased pressure from academics have been correlated with higher levels of stress, anxiety, and depression across academic disciplines (Alexandrino-Silva, Pereira, Bustamante, Ferraz, Baldassin, Andrade, & Alves, 2009; Mospan, Hess, Blackwelder, Grover, & Dula, 2017). Over time, increased academic, personal, and environmental stressors may lead to increased academic burnout and poor mental health outcomes.

With suicide and rates of mental illness in students on the rise, universities are beginning to provide more on-campus resources, such as free or low-cost counseling, peer support groups, exercise initiatives, and more. In addition, many universities are aiming to educate students on mental health throughout the academic year through a variety of activities, including orientation week activities, mental health awareness events, round tables, and mindfulness lectures (McGrady, Brennan, Lynch, & Whearty, 2012; Noori, Blood, Meleca, Kennedy, & Sengupta, 2017). However, despite the abundance of available resources for students, many are unaware of them or don't utilize them due to perceived barriers and the fear of stigmatization that may impact their future career (Gold, Johnson, Leydon, Rohrbaugh, & Wilkins, 2014). Health care students particularly show higher levels of stress, anxiety, and depression than the general population and are less likely to utilize resources due to fear of stigmatization and personal or professional repercussions.

The primary goal of this study is to analyze the relationship between field of study, mental health indicators, and internalization of stigma towards mental health in undergraduate students. Secondly, the study aims to establish if pre-professional students show differential reactions towards academic stress and mental health stereotypes.

### **Physician Suicide and Risk Behaviors**

Approximately 300 to 400 physicians die by suicide each year in the United States – which is the equivalent of an entire medical school of physicians lost to suicide (Lindeman et al., 1996). In addition, studies have shown that the rate of death by suicide in physicians is anywhere between 70% to 3 times the rate of the general population matched for age and gender (Frank & Dingle, 1999). Male physicians have been estimated to have an elevated suicide rate ratio between 1.1 to 3.4 compared to the general population, while women had rates between 2.5 to 5.7 (Lindeman et al., 1996). A meta-analysis of the literature confirmed Lindeman and colleagues' estimation with male physicians showing a 1.41 suicide rate ratio and females showing ratios of 2.27 compared to the general population (Schernhammer & Colditz, 2004). However, the suicide rate gap begins as early as medical school, with medical students showing higher suicide rates compared to the age-matched population. Female medical students and physicians die by suicide at similar rates as their male peers (Lindeman et al., 1996; Schernhammer & Colditz, 2004). In the United States, the suicide rate is typically higher among men than women, therefore physicians are considered at-risk for suicide which is contributed to by a number of personal, academic, and occupational factors.

In addition to having elevated suicide risk, physicians and medical students are particularly prone to mental illness, drug and alcohol abuse. One study reported alcohol and drug addiction being as high as 50% of physicians who had been admitted to psychiatric

hospitals (Simon, 1986). Psychiatric disorders were found to be prevalent among physicians, with the majority of physicians that died by suicide having undiagnosed or improperly treated mental illness (Hendon, Reynolds, Fox, Altchuler, Rogers, Rothstein, et al, 2007). This may be due to discrimination by state medical boards, many of which ask about impairment due to mental illness, diagnosis, treatment, and/or admission to treatment facility (Hendon et al., 2007). Admissions to many of these questions were reason enough to deny licensure to physicians with mental illness (Hendon et al., 2017). Suicidal and risk behaviors typically result from prolonged exposure to stressors when a person has undiagnosed and/or improperly treated mental illness, which predisposes them for suicide (Feurelein, 1973). Elevated rates of suicide, psychiatric disorders, and drug and alcohol abuse may therefore indicate that physicians experience more stress than the general population starting as early as medical school or earlier.

### **Manifestations of Medical Student Distress**

#### **Stress**

It is undeniable that medical school is stressful, and students experience substantial levels of stress throughout their training. In a study surveying Yale School of Medicine students, 58.5% of students reported significant stress, and there was no association between stress and gender or year in school (Gold et al., 2014). Additionally, 34.5% of Yale students who reported higher levels of stress expressed that they experienced an increase in mental health needs since beginning medical school (Gold et al., 2014). These students also reported being significantly less interested in academics, less confident in their academics, and were frequently sick (Gold et al., 2014).

Stress is a normal part of the medical education and often motivates students in a positive manner, although not all respond to stress in this way. According to Dyrbye et al's 2005 study,

intense levels of negative stress may lead to increased fear, feelings of incompetence, uselessness, anger and guilt which may lead to psychological and physical harm. Often times, high levels of stress contribute to emotional exhaustion and academic burnout in both medical students and undergraduates due to classwork, employment, exam stress, and personal stressors, such as divorce and student debt (Dyrbye, Thomas, Massie et al., 2008; Fang, Young, Golshan, Moutier, & Zisook, 2012).

### Depression

Studies have shown that although first year medical students have similar mental health to their nonmedical peers, depression changes throughout medical school (Silva, Costa, Pereira, Faria, Salgueira, Costa, et al., 2017). Medical students at the University of Minho, Portugal were surveyed from 2009 to 2013 using the Beck Depression Inventory (BDI), which showed that while 19.7% of students showed sustained high levels of depression, students with high BDI scores initially showed decreased levels of depression over the course of medical school (Silva et al., 2017). However, other studies have shown that depression worsened during medical school (Dyrbye, Thomas & Shanafelt, 2006). In a study conducted by Clark and Zeldow in 1988, BDI scores increased 3-fold from matriculation to the end of the second year. Taken together, these findings indicate that depressive systems vary throughout medical school and at-risk groups should be identified early-on in medical school.

In the 2008-2009 academic year, Vanderbilt University School of Medicine conducted a study examining 330 first-year, second-year, and third-year medical students assessing the prevalence of depression, anxiety, eating disorders, and substance abuse. Compared to the non-medical student population, 25% of Vanderbilt medical students were found to be mildly depressed based off the Beck Depression Inventory- II (Ghodarsara, Davidson, Reich, Savoie, &



Rodgers, 2011). Additionally, women were more likely to have depression than their male classmates. These rates were comparable to studies at other major medical schools conducting similar surveys (Givens & Tjia, 2002). In undergraduates, pre-medical students have been found to have increased depressive symptoms compared to their non-premedical peers (Fang et al., 2012). Depressive symptoms were also found to be higher in women and racial/ethnic minorities who were pre-medical students (Fang et al., 2012). Lastly, exercising at least 3 times a week and placing high importance on religion were found to have significant buffering effects on depression (Ghodarsara et al., 2011). Based on this study, Vanderbilt University developed one of the first wellness programs for medical students, which includes promoting physical, emotional, spiritual, and community health.

#### Academic Burnout

Burnout is best-defined by the American Psychiatric Association as a psychological syndrome resulting from prolonged response to occupational or educational stressors (American Psychiatric Association, 2019). It is often characterized by extreme emotional exhaustion, depersonalization or feeling unconnected to yourself and those around you, and a lack of self-efficacy (Maslach & Jackson, 1981). According to the American Psychiatric Association, it is estimated that 2 out of 5 psychiatrists experience physician burnout. Common predictors of burnout include job stress, personality characteristics, social support, and workload (Jacobs & Dodd, 2003). The long hours of being a physician, large case load, job stress, cynicism and the lack of social support often times contribute to physicians developing burnout. Burnout may also be developed during medical training and the undergraduate level due to exam stress, classes, employment, extracurricular activities, and the pressure to exceed manifested as

increased cynicism, emotional exhaustion, and poor self-efficacy (Dyrbye et al., 2008; Jacobs & Dodd, 2003).

Medical students have also been shown to experience high rates of burnout, with one survey showing that approximately 50% of medical students reported experiencing burnout at some point throughout their training (Dyrbye et al., 2008). Additionally, burnout is reported to be highest in the second and third years of medical school and is strongly correlated with higher levels of stress and unmet mental health needs (Gold et al., 2014). Of the students experiencing burnout, 11% also reported suicidal ideation within the past year that was correlated with burnout. However, those who recovered from burnout were less likely to experience suicidal ideation than their burnt-out peers (Dyrbye et al., 2008).

Additionally, undergraduate burnout has been thoroughly studied. In a 2012 study examining pre-medical students, it was found that they experienced more Emotional Exhaustion and greater depression severity than non-premedical students (Fang et al., 2012). However, they also had increased personal efficacy before and after adjusting for depression (Fang et al., 2012). It was also found that women pre-medical students scored higher on measures of emotional exhaustion, cynicism, and depression than their non-premedical peers (Fang et al., 2012). Ethnicity also had a significant relationship with cynicism and depression severity, with ethnic minority students scoring higher on measures of cynicism and depression than their peers (Fang et al., 2012).

Studies examining intrapersonal factors, interpersonal factors, and workload in undergraduate students found that personality, negative temperament, and subjective workload (the feeling that one's academic load was too heavy) predisposed students to burnout, while social support and extracurriculars acted as a buffer and increased personal efficacy (Jacobs &

Dodd, 2003). Other studies have found that emotional exhaustion and accomplishment were negatively correlated, while campus involvement and learning flexibility were also found to buffer emotional exhaustion (Neumann, Finaly-Neumann, & Reichel, 2019).

### **Contributing Factors of Medical Student Distress**

Medical school curriculums strive to produce knowledgeable, skillful, and professional physicians using a variety of methods, such as didactic lectures, modeling, group-based discussion, clinical observation, mentoring, and hands-on experiences (Dyrbye et al., 2005). However, often times the experience of a medical education can cause significant distress that can negatively impact student health and lead to poor academic performance, competency, professionalism, and diminished feelings of self-efficacy and empathy. More often than not, student distress is manifested in the forms of stress, depression, and burnout (Dyrbye et al., 2005).

There are multiple potential causes of student distress, such as difficulty adjusting to the medical school environment or workload, exposure to patient death and suffering, student loan debt, competitive performance environment, ethical conflicts, student abuse, and personal factors that may occur during the course of medical school (Dyrbye et al., 2005). During the first year of medical school students are asked to make a quick adjustment to the environment and lifestyle of a medical education. Often times students have to learn an entirely new method of studying while learning to balance their education with extracurricular activities, volunteering, research, and personal responsibilities. Additionally, rigorous testing occurs throughout medical school. At the end of the first two years of preclinical work in medical school, students must take and pass their Step 1 Boards as a part of the United States Medical Licensing Examination, which examines their mastery of the content learned within the preclinical curriculum (USMLE,

2019). During these clinical years, students decide their future specialty, apply for residencies, and study for Step 2 of the USMLE while still taking classes (USMLE, 2019). Clinical rotations rotate every four weeks in order to expose students to every specialty available. However, this breaks apart the cohort into smaller groups and requires a different subset of knowledge each month. The lack of structure during the last two years increases the pressure intensity as students begin to learn what type of doctor they want to be (Dyrbye et al., 2005).

Medical students may also be negatively impacted by the culture of the medical environment depending on the ethics of their supervising physician. Negative interactions with teachers during this point in medical education can severely influence specialty choice and residency choice. In addition, often times old traditions of teaching die hard in the medical practice, such as the “see one, do one, teach one” approach to learning procedures and giving “scut” to interns and medical students. Additionally, unchecked supervisors can often display depression, burnout, and stress around students leading to increased cynicism and unethical behavior that contradicts ethical behavior taught at during the preclinical years (Dyrbye et al., 2005)

In addition to having to adjust to the medical school environment and “hidden curriculum” displayed by supervisors, students may also experience abuse, harassment, or report feelings of being taken advantage of during their medical training. Approximately 50-85% of medical students have reported the perception of being taken advantage of or abused by their supervisors with the majority of them being female (Dyrbye et al., 2005). Types of abuse vary, although verbal abuse remains the most common form of abuse experienced, in addition to institutional abuse (e.g., unfair grading, excessive workload, assigning inappropriate tasks such getting food for the team, and assigning unnecessary scut work), physical abuse, sexual

harassment, and racial discrimination (Dyrbye et al., 2005). These forms of abuse can negatively impact a students' confidence and learning environment and lead to influences on specialty choice, patient care, and mental health (Dyrbye et al., 2005). However, these forms of abuse are often unreported due to fear of academic repercussions. Those who reportedly experienced these forms of abuse during medical school were more likely to suffer from anxiety, depression, low self-esteem, and abuse alcohol (Dyrbye et al., 2005).

Lastly, personal life events can positively or negatively influence medical education and lead to increased stress, depression, and anxiety. Negative events include divorce, the death of a family member, personal illness or injury, declining health of a relative, and the accumulation of educational debt over the medical curriculum. Studies on the effects of negative personal events are sparse, although studies on the impact of marriage and having children were analyzed. It was concluded that marriage is a protecting factor of mental health; therefore, divorce should negatively impact stress, anxiety, and depression (Dyrbye et al., 2005). Additionally, women with children were found to have higher levels of depression than their male colleagues with children and male/female colleagues without children (Dyrbye et al., 2005). Stress due to educational debt can also be magnified by divorce and children, with the mean medical school debt averaging to \$115,218 in 2004 (Dyrbye et al., 2005). As of 2017, this debt has grown to approximately \$190,694 (American Association of Medical Colleges, 2017). This accumulation of debt may also impact specialty choice in order for students to pay off their student debt, although its exact relationship with mental health has not been thoroughly studied.

### **Consequences of Student Distress**

Resulting consequences of prolonged intense levels of stress, depression, and anxiety include impaired academic performance. While grades can often invoke increased anxiety and

stress levels, the prevalence of anxiety and stress at unhealthy levels may also affect grades and exam scores depending on the personality of the student. While Medical College Admissions Test scores are good predictors of success during medical school, it has been found that psychosocial characteristics (e.g. anxiety, depression, loneliness, self-esteem) were better predictors of clinical competency because it determines how students handle distress (Dyrbye et al., 2005). Additionally, as academic performance is compromised, academic dishonesty also increases during medical education as an effort to get by.

Medical students and physicians may also experience an increase in cynicism during medical training if they chose the field for humanitarian reasons. Over the course of medical education, empathy and humanitarianism decline and cynicism increases (Dyrbye et al., 2005). Cynicism and other negative attitudes may arise as a mechanism for dealing with anxiety, fear of failure, and human suffering. Additionally, cynicism may often be modeled by supervisors through the hidden curriculum, contributing to the erosion of empathy (Noori et al., 2017). Consequences of the erosion of empathy include the breakdown of professionalism and an unwillingness to care for chronically ill or elderly patients (Dyrbye et al., 2005; Noori et al., 2017).

Alcohol abuse is also prominent in medical students, despite the overall rates of regular alcohol consumption being similar to their age-matched peers. According to Dyrbye et al's 2005 meta-analysis, up to 20% of first-year medical students reported excessive alcohol consumption due to high levels of anxiety and stress due to academic and work pressure. In addition, Gold et al's 2014 study that showed drinking frequency increased with year of study. Another study examining alcohol consumption across 8 U.S. medical schools found that 29% of graduating medical students reported an increase in the amount of alcohol consumed over the course of

medical school, with 20% reporting a minimum of 1 episode of binge drinking (5 or more drinks in a sitting) within the past 30 days. Drug abuse was also comparable to age-related peers, with 3% to 10% of medical students reporting using illicit drugs, such marijuana, cocaine, opiates, amphetamine and more (Mangus, Hawkin, & Miller, 1998; Gold et al., 2014).

Lastly, suicide rates are significantly higher in medical students than their age-matched peers but are comparable to suicide rates of attending physicians (3 to 4 times the general population) (Dyrbye et al., 2005). Rates of suicidal ideation, planning, and attempts have not been thoroughly studied in physicians or medical students. Of the reported suicides, physicians were at higher risk if they were single, female, experienced depression or any other psychiatric illness, or struggled with substance abuse (Dyrbye et al., 2005).

### **Barriers in Help-Seeking Behavior**

Studies have shown that medical students have similar levels of help-seeking behavior compared to the age-matched population. When it came to seeking academic help, Yale students reported feeling comfort in asking supervisors and fellow students for help, asking for feedback, and admitting errors increasingly over the course of their medical training (Gold et al., 2014). In addition, these students reported using a wide variety of support networks, such as family, friends, and significant others, and a variety of coping mechanisms (Gold et al., 2014).

However, Gold et al's study revealed that while students were comfortable with seeking academic help, many did not seek treatment for mental health illness when needed and did not regularly visit their primary care physician (PCP) as medical school endured. Additionally, students were less likely to seek health care when sick and continued to work due to not being sick enough, self-diagnoses/self-treatment, and feeling like they didn't have time or worried about receiving a bad evaluation (Gold et al., 2014). Of those who reported increased mental

health needs in medical school, only about half sought out treatment and had a regular mental health provider (Gold et al., 2014). The most frequently reported reasons for not seeking mental health services were lack of time, lack of confidentiality, mental health stigma, cost, and fear of documentation on academic record or unwanted intervention (Givens & Tjia, 2002). Stigma was also found to be a determinant of help-seeking behaviors in undergraduate students (Eisenberg, Downs, Golberstein, & Zivin, 2009; Golberstein, Eisenberg, & Gollust, 2008).

Gold et al.'s study on Yale Medical Students also examined attitudes towards mental health using the Attitudes to Mental Illness Questionnaire (AMIQ) and the following prompt: "John is depressed. He took an overdose of acetaminophen last month in an attempt to end his life.... should John be a doctor?" (Gold et al., 2014). The AMIQ results showed that mental health stigma was relatively low among respondents and did not differ by gender or time in medical school. Despite overall low scores on the AMIQ students with lower scores were more likely to feel that the fictional character "John" should not be a doctor (Gold et al., 2014). However, despite low stigma scores several students reported stigma as being a barrier in seeking mental health treatment (Gold et al., 2014). This shows that despite physicians being relatively accepting and understanding of mental illness (Gold et al., 2014; Chiles, Stefanovics, & Rosenheck, 2016), it is a widely held belief that physicians should never suffer from mental illness as an indirect outcome of stigma.

Other barriers in help-seeking behavior is the "hidden curriculum" of medical training, in which behaviors are passed down from superior to student for them to emulate. This can lead to increased cynicism and stigma towards mental health, influence students' specialty choice, negatively impact mental health outcomes, and ultimately impact patient care (Noori et al.,



2017). Mistreatment from mentors added to this culture leading to student exhaustion and burnout.

Other than the so-called “hidden curriculum” of medical training, additional institutional barriers include the underrepresentation of minorities in faculty, staff, and student populations. These students were often subject to racial discrimination and racial harassment which led to poor performance on standardized exams and increased attrition from medical study compared to their peers (Sanchez, Peters, Lee-Rey, Strelnick, Garrison, Zhang, et al., 2013). Similar trends have been examined in undergraduate populations (Masuda, Anderson, & Edmonds, 2012). However, the AAMC has made strides to encourage diversity in universities by creating pipeline programs for medical schools and fellowships, even offering admission to undocumented students under the Deferred Action for Childhood Arrivals (DACA) designation (Kuczewski & Brubaker, 2014).

Gender discrimination is also a prominent barrier in help-seeking behaviors, despite 50% of U.S. medical students being women (Babaria, Abedin, & Nunez-Smith, 2009). Female students are more likely to drop out of medical school than their male peers, doubt their decision to study medicine, and experience discrimination that impacted their future specialty and residency choice (Stratton, McLaughlin, Witte, Fosson, & Nora, 2005). Babaria et al.’s study in 2009 suggested that female medical students reported feeling less prepared to handle uncomfortable situations they may encounter while on wards because their medical training valued masculine traits over feminine traits. In addition, female medical students reported feeling like physicians created career-advancing bonds with male students more so than females (Babaria et al., 2009), and felt that they needed to conform to normal gender roles even in the workplace.

Gender barriers may prevent women from seeking academic or personal health due to worry of being stereotyped by gender roles prominently held by the “hidden curriculum” passed down generation to generation in medical education. However, medical schools are beginning to combat this by pairing female students with female faculty in a mentoring program and encouraging female students to come forward should they experience gender discrimination or sexual harassment.

Outside of the medical education, physicians and residents applying for licensure may be discriminated against by state medical boards (Hendon et al., 2007). Many applications directly or indirectly ask about the diagnosis and treatment of a mental illness, which may be reason enough to be denied licensure (Hendon et al., 2007). This may lead physicians to lie on their licensure applications or inhibit help-seeking behaviors for mental illness.

### **The Current Study**

Given the prevalence of anxiety, depression, and stress within the medical student population (Dyrbye et al., 2005; Gold et al., 2014; Ghodasara et al., 2011), the relationship between mental health status and declaring a pre-professional major was examined using convenience sampling methods in order to establish a basis for which universities can identify high-risk groups based on academic study. In addition, this study adds to the limited literature focusing on pre-professional students and help provide a better understanding of how the significant increase in symptomology occurs during medical school and other professional programs. Secondly, the study aimed to establish if pre-professional students show differential reactions towards mental health stereotypes and levels of internalization of mental health stigma compared to their non-pre-professional peers. It was hypothesized that pre-professional students would show higher levels of anxiety, stress, and depression over-all

compared to the non-pre-professional group. Additionally, it was hypothesized that internalization of mental health stigma would be higher in pre-professional majors compared to their non-pre-professional peers.

## METHOD

### **Participants**

The participants in this study consisted of 707 undergraduate students enrolled at Western Kentucky University with a mean age of  $20.7 \pm 3.17$  years. Participants were asked to provide their pre-professional concentration, which consisted of pre-medicine (n = 26), pre-dental (n = 5), pre-physician assistant (n = 8), pre-physical therapy (n = 20), pre-veterinary medicine (n = 9), pre-optometry (n = 2), pre-podiatric medicine (n = 1), pre-pharmacy (n = 11), pre-occupational therapy (n = 7), and pre-law (n = 17). Of the total sample, 142 indicated a pre-professional concentration and 565 did not. The sample also consisted of 142 males, 549 females, and 16 other gender identifications. Additionally, 79.0% percent of participants reported their sexual orientation as Heterosexual/straight, 2.5% Homosexual/gay/lesbian, 11.4% Bisexual, 3.0% Pansexual, and 3.8% Other/Not Sure/Declined to State. The sample also consisted of 85.8% White/Caucasian, 4.4% Black/African-American, 2.4% Hispanic/Latino(a), 3.2 % Asian, 0.4% Native American, and 3.7% identified as Multi-Ethnic, other, or declined to state. Of the 707 respondents, 21.0% were freshman, 21.6% were sophomores, 27.6% were juniors, and 28.9% were seniors.

### **Procedure**

Western Kentucky University undergraduates with a valid WKU e-mail account received a mass e-mail inviting them to participate in an IRB-approved online survey conducted through Qualtrics. The e-mail contained a link that directed students to the Qualtrics survey. Students were first presented with an informed consent document (Appendix A) describing the nature of the study, perceived benefits and risks, and explained that they may choose to stop participating

at any time by closing the web browser. Students were then asked whether or not they would like to participate in the study before accessing the survey. If informed consent was not given, Qualtrics automatically closed the survey.

The Qualtrics survey began with basic demographic information, such as age, gender, ethnicity/race, and sexual orientation. In addition, participants were asked if they were an international student and about any military service completed by them or their family. Lastly, participants were asked to provide their year in college, academic college at Western Kentucky University, academic major, minor, and pre-professional concentration if applicable.

The measures appeared in the following order: The Beck Anxiety Inventory, Center for Epidemiological Studies Depression Scale, Perceived Stress Scale, and the Self-Stigma of Mental Illness Scale- Short Form. After completing all measures, participants were presented with a debriefing form thanking them for their participation and providing information on WKU and local mental health resources in addition to the contact information of the lab supervisor.

Participants were also given the opportunity to submit their e-mail to be entered into a randomized drawing for 5 \$20 Target gift cards. After acknowledging the debriefing form, Qualtrics submitted participants' responses and closed the survey. All responses were collected anonymously, and no identifying information was requested. E-mails submitted for the drawing were not connected to participant responses. All data collected was stored in a database on a password-protected computer in the research lab, which was locked when no one was present.

## **Measures**

### **Beck Anxiety Inventory**

The Beck Anxiety Inventory (BAI) was developed in 1988 to discriminate between symptoms of anxiety and depression while maintaining correlation with previously developed

measurements, such as the Hamilton Anxiety Rating Scale (Beck, Epstein, Brown, Steer, 1988). The final BAI survey was constructed by using archival data from the Anxiety Checklist, PDR Checklist, and Situational Anxiety Checklist to create a pool of 86 items and used various analysis strategies to eliminate inappropriate survey items (Beck et al, 1988).

The resulting BAI survey consisted of 21 items describing common symptoms of anxiety, such as numbness or tingling, feeling hot, wobbliness in legs, unable to relax, fear of the worst, feeling terrified or afraid, etc. (Appendix B). A total score of 0 to 7 indicated “Minimal” anxiety, a score between 8 and 15 indicated “Mild” anxiety, scores between 16 and 25 were “Moderate”, and lastly scores between 26 and 63 indicated “Severe” anxiety. The new measure was administered to participants to confirm the measure’s internal consistency, test-retest reliability when administered a week apart, and correlations with the Hamilton Anxiety Rating Scale, revised Hamilton Depression Rating Scale, and Beck Depression Inventory.

The BAI was found to have high internal consistency ( $\alpha = .92$ ) and high test-retest reliability,  $r = .75$ . In addition, it was found to be moderately correlated with the Hamilton Anxiety Rating Scale,  $r = .51$ , and only mildly correlated with the Hamilton Depression Rating Scale,  $r = .25$ , showing that the new measure was consistent with previously developed anxiety measures. Lastly, the correlation between the BAI and BDI was determined to be .48 (Beck et al, 1988). Although .48 correlation with the BDI is moderately high, the correlation is lower compared to other anxiety scales, such as the State scale, .60, and the Trait Scale of the State-Trait Anxiety Inventory, .73 (Beck et al, 1988).

The BAI asked participants to rate how much they had been bothered by 21 symptoms of anxiety within the past month on a 4-point scale from 0 (Not at all) to 3 (Severely—it bothered

me a lot. All items were summed together to obtain a score between 0 and 63, with higher scores indicating higher levels of anxiety. Reliability for the BAI in the current sample was  $\alpha = .94$ .

### **Center for Epidemiological Studies Depression Scale**

The Center for Epidemiologic Studies Depression Scale (CES-D) (Radloff, 1977) was developed to assess the current level of depressive symptomatology in the general population, focusing on symptoms of positive and negative affect (Appendix C). It is a self-report scale consisting of 20 items associated with depression symptoms chosen from previously validated scales. The measure was found to have a high internal consistency in both a clinical sample ( $\alpha = .90$ ) and the general population ( $\alpha = .85$ ). Test-retest reliability ranged between .40 and .75 across subgroups and the CES-D showed moderate correlations with the Bradburn Negative Affect scale ( $r = .55-.60$ ) and was negatively correlated with the Bradburn Positive Affect scale ( $r = -.55- -.21$ ) (Radloff, 1977).

The CES-D gives statements concordant to depressive symptoms that participants may have felt or exhibited. The items are counterbalanced with positive and negative items in order to examine differences in positive and negative affect. In populations without depressive symptoms, positive and negative affect have a low negative correlation to each other. However, severely depressed individuals may be characterized by the absence of positive affect and the presence of negative affect, causing a strong negative correlation between positive and negative affect (Klein, 1974).

Participants were asked to rate how often they had felt or behaved in the ways described within the past week from “Rarely or none of the time (less than 1 day)” to “Most or all of the time (5-7 days)”. Each item belonged to one of four subscales (Depressed Affect, Happy, Somatic, and Interpersonal) and subscale scores were obtained by summing the total of the

subscale items. Items belonging to the Happy subscale (items 4, 8, 12, and 16) were reverse-coded.

The depressed affect subscale aimed to measure flattened affect by asking participants to self-report items measuring how often they felt blue, depressed, lonely, sad, or cried.

Conversely, the positive affect subscale measures how often participants felt happy, hopeful, as good as others, and enjoyed life. Next, the somatic subscale measured how often they felt bothered, loss of appetite, restlessness, and lack of energy. Finally, the interpersonal scale measured how often participants felt disliked or that people were unfriendly towards them.

In the present study, the overall total score was used as a measure of depressive symptoms and the internal consistency was  $\alpha = .80$ . Scores above 16 indicated significant risk for clinical depression.

### **Perceived Stress Scale**

The Perceived Stress Scale (PSS) (Cohen, 1983) was used to measure how participants perceived stress in life events, which are often unpredictable and uncontrollable. In addition, stressful events are often perceived differently based on personal and contextual factors making it increasingly difficult to measure. Often times the perception of stressful events are unrelated to the event itself, but are actually due to the cognitive appraisal and emotions surrounding an event (Lazarus, 1977). In order to effectively measure perceived stress scale items were designed to analyze how unpredictable, uncontrollable, or overloaded the participant perceived their life (Cohen, 1983).

The 14-item measure consisted of positive and negative items asking about thoughts and feelings they may have experienced within the past month on a scale of 0 (Never) to 4 (Very Often) (Appendix D). Questions are non-specific to any subpopulation so to avoid bias, such as



“In the last month, how often have you felt that you were unable to control the important things in your life?”. Positively worded items are reverse-coded. The sum of all 14 items produces the PSS total score, with higher scores indicating higher levels of perceived stress (Cohen et al, 1988). Scores between 0-13 indicate low stress, while scores between 14-26 and 27-40 indicate moderate and high stress, respectively.

The PSS was found to have strong test-retest reliability when administered two days later ( $\alpha = .85$ ), but decreased over the course of six weeks ( $\alpha = .55$ ) due to temporal changes in perception surrounded previously stressful life events (Cohen, 1983). In addition, the PSS was found to have a moderate correlation with life-event scales (.18 to .36) and a high correlation with symptomatologic measures (.52 to .76) (Cohen, 1983). Therefore, due to the operational definition of perceived stress overlapping with depressive symptoms the PSS can also be used to identify groups that have or are at risk of developing a psychiatric disorder in addition to measuring appraised stress levels. In the current study sample, the reliability of the PSS was  $\alpha = .94$ .

### **Self-Stigma of Mental Illness – Short Form**

The Self-Stigma of Mental Illness -Short Form (SSMIS-SF), was developed as a self-report measure of attitudes towards mental illness based on the four-stage model of the internalization of mental health stigma (Corrigan and Watson, 2002). The four-stage model proposes that in order for stigma internalization to occur, people must be aware of stereotypes about mental illnesses, agree with these stereotypes, apply stereotypes to themselves, and experience harm due to internalized self-stigma in the form of lowered self-esteem, feelings of self-efficacy, hope, etc., (Corrigan & Watson, 2002). The SSMIS-SF was formed from the

SSMIS-40 by removing reportedly offensive items and choosing half of the original items in order to cut down on assessment time and study attrition (Corrigan et al, 2011).

The resulting 20-item measure contains items based on the four stages of stigma internalization (Appendix E). Stereotype awareness was measured by asking participants what they thought the public believed about mental illness on a scale of 1 (Strongly Disagree) to 9 (Strongly Agree) with 5 being neither agree nor disagree. For example, “I think the public believes most persons with mental illness are unpredictable.” Next, using the same scale, participants were asked what they thought about persons with serious mental illnesses using the same item (e.g. “I think most persons with mental illnesses are unpredictable”) (Appendix F). Lastly, participants were asked about their beliefs about themselves if they had a mental illness (“Because I have a mental illness...”) (Appendix G) and their levels of self-respect (“I currently respect myself less...”) (Appendix H) using the same agreement scale. Scores were determined by summing the items within each subscale, resulting in a score range of 5 to 45 in each subscale (Appendix I). The SSMIS-SF was found to have high internal consistency with alpha scores, ( $\alpha = 0.65$  to  $0.87$ ), according to consistency values reported for the SSMIS-40, ( $\alpha = 0.72$  to  $0.89$ ), by Corrigan et al. (2006). The internal reliability for the current sample was found for the Aware, Agree, Apply, and Harm subscales to be  $\alpha = .87, .84, .81,$  and  $.85$ , respectively.

## RESULTS

MANOVA analyses were conducted in order to test the hypothesis that pre-professional students would show higher levels of stress, anxiety, depression, and internalization of mental health stigma compared to non-pre-professional students. The mean score of each measure was

found and MANOVA analyses were conducted to compare mean scores between pre-professional students ( $n = 142$ ) and non-pre-professional students ( $n = 565$ ). Additionally, the mean score of each subscale in the stigma measure were compared between groups. Results revealed no significant group differences between the pre-professional students and non-pre-professional students for depression, stress, and anxiety levels (see Table 1). However, pre-professional and non-preprofessional students reported severe levels of depression, moderate anxiety, and moderate stress based on score cut-off scores. Additionally, MANOVA results showed that pre-professional students showed lower awareness towards mental health stereotypes on the Aware scale of the stigma measure compared to non-pre-professional students ( $F(7, 594) = 5.06, p = .025$ ) (see Table 2). The Agree and Hurt scales of the stigma measure were non-significant between the groups, while the Apply was non-significant, with pre-professional students being less likely to apply mental health stereotypes to themselves ( $p = .184$ ) (see Table 2).

Variable	Group	N	Mean	SD	F	<i>p</i>
Depression	Pre-Professional Students	130	39.2	9.05	.241	.623
	Non-Pre-Professional Students	500	38.7	10.4		
	Total	630	38.8	10.1		
Stress	Pre-Professional Students	129	20.6	6.75	.018	.893
	Non-Pre-Professional Students	491	20.5	7.30		
	Total	620	3.14	.58		
Anxiety	Pre-Professional Students	133	20.9	13.0	.145	.703
	Non-Pre-Professional Students	514	21.4	13.7		

	Total	647	1.05	.80		
--	-------	-----	------	-----	--	--

*Table 1.* MANOVA and Descriptive Statistics for Depression, Stress, and Anxiety Symptoms

Between Groups

*Table 2.* MANOVA and Descriptive Statistics for Aware, Agree, Apply, and Hurts Subscales of the SSMIS-SF for Internalization of Mental Health Stigma Between Groups

Variable	Group	N	Mean	SD	F	<i>p</i>
Aware	Pre-Professional Students	122	25.7	9.37	5.07	.025
	Non-Pre-Professional Students	473	27.8	9.17		
	Total	595	27.3	9.24		
Agree	Pre-Professional Students	122	15.0	8.35	.005	.941
	Non-Pre-Professional Students	472	15.0	7.17		
	Total	594	15.0	7.42		
Apply	Pre-Professional Students	91	11.8	7.43	1.77	.184
	Non-Pre-Professional Students	373	13.0	7.61		
	Total	464	12.8	7.58		
Hurts	Pre-Professional Students	91	12.1	9.13	.739	.390
	Non-Pre-Professional Students	374	13.0	8.65		
	Total	465	12.8	8.74		

## DISCUSSION

The primary goal of this study was to examine the relationship between academic study and internalization of mental health stigma in the undergraduate pre-professional student population. The hypothesis that undergraduate pre-professional students would show higher levels of anxiety, stress, and depression compared to their peers was not supported by results. Contrary to Fang et al's study in 2012 examining depression and burnout in premedical undergraduate students, Western Kentucky University undergraduate pre-professional students were shown to have near-equal levels of depression compared to the control population. Anxiety and stress were also equal across groups. However, students indicated severe levels of depression, moderate anxiety, and moderate stress, which supports that undergraduate students experience significant increases in mental health indicators during college. Secondly, results did not support the hypothesis that pre-professional students would experience more internalization of mental health stigma. Conversely, it was found that pre-professional students showed lower levels of internalization, with the awareness scale of the stigma measure showing statistical significance. This result indicates that pre-professional students were less aware of mental health stigma held by the public compared to their peers.

Possible reasons that pre-professional students were less aware of mental health stigma based on the stigma measure is increased exposure to mental health and mental illness. Pre-professional students may be a protected population of students that receive more education and resources from counselors, advisors, mentors, and club organizations to help students avoid poor mental health outcomes. For example, club organizations may frequently lecture on how to take care of your mental health, with professionals in the community coming to talk about the

symptoms of burnout due to the nature of the healthcare profession and how to combat it using Box Strategies to Prevent Physician Burnout (Spickard, Gabbe, Christensen, 2002). In addition, pre-professional students are more likely to have taken an introductory course in psychology or sociology as a prerequisite for professional school, therefore these students may have more knowledge about mental illness compared to the peers (AAMC, 2019). Lastly, pre-professional students may have personal experience with mental illness from shadowing professionals in their field.

The current study does not support the notion that pre-professional students have higher levels of anxiety, depression, and stress nor does it support that pre-professional students suffer more from the internalization of stigma towards mental health held by the public contrary to a previous study examining premedical undergraduate students (Fang et al., 2012). A possible reason why the current study did not emulate the Fang et al's 2012 study is because the current did not focus on only pre-medical students. The current study included a variety of pre-professional majors, including pre-medicine, pre-dental, pre-physical therapy, pre-law, pre-physician assistant, and more. The reasoning behind this decision was based off studies that found similar levels of suicide ideation, anxiety, stress, and depression in physical therapy and medical students (Alexandrino-Silva et al., 2009). The current study also had a significantly smaller sample size compared to Fang et al's study. Pre-professional students represented approximately 20% of our total sample, whereas pre-medical students in Fang's sample represented 50% of the sample. The limited sample size in the current study would make it more difficult to reveal significant results between groups. Lastly, Fang et al's study used different psychometric measures and did not measure anxiety, stress, or stigma. Fang et al's study



examined depression using the Patient Health Questionnaire and burnout using the Maslach Burnout Inventory General Survey.

Lastly, pre-professional students may better recognize the symptoms of mental illness and be more empathetic towards mental health issues due to exposure during their course of study. Therefore, on the stigma measure pre-professional students would be less likely to recognize mental health stigma held by the public and less likely to apply that stigma to themselves. This evaluation is also consistent with studies in medical students showing decreased mental health stigma and increased social acceptance, especially among those who had completed the psychiatry clerkship in medical school (Chiles, Stefanovics, Rosenheck, 2016; Gold et al., 2014).

Limitations of this study include the use of online convenience sampling for data collection and the utilization of only self-report measures. Due to this method, a small percentage of the sample was from the target population, with only 28 of the 142 pre-professional students declaring a pre-medicine concentration. Consequently, pre-professional students were combined into one group for data analyses and group differences were not able to be examined. In addition, measures used only examined students' levels of stress, anxiety, and depression at the time of the study and did not measure any persisting characteristics, therefore all data is cross-sectional.

Further study should analyze differences between medical students' and graduate students' levels of anxiety, stress, depression and internalization of stigma to determine if medical student education uniquely causes symptom elevation compared to other programs of study. It is important to make comparisons between medical, undergraduate, and graduate programs in order to identify at-risk groups, compare the intensity of their academic curriculums,

and allow for universities to develop or improve student-wellness initiatives. Cross-sectional studies examining medical, nursing, and pharmacy students verified significant correlations between suicide risk and symptoms of depression and hopelessness across all disciplines (Alexandrino-Silva et al., 2009). However, studies comparing medical students to other graduate students are lacking, indirect comparisons suggest that medical students report moderate anxiety at a higher rate than graduate students (Eisenber, Gollust, Golberstein, Hefner, 2007). Once established, future research may look into the elements of medical education that contribute to poor mental health outcomes and universities may change their medical education curriculums, provide additional institutional resources, and improve the quality of life for students.

## REFERENCES

- Alexandrino-Silva, C., Pereira, M.L., Bustamante, C., Ferraz, A.C., Baldassin, S., Andrade, A.G., & Alves, T.C. (2009). Suicidal ideation among students enrolled in healthcare training programs: A cross-sectional study. *Rev Bras Psiquiatr*, *31*(4), 338-344.
- American Association of Medical Colleges. (2019). Medical school admission requirements. *American Association of Medical Colleges*. Retrieved from URL: <https://apps.aamc.org/msar-ui/#/landing>.
- American Association of Medical Colleges. (2017). Medical student education: Debt, costs, and loan repayment fact card. *American Association of Medical Colleges*. Retrieved from URL: <https://members.aamc.org/iweb/upload/2017%20Debt%20Fact%20Card.pdf>.
- American Psychiatric Association. (2019). Recognizing Physician Burnout. *American Psychiatric Association*. Retrieved from URL: <https://www.psychiatry.org/psychiatrists/practice/well-being-and-burnout>.

- Barbaria, P., Abedin, S., & Nunez-Smith, M. (2009). The effect of gender on the clinical clerkship experiences of female medical students: results from a qualitative study. *Academic Medicine: Journal of the Association of American Medical Colleges*, *84*, 859-866.
- Ball, S., & Bax, A. (2002). Self-care in Medical Education: Effectiveness of health-habits interventions for first-year medical students. *Academic Medicine*, *77*(9), 911-917.
- Beck, A.T., Epstein, N., Brown, G., & Steer, R.A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology*, *56*, 893-897.
- Chiles, C., Stefanovics, E., & Rosenheck, R. (2017). Attitudes of students at a U.S. medical school toward mental illness and its causes. *Academic Psychiatry*, *41*, 20-350.  
doi: 10.1007/s40596-016-0508-0
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A Global Measure of Perceived Stress. *American Sociological Association*, *24*, 385-396.
- Corrigan, P.W., Michaels, P.J., Vega, E., Gause, M., Watson, A.C., & Rüsck, N. (2012). *Psychiatry Research*, *199*(1), 65-69.
- Dyrbye, L.N., Eacker, A., Durning, S.J., Brazeau, C., Moutier, C., Massie, S., *et al.* (2015). The impact of stigma and personal experiences on the help-seeking behaviors of medical students with burnout. *Academic Medicine*, *90*(7), 961-969.
- Dyrbye, L.N., Thomas, M.R., Massie, F.S., Power, D.V., Eacker, A., Harper, W., *et al.* (2008). Burnout and suicidal ideation among U.S. medical students. *Annual Internal Medicine*, *149*(5), 334-341.

- Dyrbye, L.N., Thomas, M.R., & Shanafelt, T.D. (2005). Medical student distress: Causes, consequences, and proposed solutions. *Mayo Clinic Proceedings*, 80(12), 1613-1622.
- Dyrbye, L.N., Thomas, M.R., & Shanafelt, T.D. (2006). Systematic review of depression, anxiety, and other indicators of psychological distress among U.S. and Canadian Medical Students. *Academic Medicine*, 81, 354-373.
- Eisenberg, D., Downs, M.F., Golberstein, E., & Zivin, K. (2009). Stigma and help seeking for mental health among college students. *Medical Care Research and Review*, 66(5), 522-541.
- Eisenberg, D., Gollust, S.E., Golberstein, E., & Hefner, J.L. (2007). Prevalence and correlates of depression, anxiety, and suicidality among university students. *American Journal of Orthopsychiatry*, 77(4), 534-542.
- Fang, D.Z., Young, C.B., Golshan, S., Moutier, C., & Zisook, S. (2012). Burnout in premedical undergraduate students. *Academic Psychiatry*, 36, 11-16.
- Feurelein, W. (1973). Suicide and attempted suicide: trends, statistics, prevention, help. *Medizinische Klinik*, 68, 1717-1721.
- Frank, E., & Dingle, A.D. (1999). Self-reported depression and suicide attempts among U.S. women physicians. *The American Journal of Psychiatry*, 156(12), 1887-1894.
- Givens, J.L., & Tjia, J. (2002). Depressed medical students' use of mental health services and barriers to use. *Academic Medicine*, 77, 918-921.
- Ghomasara, S.L., Davidson, M.A., Reich, M.S., Savoie, C.V., & Rodgers, S.M. (2011). *Academic Medicine*, 86(1), 116-121.
- Golberstein, E., Eisenberg, D., & Gollust, S.E. (2008). Perceived stigma and mental health care seeking. *Psychiatric Services*, 59(4), 392-399.

- Gold, J.A., Johnson, B., Leydon, G., Rohrbaugh, R.M., & Wilkins, K.M. (2015). Mental health self-scare in medical students: A comprehensive look at help-seeking. *Academic Psychiatry, 39*, 37-46. doi: 10.1007/s40596-014-0202-z.
- Hendon, H., Reynolds, C., Fox, D., Altchuler, S., Rogers, P., Rothstein, L., *et al.* (2007). Licensing and physician mental health: Problems and possibilities. *Journal of Medical Licensure and Discipline, 93*(2), 6-11.
- Jacobs, S.R., & Dodd, D.K. (2003). Student burnout as a function of personality, social support, and workload. *Journal of College Student Development, 44*(3), 291-303.
- Kuczewski, M.G., & Brubaker, L. (2014). Medical education for “Dreamers”: Barriers and opportunities for undocumented immigrants. *Academic Medicine: Journal of the Association of American Medical Colleges, 89*, 1593-1598.
- Lindeman, S., Laara, E., Hakko, H., & Lonnqvist, J., (1996). A systematic review on gender specific suicide mortality in medical doctors. *British Journal of Psychiatry, 168*(3), 274-279.
- Mangus, R., Hawkins, C., & Miller, M. (1998). Tobacco and alcohol use among 1996 medical school graduates. *Journal of the American Medical Association, 280*, 1192-1193.
- Masuda, A., Anderson, P.L., & Edmonds, J. (2012). Help-seeking attitudes, mental health stigma, and self-concealment among African-American college students. *Journal of Black Studies, 43*(7), 773-786.
- McGrady, A., Brennan, J., Lynch, D., & Whearty, K. (2012). A wellness program for first year medical students. *Applied Psychophysiol Biofeedback, 37*, 253-260.  
doi: 10.1007/s10484-012-9198-x.

- Mospan, C.M., Blackwelder, R., Grover, S., & Dula, C. (2017). A two-year review of suicide ideation assessments among medical, nursing, and pharmacy students. *Journal of Interprofessional Care, 31*(4), 537-539.
- Neumann, Y., Finaly-Neumann, E., & Reichel, A. (2019). Determinants and consequences of students' burnout in universities. *The Journal of Higher Education, 61*(1), 20-31.
- Noori, S., Blood, A.G., Meleca, J., Kennedy, V., & Sengupta, D. (2017). Current directions in medical student well-being. *Columbia Medical Review, 1*(2), 10-19.
- Radloff, L.S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*(3), 385-401.
- Sanchez, J.P., Peters, L., Lee-Rey, E., Strelnick, H., Garrison, G., Zhang, K, *et al.* (2013). Racial and ethnic minority medical students' perceptions of and interest in careers in academic medicine. *Academic Medicine: Journal of the Association of American Medical Colleges, 88*, 1299-1307.
- Schernhammer, E.S., & Colditz, G.A. (2004). Suicide rates among physicians: A quantitative and gender assessment (meta-analysis). *American Journal of Psychiatry, 161*, 2295-2302.
- Silva, V., Costa, P., Pereira, I., Faria, R., Salgueira, A.P., Costa, M.J., Sousa, N., Cerqueira, J.J., & Morgado, P. (2017). Depression in medical students: Insights from a longitudinal study. *BMC Medical Education, 17*(184), 1-9. doi: 10.1186/s12909-017-1006-0.
- Simon, W. (1986). Suicide among physicians: Prevention and postvention. *Crisis, 7*, 1-13.
- Spickard, A., Gabbe, S.B., & Christensen, J.F. (2002). Mid-career burnout. *Journal of American Medical Association, 288*(12), 1447-1450.

- Stratton, T.D., McLaughlin, M.A., Witte, F.M., Fosson, S.E., & Nora, L.M. (2005) Does students' exposure to discrimination and sexual harassment in medical school affect specialty choice and residency selection? *Academic Medicine: Journal of the Association of American Colleges*, 80, 400-408.
- United States Medical Licensing Examination. (2019). Step Examinations. *Federation of the State Medical Boards and National Board of Medical Examiners*. Retrieved from URL: <https://www.usmle.org/step-1/>.
- Zisook, S., Young, I., Doran, N., Downs, N., Hadley, A., Kirby, B., et al. (2016). Suicidal ideation among students and physicians at a U.S. medical school: A healer education assessment and referral program report. *Journal of Death and Dying*, 74(1), 35-61.

#### APPENDIX: A





### INFORMED CONSENT DOCUMENT

**Project Title:** Mental Health Stigma in College Students

**Investigator:** Kristen Miller and Dr. Amy Brausch, Department of Psychological Sciences,  
270-745-4407

You are being asked to participate in a project conducted through Western Kentucky University. The University requires that you give your agreement to participate in this project.

**You must be 18 years old or older to participate in this research study.**

The investigator will explain to you in detail the purpose of the project, the procedures to be used, and the potential benefits and possible risks of participation. You may ask any questions you have to help you understand the project. A basic explanation of the project is written below. Please read this explanation and discuss with the researcher any questions you may have. You should keep a copy of this form for your records.

1. **Nature and Purpose of the Project:** You are volunteering to participate in an on-line survey being conducted by Kristen Miller, who is supervised in research by Dr. Amy Brausch, a WKU psychological sciences professor. The responses provided on this survey will be used to identify current mental health symptoms and academic stressors of college students.
2. **Explanation of Procedures:** If you decide to participate in this survey, you will be asked to answer questions about your overall mental health status, academic stressors, and basic demographics through an on-line survey. The survey will take no longer than 15 minutes to complete.
3. **Discomfort and Risks:** Participation is voluntary and your responses will be anonymous. Whether or not you participate will not affect your standing in the University. If you choose to participate, no identifying information will be required. We do not anticipate any risk beyond the inconvenience of time and the potential for mild emotional reaction to questions about your mental health history.
4. **Benefits:** The potential benefits of your participation are potentially feeling positive about helping with a research project that will aid in our understanding of college student's mental health needs and academic stressors. You may choose to be entered into a drawing for one of 5 \$20 Target gift cards by providing your email address at the end of the survey. Winners will be selected at random and your e-mail address will not be linked to your responses.
5. **Confidentiality:** The survey will remain completely anonymous, and no one, including the researcher, will know your identity. Data collected from the survey will be kept in an electronic database on a password-protected desktop computer in Dr. Brausch's lab, which is kept locked when no one is present.
6. **Refusal/Withdrawal:** Refusal to participate in this study will have no effect on any future services you may be entitled to from the University. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

*You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.*

***Your continued cooperation with the following research implies your consent.***

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT  
THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY  
THE WESTERN KENTUCKY UNIVERSITY INSTITUTIONAL REVIEW BOARD

Robin Pyles, Human Protections Administrator  
TELEPHONE: (270) 745-3360

WKU IRB# 19-252  
Approved: 2/05/2019  
End Date: 5/31/2019  
EXPEDITED  
Original: 2/05/2019

## APPENDIX: B

### BAI

Below is a list of common symptoms of anxiety. Please carefully read each item in the list. Indicate how much you have been bothered by that symptom during the past month, including today, by circling the number in the corresponding space in the column next to each symptom.

	0 = Not at all	1 = Mildly, but it didn't bother me much	2 = Moderately - it wasn't pleasant at times	3 = Severely - it bothered me a lot
1. Numbness or tingling	0	1	2	3
2. Feeling hot	0	1	2	3
3. Wobbliness in legs	0	1	2	3
4. Unable to relax	0	1	2	3
5. Fear of worst happening	0	1	2	3
6. Dizzy or lightheaded	0	1	2	3
7. Heart pounding/racing	0	1	2	3
8. Unsteady	0	1	2	3
9. Terrified or afraid	0	1	2	3
10. Nervous	0	1	2	3
11. Feeling of choking	0	1	2	3
12. Hands trembling	0	1	2	3
13. Shaky/unsteady	0	1	2	3
14. Fear of losing control	0	1	2	3
15. Difficulty in breathing	0	1	2	3
16. Fear of dying	0	1	2	3
17. Scared	0	1	2	3
18. Indigestion	0	1	2	3
19. Faint/lightheaded	0	1	2	3
20. Face flushed	0	1	2	3
21. Hot/cold sweats	0	1	2	3

APPENDIX: B

**Center for Epidemiologic Studies Depression Scale (CES-D), NIMH**

Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

	During the Past			
	Rarely or none of the time (less than 1 day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1. I was bothered by things that usually don't bother me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. I did not feel like eating; my appetite was poor.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. I felt that I could not shake off the blues even with help from my family or friends.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. I felt I was just as good as other people.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. I had trouble keeping my mind on what I was doing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I felt depressed.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. I felt that everything I did was an effort.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. I felt hopeful about the future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. I thought my life had been a failure.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I felt fearful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. My sleep was restless.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. I was happy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. I talked less than usual.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. I felt lonely.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. People were unfriendly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. I enjoyed life.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. I had crying spells.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I felt sad.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I felt that people dislike me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. I could not get "going."	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**SCORING:** zero for answers in the first column, 1 for answers in the second column, 2 for answers in the third column, 3 for answers in the fourth column. The scoring of positive items is reversed. Possible range of scores is zero to 60, with the higher scores indicating the presence of more symptomatology.

APPENDIX: C

# PERCEIVED STRESS SCALE

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate by circling how often you felt or thought a certain way.

Name \_\_\_\_\_ Date \_\_\_\_\_

Age \_\_\_\_\_ Gender (Circle): M F Other \_\_\_\_\_

0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often

- 1. In the last month, how often have you been upset because of something that happened unexpectedly? 0 1 2 3 4
- 2. In the last month, how often have you felt that you were unable to control the important things in your life? 0 1 2 3 4
- 3. In the last month, how often have you felt nervous and "stressed"? 0 1 2 3 4
- 4. In the last month, how often have you felt confident about your ability to handle your personal problems? 0 1 2 3 4
- 5. In the last month, how often have you felt that things were going your way? 0 1 2 3 4
- 6. In the last month, how often have you found that you could not cope with all the things that you had to do? 0 1 2 3 4
- 7. In the last month, how often have you been able to control irritations in your life? 0 1 2 3 4
- 8. In the last month, how often have you felt that you were on top of things? 0 1 2 3 4
- 9. In the last month, how often have you been angered because of things that were outside of your control? 0 1 2 3 4
- 10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them? 0 1 2 3 4



info@mindgarden.com  
www.mindgarden.com

References

The PSS Scale is reprinted with permission of the American Sociological Association, from Cohen, S., Kamarck, T., and Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 386-396.  
Cohen, S. and Williamson, G. Perceived Stress in a Probability Sample of the United States. Spacapan, S. and Oskamp, S. (Eds.) *The Social Psychology of Health*. Newbury Park, CA: Sage, 1988.



## APPENDIX: D

### PERCEIVED STRESS SCALE by Sheldon Cohen

The *Perceived Stress Scale* (PSS) is the most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful. Items were designed to tap how unpredictable, uncontrollable, and overloaded respondents find their lives. The scale also includes a number of direct queries about current levels of experienced stress. The PSS was designed for use in community samples with at least a junior high school education. The items are easy to understand, and the response alternatives are simple to grasp. Moreover, the questions are of a general nature and hence are relatively free of content specific to any subpopulation group. The questions in the PSS ask about feelings and thoughts during the last month. In each case, respondents are asked how often they felt a certain way.

**Evidence for Validity:** Higher PSS scores were associated with (for example):

- failure to quit smoking
- failure among diabetics to control blood sugar levels
- greater vulnerability to stressful life-event-elicited depressive symptoms
- more colds

**Health status relationship to PSS:** Cohen et al. (1988) show correlations with PSS and: Stress Measures, Self-Reported Health and Health Services Measures, Health Behavior Measures, Smoking Status, Help Seeking Behavior.

**Temporal Nature:** Because levels of appraised stress should be influenced by daily hassles, major events, and changes in coping resources, predictive validity of the PSS is expected to fall off rapidly after four to eight week

**Scoring:** PSS scores are obtained by reversing responses (e.g., 0 = 4, 1 = 3, 2 = 2, 3 = 1 & 4 = 0) to the four positive stated items (items 4, 5, 7, & 8) and then summing across all scale items. A short 4 item scale can be made from questions 2, 4, 5 and 10 of the PSS 10 item scale.

**Norm Groups:** L. Harris Poll gathered information on 2,387 respondents in the U.S.

**Norm Table for the PSS 10 item inventory**

Category	N	Mean	S.D.
Gender			
<b>Male</b>	<b>926</b>	<b>12.1</b>	<b>5.9</b>
<b>Female</b>	<b>1406</b>	<b>13.7</b>	<b>6.6</b>
Age			
<b>18-29</b>	<b>645</b>	<b>14.2</b>	<b>6.2</b>
<b>30-44</b>	<b>750</b>	<b>13.0</b>	<b>6.2</b>
<b>45-54</b>	<b>285</b>	<b>12.6</b>	<b>6.1</b>
<b>55-64</b>	<b>282</b>	<b>11.9</b>	<b>6.9</b>
<b>65 &amp; older</b>	<b>296</b>	<b>12.0</b>	<b>6.3</b>
Race			
<b>white</b>	<b>1924</b>	<b>12.8</b>	<b>6.2</b>
<b>Hispanic</b>	<b>98</b>	<b>14.0</b>	<b>6.9</b>
<b>black</b>	<b>176</b>	<b>14.7</b>	<b>7.2</b>
<b>other minority</b>	<b>50</b>	<b>14.1</b>	<b>5.0</b>

## APPENDIX: E

---

The public has believed many different things about persons with serious mental illnesses over the years, including some things that could be considered offensive. We would like to know what you think most of the public as a whole, or most people in general, believe about persons with serious mental illnesses at the present time. Please answer the following items using the 9-point scale below.

I strongly Disagree				neither agree nor disagree					I strongly agree
1	2	3	4	5	6	7	8	9	

Section 1:

### **I think the public believes...**

1. \_\_\_\_ most persons with mental illness are to blame for their problems.
2. \_\_\_\_ most persons with mental illness are unpredictable.
3. \_\_\_\_ most persons with mental illness will not recover or get better.
4. \_\_\_\_ most persons with mental illness are dangerous.
5. \_\_\_\_ most persons with mental illness are unable to take care of themselves.

## APPENDIX: F

41

Section 2:

Now answer the next 5 items using the agreement scale.

I strongly Disagree				neither agree nor disagree					I strongly agree
1	2	3	4	5	6	7	8	9	

### I think...

1. \_\_\_\_ most persons with mental illness are to blame for their problems.
2. \_\_\_\_ most persons with mental illness are unpredictable.
3. \_\_\_\_ most persons with mental illness will not recover or get better.
4. \_\_\_\_ most persons with mental illness are dangerous.
5. \_\_\_\_ most persons with mental illness are unable to take care of themselves.

APPENDIX: G

Section 3

Now answer the next 5 items using the agreement scale.

I strongly Disagree				neither agree nor disagree					I strongly agree
1	2	3	4	5	6	7	8	9	

## Because I have a mental illness...

1. \_\_\_\_\_ I am unable to take care of myself.
2. \_\_\_\_\_ I will not recover or get better.
3. \_\_\_\_\_ I am to blame for my problems.
4. \_\_\_\_\_ I am unpredictable.
5. \_\_\_\_\_ I am dangerous.



APPENDIX: H

Section 4

Finally, answer the next 5 items using the agreement scale.

I strongly Disagree				neither agree nor disagree					I strongly agree
1	2	3	4	5	6	7	8	9	

**I currently respect myself less...**

1. \_\_\_\_\_ because I am unable to take care of myself.
2. \_\_\_\_\_ because I am dangerous.
3. \_\_\_\_\_ because I am to blame for my problems.
4. \_\_\_\_\_ because I will not recover or get better.
5. \_\_\_\_\_ because I am unpredictable.

## The SSMIS-SF Score Sheet

Name or ID Number \_\_\_\_\_ Date \_\_\_\_\_

Summing items from each section represents the 3 A's plus 1.

\_\_\_\_\_ **Aware:** (Sum all items from **Section 1**).

\_\_\_\_\_ **Agree:** (Sum all items from **Section 2**).

\_\_\_\_\_ **Apply:** (Sum all items from **Section 3**).

\_\_\_\_\_ **Hurts self:** (Sum all items from **Section 4**).