

**Copyright**  
**by**  
**R. Dakota Carter, MD**  
**December 2017**

**PHYSICIAN WELLNESS: IMPACT OF STRESS, BURNOUT, AND DEPRESSION ON  
MEDICAL TRAINEE EMPATHY**

**A Doctoral Thesis Presented to the  
Faculty of the College of Education  
University of Houston**

**In Partial Fulfillment  
of the Requirements for the Degree**

**Doctor of Education**

**by**

**R. Dakota Carter, MD**

**December 2017**

**PHYSICIAN WELLNESS: IMPACT OF STRESS, BURNOUT, AND DEPRESSION ON  
MEDICAL TRAINEE EMPATHY**

**An Abstract  
of a Doctoral Thesis Presented to the  
Faculty of the College of Education  
University of Houston**

**In Partial Fulfillment  
of the Requirements for the Degree**

**Doctor of Education**

**by  
R. Dakota Carter, MD**

**December 2017**

## Abstract

**Background:** Medical schools and residency training programs are tasked with developing physicians that are compassionate, empathetic providers capable of providing evidenced-based, up-to-date care. With the numerous changes in healthcare, healthcare education, and increased stress, burnout, depression in medical trainees, empathy levels have declined, impacting patient health outcomes and physician well-being. **Purpose:** This study sought to understand the relationship between stress, burnout, depression and empathy in medical trainees. Using self-report scales, we sought to determine the impact career demands, stress, and a changing healthcare system has on medical trainees. This study captured elements of burnout and depression that impacted trainee empathy and compassion towards their patients, and ultimately patient outcomes. This study evaluated demographic data and characteristics that identified trainees that are more likely to be more burnt out, depressed, or less empathetic. **Methods:** Utilizing the Jefferson Scale of Physician Empathy, the Maslach Burnout Inventory, and the Patient Health Questionnaire-9, trainee self reports of empathy, stress/burnout, and depression were collected and analyzed for correlations between scales and with demographic data. **Results:** Numerous results were found, noting that students/residents have low empathy, which correlated with high rates of burnout and depression in both populations. Significant demographic correlations with high burnout, depression, and low empathy were seen in gender, specialty choice, and year in school/residency; our resident population trended high on each of these variables compared to students. **Conclusion:** These findings highlight significant trends in medical education that require intervention. Current training models are producing students and residents with poor empathy and

increasingly high burnout, detachment, low performing behavior that affects self-care and patient outcomes. A new conceptual model was developed to indicate the role low empathy, burnout, and depression play on patient care and physician well-being, along with a discussion of potential changes needed in curriculum.

## Table of Contents

Chapter	Page
I. Introduction.....	1
Statement of the Problem.....	3
Study Purpose.....	7
Research Questions.....	8
Context of Study.....	9
Significance of Problem.....	9
Educational Value of Study.....	10
Definitions.....	11
Limitations.....	12
Summary.....	12
II. Literature Review.....	14
Defining Empathy.....	15
The Impact of Empathy.....	20
Measuring Empathy.....	23
Empathy in Medical School.....	24
Empathy in Residency.....	27
Effects of Career and Educational Demands.....	33
Defining and Understanding Burnout.....	35
Measuring Burnout.....	39
Measuring Depressive Symptoms.....	41
Relationship between Stress, Burnout, and Depression on Empathy.....	43
Previous Theoretical Framework: Connecting Burnout, Depression, Empathy and Patient Care.....	45
Summary.....	47
III. Methodology.....	49
Scales.....	49
Demographic Data.....	51
Research Questions.....	52

Participants.....	53
Data Collection Procedure.....	53
Data Analysis.....	54
Summary.....	54
IV. Results.....	55
Preliminary Data Analysis.....	55
Student Empathy.....	57
Student Burnout and Depression.....	58
Correlational Data Between Student Empathy, Burnout, and Depression.....	61
Resident Empathy.....	62
Resident Burnout and Depression.....	64
Correlational Data Between Resident Empathy, Burnout, and Depression .....	67
Summary.....	68
V: Discussion.....	66
Student Empathy, Burnout and Depression.....	70
Resident Empathy, Burnout and Depression.....	74
Total Trainee Well-being.....	75
Conceptual Model.....	78
Future Research.....	80
Conclusion.....	81
References.....	83
Appendix A: JPSE Sample .....	91
Appendix B: MBI Sample .....	94
Appendix C: PHQ-9 .....	96

## List of Tables

Table	Page
1. Empathy Studies during Medical Training .....	29
2. MBI Scale Trends.....	50
3. Comparative Evaluation of Student Versus Resident Data.....	56
4. Patient-based Specialty Categorization.....	57
5. Technology/Procedure Specialty Categorization.....	57
6. Correlational Data for Student Demographics and Empathy.....	58
7. Correlational Data for Student Demographics, Emotional Exhaustion.....	59
8. Correlational Data for Student Demographics, Depersonalization.....	60
9. Correlational Data for Student Demographics, Personal Accomplishment.....	60
10. Correlational Data for Student Demographics, Depression.....	61
11. Student Empathy, Burnout and Depression Scale Correlations....	62
12. Correlational Data for Resident Demographics and Empathy.....	63
13. Correlational Data for Resident Demographics, Emotional Exhaustion.....	64
14. Correlational Data for Resident Demographics, Depersonalization.....	65
15. Correlational Data for Resident Demographics, Personal Accomplishment.....	66
16. Correlational Data for Resident Demographics, Depression.....	67
17. Resident Empathy, Burnout and Depression Scale Correlations...	68



## List of Figures

Figure	Page
1. Williams et al. (2009) Conceptual Model and Theoretical Framework.....	46
2. Carter Conceptual Model/Theoretical Framework.....	81

## **Chapter 1**

### **Introduction**

Medical students and residents enter training in order to obtain an education that allows for them to provide cutting edge clinical care in a compassionate way that alleviates suffering and improves quality of life for patients. According to the Institute of Medicine (Wolfe, 2001), empathy plays a vital role in providing care to patients and represents a major goal within medicine in developing a quality healthcare system. The organization calls for physicians to develop “qualities of compassion, empathy, and responsiveness to the needs, values, and expressed preferences of the individual patient” (Wolfe, 2001, p. 48). Medical school education focuses on preparing students to become knowledgeable, competent physicians that are capable of providing this individualized, compassionate, and evidence-based care for patients. Residency training further increases this mastery of information within a designated specialty of choice selected by the individual after four years of medical school education. Curricula varies across medical schools and residency training programs, but these educational experiences focus on both the science and art of medicine.

Universities implement curricula in these two realms based on recommendations from governing bodies in order to prepare students to be competent physicians. The Liaison Committee on Medical Education (LCME) is recognized by the United States Department of Education as the authority for the accreditation of medical education programs leading to a medical doctorate degree. In this capacity, it is sponsored by the Association of American Medical Colleges (AAMC) and the American Medical Association (AMA) in providing guidelines for medical education (LCME, 2015). The

LCME oversees the function and structure of American medical schools offering medical doctorate degrees and regulates mission, organization and planning, faculty development, and the actual learning and structural environment; in addition, it dictates curricula and student educational expectations. Specific to curricula, the governing body indicates in Standard 6 of the LCME accreditation booklet that medical schools must offer a broad clinical, research, and basic science experience (LCME, 2015). This is accomplished through Standard 7 recommendations that emphasize biomedical, behavioral, and social sciences, organ system pathology and treatment, research and scientific method, critical judgment, problem-solving skills, cultural competency, healthcare disparities, professionalism, communication skills, ethics, and interpersonal collaborative skills (LCME, 2015). Medical schools can accomplish these requirements in various structures, class formats, and educational experiences as long as they can demonstrate that their students are clinically- and compassionately-sound individuals, fulfilling the concepts of the science and art of medicine respectively. These schools are responsible for ensuring that these future residents and physicians possess the basic science knowledge and clinical skills to provide safe, evidence-based care, while nurturing their empathetic, compassionate nature to be able to develop professional, therapeutic relationships with patients.

Residency training programs are regulated by the Accreditation Council for Graduate Medical Education (ACGME). Similar to the LCME, this advisory board oversees the curricula and educational experiences of resident physicians while regulating other aspects like duty hours, program organization and regulation, and specific requirements in individual residency specialties. Consistent in all programs, the ACGME

dictates that residents be competent in patient care and procedural skills, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practices (ACGME, 2015). Residents are mandated to continue scientific learning and education while developing “sensitivity and responsiveness to diverse patient populations,” “responsiveness to patient needs that supersedes self-interest,” and “compassion, integrity, and respect for others,” while communicating “effectively with patients, families, and the public,” among other skills (ACGME, 2015, p. 22). There remains an emphasis on developing medical knowledge and acumen within a given specialty while maintaining core features of empathetic, professional and culturally competent care during post-graduate training.

### **Statement of the Problem**

The profession of medicine at its core is one of service. In addition to clinical knowledge, schools and training programs focus on educating students and residents to have humanistic values, quality interpersonal skills, and compassion for patients and their families. In educating for any human service endeavor, empathy is paramount and potentially impacts clinical outcomes and relationships with patients (Hojat et al., 2009). Despite recommendations to educate on empathy from governing boards and the potential impact on patient lives, research has shown that empathy in students and residents is decreasing (Bellini, 2002; Bellini & Shea, 2005; Chen et al., 2007; Hojat et al., 2004; Hojat et al., 2009; Mangione et al., 2002; Newton et al., 2000; Newton et al., 2008; Rosen et al., 2006; Stratton et al., 2008; West et al., 2006; West et al., 2007; Shanafelt et al., 2005). At the same time stress demands in education and careers are increasing (Bellini, 2002; Bellini & Shea, 2005; Neumann et al., 2011; Rosen et al., 2006;

Shanafelt et al., 2005; Stratton et al., 2008; West et al., 2006). In addition, the curricula for teaching empathy are not uniform or evidenced-based, and there seems to be new ideas being passed along of “emotional detachment,” “affective distance,” and “clinical neutrality” (Hojat, et al., 2009).

Medical students enter medical school with various undergraduate degrees, diverse backgrounds and educational experiences, along with numerous reasons for pursuing a degree in medicine. Most, if not all of the students, possess a level of empathy and an innate need to care for others, captured in their profiles and interviews for acceptance. A majority of studies reveal a high level of empathy in medical students as they enter medical school (Chen et al., 2007; Hojat et al., 2004; Hojat et al., 2009; Newton et al., 2000; Newton et al., 2008; Stratton et al., 2008). These students begin with enthusiastic ideals and a genuine intention to help others, yet research has shown that these same students lose these initial levels of empathy with increasing levels of cynicism (Chen et al., 2007; Hojat et al., 2004; Hojat et al., 2009; Newton et al., 2000; Newton et al., 2008; Stratton et al., 2008). Similarly, applicants to residency programs demonstrate their learned skills and vie for positions in their chosen specialty highlighting their clinical acumen, medical knowledge, and abilities in patient care. However, residents also tend to develop and maintain a level of cynicism and begin to have decreases in empathetic care as they progress in their training programs (Bellini, 2002; Bellini & Shea, 2005; Hojat et al., 2009; Mangione et al., 2002; Rosen et al., 2006; Shanafelt et al., 2005; West et al., 2006; West et al., 2007). Although there are general demographic and specialty-linked impacts on empathy, there is little understanding of the decrease of

empathy as one advances through medical school and residency, and even less evidence on possible curriculum interventions that can alleviate this decrease.

The curricula offered by schools and training programs are designed to develop well-rounded clinicians capable of empathetic, scientific-based patient care; the burden on students and residents is high in their need to succeed in knowledge acquisition and demonstration through examinations and clinical experiences and evaluations. The four years of medical school and time in residency abound with multiple educational requirements, while attempting to maintain positive relationships with colleagues and patients through communication and understanding (LCME, 2015; AGME, 2015). This is further complicated by new demands on students and residents related to the amount of material, scheduling, clinical and study duties, and increasing responsibility in care provision. Students and residents have begun to report that these increasing demands lead to higher levels of stress, less time for patient care, and a need to prioritize duties with little focus on patient interaction, understanding or personal care (Bellini, 2002; Bellini & Shea, 2005; Neumann et al., 2011; Rosen et al., 2006; Shanafelt et al., 2005; Stratton et al., 2008; West et al., 2006).

As healthcare has changed through legislation, new technologies, innovative treatments, increasing amounts of basic science, clinical, and evidential knowledge, so has the educational experiences of the students and residents; frequently, efficiency and medical knowledge trump personalized, compassionate care because of the sheer volume of scientific knowledge these healthcare providers are required to know (Neumann, et al., 2011). Students and residents are on information-overload, while also entering an age in medicine where many aspects of medical record keeping and communication is via

electronic means. More emphasis is being placed on science, basic career obligations, and computer-based patient management, possibly to the detriment of providing quality, empathetic care (Neumann, et al., 2011). Theories have emerged that this traumatic “de-idealization” and “de-humanization” results from a lack of role models, increased electronic influences, education volume, healthcare market changes, time pressures, patient and environmental factors, and the potential belief that empathy may be outside of clinical- and evidence-based medicine (Hojat et al., 2009).

This is devastating to the field of medicine because of the noted influence empathy has on patient health and illness outcomes. Empathetic behavior of physicians can lead to better patient reporting of symptoms (Beckman & Frankel, 2003; Coulehan et al., 2001; Maguire et al. 1996; Neumann et al., 2007; Squier, 1990), improve diagnostic accuracy (Beckman & Frankel, 2003; Coulehan et al., 2001; Halpern, 2011; Larson & Yao, 2005), obtain more illness-specific information (Kim, Kaplowitz, & Johnston, 2004; Neumann et al., 2007), advance patient education (Mercer & Reynolds, 2002; Zachariae et al., 2003), increase compliance (Levinson, 2000; Kim, Kaplowitz, & Johnston, 2004; Levinson, 2000; Ong, et al., 1995), quality of life and patient satisfaction (Neumann et al., 2007; Zachariae et al., 2003), and reduce both patient and physician distress (Krasner et al., 2009). Empathy has also been proven to decrease the severity of the common cold (Rakel et al., 2004), improve glycemic control, improve cancer outcomes, and help patients maintain better health (Hojat et al., 2011; Schillinger, et al., 2003; Zachariae et al., 2003). In addition, there are less malpractice claims, medical errors, and lawsuits (Hickson, 2002). Simply, empathic care is vital to the doctor-patient relationship, and is a clinical skill that can improve health outcomes and quality of life for patients and

physicians. It remains a vital component in healthcare and a necessary training component that has proven benefit to the healthcare system.

Despite understanding the changing healthcare field and various curricula across the country designed to create empathetic doctors that can provide cutting-edge, competent care, there is scarce research on empathy, few valid measurement instruments, little development in potential curricula interventions, and poor understanding of influences that may moderate or mediate its erosion or elevation. Fewer studies have reflected upon the role of medical student and resident distress and career demands, and the impact this stress has on empathy, education, and clinical outcomes. There is also a paucity of information regarding the overarching issues related to decreasing empathy and increasing stress levels in these healthcare workers and potential impact on the profession of medicine and clinical outcomes for the patients being served.

### **Study Purpose**

This study sought to determine the relationship between medical student and resident stress, burnout and depression and its impact on empathetic care. Previous research has shown that empathy levels decrease as one progresses through medical school and residency; various demographic trends have been found in multiple studies that influence and impact these levels, including gender and specialty choice (Chen et al., 2007; Hojat et al., 2009; Neumann et al., 2011; Newton et al., 2000; Newton et al., 2008; Stratton et al., 2008). In addition, little data has been collected comparing levels of self-reported stress and career demands with potential impact on empathy with newer, validated scales dedicated to this particular population (Hojat et al., 2004). There has been strong correlation that physicians are experiencing higher levels of burnout that is



represented through emotional exhaustion, depersonalization, and decreased personal accomplishment (Maslach & Jackson 1986; Williams et al., 2009). This study will attempt to add data to this paucity in literature and to determine the potential relationship between high stress, burnout and depression levels and decrease empathy scores, which could allude to other findings related to patient outcomes and physician success. This study, in the review of literature, will be the first to use the Jefferson Scale of Physician Empathy (JPSE), the Maslach Burnout Inventory (MBI), and the Patient Health Questionnaire-9 (PHQ-9) to determine the relationship between stress, burnout, depression, and empathy in medical students and residents.

### **Research Questions**

With limited research performed on empathy in medical students and residents, and even more scarcity of literature related to stress effects on empathy, the following questions are posed:

- 1) How does self-reported burnout and depression affect medical trainees in providing empathic care?
- 2) What role does gender, age, race/ethnicity, year in training, specialty choice, and country of training play in modulating empathy, burnout, and depression in medical trainees?

The null hypothesis highlights that burnout and depression will have no impact on empathy scores; additionally, no demographic data will be indicative of trainees that might be at higher risk for burnout, depression, or low empathy.

## **Context of the Study**

This study was performed within a large, demographically diverse medical university consisting of over 1000 medical students and over 60 residency and fellowship programs. The data was collected from self-reports of stress, burnout and depression and answers to empathic questions with a validated empathy scale.

## **Significance of the Problem**

Previous research has indicated that empathy declines throughout medical school and residency with various theories attempting to link causation, mediation, or moderation. These studies have shown gender, specialty, and international differences, all within a changing American healthcare system. “At risk” students have also been identified in these studies, in addition to acknowledging the stressful education process and environment these students and residents encounter (Chen et al., 2007; Hojat et al., 2009; Neumann et al., 2011; Newton et al., 2000; Newton et al., 2008; Stratton et al., 2008). Empathy is a driving force in attempting to understand a patient’s unique narrative and then provide relief through compassionate, patient-centered care; higher levels of empathy can better clinical outcomes and improve doctor-patient relationships.

This has led many of the leading educational organizations to call for both scientific- and empathetic-care emphasis in medical school and residency curricula, to create a well-rounded physician force (LCME, 2015; ACGME, 2015; Wolfe, 2001). The practical application of these curricula varies across the country, with little congruence. Data and evidence supporting one interventional approach over another is lacking, and empathy levels continue to decline as stress and demands rise (Hojat et al., 2009). In an ideal healthcare system, clinical knowledge and evidence-based medicine should be in

balance with positive communication and seeking to understand the patient's perspective to alleviate suffering. In numerous studies, empathetic care leads to increased patient satisfaction, improved doctor-patient communication, and significantly better health outcomes (Beckman & Frankel, 2003; Coulehan et al., 2001; Halpern, 2011; Hickson, 2002; Hojat et al., 2011; Kim, Kaplowitz, & Johnston, 2004; Krasner et al., 2009; Larson & Yao, 2005; Levinson, 2000; Ong, et al., 1995; Neumann et al., 2007; Schillinger, et al., 2003; Rakel et al., 2004; Zachariae et al., 2003).

In many educational programs, the science of medicine can supersede empathy, along with new technological advances, unrealistic time constraints, and increasing knowledge demands, allowing for the dehumanization of medicine. This phenomenon has the potential to ultimately lead to poor health outcomes in patients, physician burnout, and a healthcare force unable to provide humanistic care. The increasing stress and demands on medical students, residents, and physicians may impact the level of empathetic care they are capable of providing, potentially leading to poor physician-patient relationships, less communication, and worsening health for both the doctor and individual being treated.

### **Educational Value of the Study**

This study sought to determine the relationship between medical student and resident stress levels and their empathy scores. With a cognitively-based definition of empathy, and an understanding of the relationship between the two variables, modifications can be made in curricula to incorporate more empathy-based education or identify possible changes to the current education methods and environments to limit stress. The importance of empathy has been demonstrated in health outcomes and patient-

care; it is critical to identify potential mediators or moderators, like student and physician burnout or depression, that can impact the healthcare partnership between a physician and patient, leading to dissatisfaction, poor communication, less self-efficacy, and poor health outcomes.

### **Definitions**

Empathy: a cognitive-based term that emphasizes the seeking to understand another's experience, concerns and perspectives; specifically in healthcare, also having the capacity to express and communicate this understanding and possessing the intention to help by alleviating suffering; a teachable concept; an ability to communicate emotional understanding to a patient in order to alleviate pain or illness.

Sympathy: an emotion-based term that emphasizes identifying and relating with a patient's feelings; specifically within healthcare, can lead to burn-out and detrimental outcomes related to internalization of distress and suffering.

Stress: a state of mental or emotional strain or tension resulting from adverse or very demanding circumstances.

Distress: extreme anxiety, sorrow, or pain; may also related to a state of physical strain or exhaustion.

Compassion: a concept that "lies at the intersection of empathy and sympathy and combines a response to the distress of others and a desire to alleviate that distress. It addresses the patient's innate need for connection and relationships and is based on attentive listening and a desire to understand the patient's context and perspective" (Lown, Rosen, & Marttila, 2011).

Medical student: a college or university graduate that has matriculated and follows a course of study leading to qualification as a doctor of medicine.

Medical resident: a physician who has finished medical school and is receiving training in a specialized area.

### **Limitations**

This study is limited to one university, with geographical influences, which may limit external validity; the voluntary study participants are likely to be more motivated to answer scales related to stress and empathy, possibly skewing the results. The results of this study will also be limited in that the scales used are self-reporting and not objective with the potential for bias. Scales used have been validated, but remain relatively new in the study of empathy. The paucity of literature and the abstract nature of empathy makes this a subject that is difficult to measure and study.

### **Summary**

Medical education continues to change towards a focus in clinical knowledge, despite an understanding that empathy is a key component in a competent healthcare provider. Unfortunately, research has shown that as one progresses through a stressful medical curriculum, empathy levels decline while clinical demands, responsibilities, and required knowledge increase. Limited research regarding empathy in students and residents has shown differences related to gender and specialty of choice, with fewer studies seeking interventions that can alleviate decreasing humanism, and even fewer identifying the role of stress, burnout and depression in inhibiting or decreasing levels of empathy. This study sought to understand the relationship between stress and career

demands, specifically including aspects of burnout and depression, and potential effect on empathy in order to identify potential interventions to alleviate both variables.

## **Chapter 2**

### **Literature Review**

Medical schools and residency programs seek to educate future physicians to be competent, well-rounded providers, capable of evidence-based and humanistic care. These long, arduous years of training strive to produce empathetic, knowledgeable physicians to provide compassionate care in this service-oriented profession (LCME, 2015; ACGME, 2015). Positive clinical outcomes are dependent upon healthcare providers that possess both clinical acumen and understanding of the patient's perspective (Di Blasi et al., 2001). Clinical knowledge and empathetic outlooks should not be competitors in providing care, but compliments, as both are not mutually exclusive in their ability to help others to be healthy individuals.

The science of medicine is readily assessed and defined, and this medical acuity can be measured through examinations, clinical proficiency demonstrations, and ability to discuss understanding of evidenced-based material (LCME, 2015). Curricula that cover the numerous topics needed to be a capable, competent physician are regulated and emphasized in current medical education with little variation in academic institutions across the country. Both the LCME and ACGME are clear in their recommendations of best practices in education students and residents in the basic and clinical sciences (2015), and these students and residents are assessed on their knowledge of these components numerous times in their training.

The concepts of empathy, interpersonal relationships, professionalism, ethics and humanism are vaguer and less readily assessed (LCME, 2015). These topics also experience a heterogeneous presentation across the country in training programs, with

varying emphasis and expertise, in addition to less understanding of the definitions and few validated educational interventions or assessments. These terms are more ambiguous, difficult to define, and, arguably, have eroded in focus in medical student and residency education, despite mandates to include them in curricula (Hojat et al., 2009). Although empathy and other aspects that relate to the art of medicine are needed, research, educational opportunities, measurement instruments, and evidenced-based practices are limited.

Empathy-related research, especially within healthcare, is sparse. The definition is difficult to pinpoint, and various researchers and physicians possess varying ideas on what empathy and humanism mean. Studies, prior to 2002, used scales validated in other fields and not within health disciplines when studying trainees and physicians, possibly not capturing the true essence of the concept in healthcare (Hojat et al., 2009). Within the completed research, trends have been identified and theories have been put forth. Few studies have sought to validate those potential influences, especially in relation to increasing educational strains and innumerable knowledge and clinical stressors identified in the status quo of American medical schools and residency training programs.

### **Defining Empathy**

Researchers who have attempted to define the ambiguous term of empathy have focused in three general domains: cognitive, or understating concerns and emotions, affective/emotional, or the actual feeling of pain, or a combination of the cognitive and emotional concepts. Focusing this definition is key within a clinical scope of practice; that is, defining clinical empathy and its importance in the doctor-patient relationship in balancing cognitive and affective processes.



Empathy is therapeutic component of communication between a physician and patient; according to Mercer and Reynolds, there are three components to empathy; 1) understanding a patient's perspective and feelings, 2) communicate that understanding for accuracy and confirmation from the patient, and 3) act upon that understanding to alleviate illness or suffering (Mercer & Reynolds, 2002). In one of the first longitudinal empathetic studies in medical students, researchers identified that a "clear conceptualization of empathy is critically important because...it serves as a guideline for an operational definition...and can also provide framework for the development of a content-specific instrument for measuring empathy in the context of medical education and patient care," (p. 1563) in addition to potentially helping to develop interventions to train future physicians to be more empathetic (Hojat et al., 2009). Hojat et al. define empathy as "a cognitive (as opposed to affective) attribute that involves an understanding of the inner experiences and perspectives of the patient, combined with a capability to communicate this understanding to the patient" (Hojat et al. 2002, p. 1563). These researchers believe when empathy is cognitively defined, change can be initiated through intervention versus emotion-based definitions. However, other authors highlight that empathy is more than a cognitive process and presents with both emotion and intellect, thus beginning a debate on whether empathy is teachable.

Halpern describes empathy in cognitive terms, or attempting to understand what a patient is experiencing, and emotional terms, or a "resonance" and "emotional back drop" (Halpern, 2011). This theory supports a cognitive process that develops from the experiencing of emotion and its impact upon both the patient and the clinician (Halpern, 2011). Other researchers have indicated a support for this theory, defining these processes

as “simple and advanced” cognitions, precursors to physician’s affective responses that impacts clinical care (Larson and Yao, 2005.) This theory is based upon physician emotion, or imagining of patient emotion, and clinical observation that believes this experience can deliver direct knowledge of another’s suffering (Weiner & Auster, 2007).

However, as noted by Weiner and Auster, the strict use of emotion to make determinations about a patient defines the “trouble with empathy.” They argue that a physician may experience an “associated dysphoria” during a clinical experience, allowing personal bias and internalization of emotion to influence their understanding of a patient, resulting in poor understanding of patient suffering and potential errors (Weiner & Auster, 2007). This reaction, without clarification, may lead to no or poor questions being asked and diagnoses being missed; the authors also highlight that researchers that define empathy in a strictly cognitive manner may imagine what is more important to the provider than that of the patient, another source of bias that can lead to error or a poor relationship. The lack of congruence between what the provider cognitively understands and what the patient has expressed highlights the need for communication and dialogue between physician and patient (Weiner & Auster, 2007).

True empathetic understanding involves engagement and data collection; the notion that simple observation can provide a direct understanding of another’s suffering is counter to accepted theories of qualitative inquiry (Weiner & Auster, 2007). Simply put, empathy takes work, and “the emotional labor of empathy requires effort, dedication, and patience” (Larson and Yao, 2005, p. 1101). Physicians must seek to understand, rather than imagine, a patient’s perspective through “constant comparison,” or observed object validation, and “reflexivity,” or recognizing and setting aside personal perspective

and bias (Malterud, 2001; Strauss & Corbin, 2015). That is, there is a need to mitigate the imagining of a patient's perspective based on personal experiences and emotion, but to seek to understand the patient's perspective, communicate that understanding, and identify with the patient, their experience with their illness based in their worldview and perception.

Understanding the difference between empathy and a closely related term, sympathy, is also vital in understanding terminology, measuring these variables, and teaching students and residents the best practices to be competent caregivers. Hojat et al. (2009) discuss that the terms have a "25% overlap" and are not completely individual or interchangeable ideas, especially within patient care. These researchers explore the concepts in various ways, finding subtle differences between the two terms and understanding they may come from different behavioral motivations. Sympathy is an egoistic motivation, seeking to decrease personal distress, and seeks to identify with the feelings presented by the patient, possibly leading to detrimental outcomes, especially in the doctor-patient relationship (Hojat et al., 2009). Empathy develops from a sense of altruism and a desire to understand patient perspective; empathetic practitioners seek to understand experience, concerns and perspectives, have the capacity to express and communicate this understanding, and possess the intention to help by alleviating suffering (Hojat et al., 2009).

Researchers who study healthcare empathy and believe it to be a teachable trait define empathy in cognitive terms, as emotional intelligence, or as a reflective concept able to be processed and improved upon, leading to better relationships with patients and more success as a compassionate physician; "cognitively defined empathy always leads

to personal growth, career satisfaction, and optimal clinical outcomes, whereas affectively-defined sympathy can lead to career burnout, compassion fatigue, exhaustion, and vicarious traumatization” (Hojat et al., 2009, p. 1189). Empathy is further defined as a positive linear relationship in relation to clinical outcomes, whereas sympathy identifies with an “inverted U” shape on the graph. This visual representation mimics that of anxiety and performance; that is, anxiety/sympathy can be beneficial, but performance/clinical outcomes began to decrease as these levels reach a critical point (Hojat et al., 2009).

Further, for empathy to be clinically effective, there must be an element of caring expressed; that is, efficacious empathy seeks to understand a patient’s perspective, communicate and discuss suffering in familiar terms that resonate with the patient, leave personal bias, emotional assumptions, and identification with the patient aside, and seek a “sustained emotional investment in an individual’s well-being, characterized by a desire to take actions that will benefit that person” (Weiner & Auster, 2007, p. 126). For empathy and caring to exist simultaneously, the focus must be on the patient and not the physician’s emotions (Weiner & Auster, 2007). Some that separate empathy and caring argue that caring, alone, can “inevitably lead to engagement on a human level, transcending professional relationship,” yet each offered example by these researchers involve a physician encountering a patient in distress that requires the understanding of emotion, communicating that understanding back to the patient in a compassionate way, and working on solutions to solve the dilemma (Weiner & Auster, 2007, p. 127).

Weiner and Auster debate whether “caring” can exist without empathy, and they argue that physician emotion may dictate empathy and poorly impact the direct care a

patient receives; however, these researchers indicate that caring is based in proper questioning, active listening, bold actions, non-judgmental experiences, and being fully open to another's perspective (2007). These components of engagement with a patient are direct aspects that Hojat et al. and others believe are teachable to students and residents to provide empathetic, compassionate care (Hojat et al. 2002; 2004; 2009). In reflecting upon Mercer and Reynolds's definition, along with input from Hojat et al., empathy is a cognitive processing of affect that is teachable via skills that seek to understand a patient's experience, communicate that understanding, and alleviate suffering that has been expressed and understood.

### **The Impact of Empathy**

With a clear definition of empathy and an understanding of the concept's role in healthcare, it is important to understand the significance and need for a healthcare-force practiced in empathetic care and communication. This subject began to be explored in the late 1980s and early 1990s as a means to improve patient understanding and outcomes. In the review of this literature, patient-centered approaches aid in increased satisfaction, improved compliance, good rapport with patients, and resolution concern, anxiety and worry (Ong, et al., 1995), while poor communication and decreased empathy lead to dissatisfaction, poor understanding of a diagnosis, less compliance, lengthier hospital stays with delayed recovery (Fallowfield, 1992).

Patients have a higher level of satisfaction when met with patient-directed behaviors such as "listening, letting the patient ask questions, giving information, and explaining the biomedical aspects" and the "ability to respond to the patients' emotions" (Zachariae et al, 2003); these empathetic physicians were also able to increase the self-

efficacy, knowledge, and decision-making ability in their patients with cancer due to these elements compared to previous outcomes (Zachariae et al., 2003). In a review of 25 randomized trials regarding empathy in consultation services, it was concluded that “one relatively consistent finding is that physicians who adopt a warm, friendly, and reassuring manner are more effective than those who keep consultations formal and do not offer reassurance” (Di Blasi et al., 2001, p.757). Theorists attribute that empathy impacts the way that patients view their disease; when threatened with illness, cognitive and emotional factors take control, and physicians practicing empathetic, compassionate care can alleviate concerns and improve outcomes by influencing beliefs and lowering unhelpful patient emotions (Di Blasi et al., 2001). It is also understood that patients must perceive the physician as empathetic for positive health outcomes to occur. Empathetic physicians must possess the ability to communicate compassion, warmth and understanding within the therapeutic alliance to reach treatment goals (Rakel, et al., 2011).

In a 2011 study of empathy and clinical outcomes in diabetic patients, researchers found that physicians who were perceived to be more empathetic were associated with patients who had better control of their blood glucose and cholesterol levels over time, while those with lower empathy scores had a statistically significant population of patients with poor outcomes; analysis showed that these results were highly dependent upon physician empathy regardless of physicians' gender or age and participants' age or health insurance type (Hojat et al., 2011). A similar study in 2003 discussed the impact of communication in helping patients with low levels of health literacy control their blood glucose; using an interactive communication loop, physicians corrected lapses in recall

and understanding, reviewed health beliefs, reinforced goals of care, and were more likely to have an interactive dialogue with patients (Schillinger, et al., 2003). Researchers have hypothesized that these changes in health may be related to “greater empathy in the physician–patient relationship enhances mutual understanding and trust between physician and patient, which in turn promotes sharing without concealment, leading to better alignment between patients' needs and treatment plans and thus more accurate diagnosis and greater adherence” (Hojat et al., 2011).

Studies revealed that patients use less pain medication when recovering from surgery, control blood glucose better in diabetes mellitus, had improved outcomes after a cancer diagnosis, and have better compliance and lower blood pressures with reduced stress when understood by a caring, competent physician (Zachariae et al., 2003). In another study, patients with the common cold reported less severity, shorter duration, and objective measures of Interleukin 8 and neutrophils were significantly decreased when they viewed their physician as kind and empathetic (Rakel, et al., 2011). Patients also have higher likelihood to report symptoms and concerns, offer more illness-specific information, feel more enabled and empowered, and have reduced emotional distress with an increased quality of life (Beckman & Frankel, 2003; Coulehan et al., 2001; Kim, Kaplowitz, & Johnston, 2004; Neumann et al., 2007; Neumann et al., 2011).

Other sources indicate that the higher a provider's perceived empathy, there are fewer medical errors and fewer malpractice claims (Hickson, 2002; Hickson, et al., 2007). Found in their comprehensive study and literature review, lawsuits were not “predicted by patient characteristics, illness complexity, or even physicians' technical skills. Instead, risk appears related to patients' dissatisfaction with their physicians' ability

to establish rapport, provide access, administer care and treatment consistent with expectations, and communicate effectively” (Hickson, 2002, p. 2951). The physicians with the highest number of lawsuits were those providers who had the most complaints related to communication, ‘bed-side manner,’ and level of patient-perceived respect; interestingly, but possibly related to the invasive nature of practice, surgeons and technical-based specialties, providers with traditionally low empathy scores, were the most likely to experience a malpractice lawsuit (Hickson, 2002; Hickson, et al., 2007).

Empathetic physicians also have higher levels of happiness and improvements in well-being and attitudes. Physicians with high levels of distress, burnout, and poor quality of life due to work-life balance can improve their stress levels by “being present” with the patient and increasing mindfulness (Krasner et al., 2009). Burnout and physician stress could be alleviated through training aimed at attention, awareness, and communication skills; this higher capacity for empathy and patient-centered care, proved to have beneficial effects for both patient and physician (Krasner et al., 2009).

### **Measuring Empathy**

In their landmark study with medical students, Hojat et al. al discovered that the actual measurement of empathy, especially in healthcare, lacked a sound, validated instrument that could determine correct levels (Hojat et al. 2009). Consequentially, these researchers identified there was no sound instrument that had been validated in healthcare workers, specifically (Hojat et al. 2009). These researches developed a reliable, valid scale to measure medical student and physician empathy that related directly to healthcare, in general. Spanning several years, the Jefferson Scale of Physician Empathy (JSPE) was developed to measure “perspective taking, compassionate care, and the



ability to stand in the patient's shoes," with dedicated survey questions to each of these domains (Hojat et al. 2009). This developed scale consists of three versions: one for physicians and other practicing health professionals (HP-version), one for students (S-version) and one for health professional students (HPS-version). The HP version can be administered to other health professionals who are involved in patient care, as well. Each has minor modifications in wording to remain valid for the target populations being surveyed (Hojat et al., 2002; 2009). Several studies have validated this scale, the first of which was completed in 2002. Hojat et al. (2002) offered a definitive study that cemented "the construct validity, test-retest, and internal consistency reliabilities" (p 1568), along with a clear definition of empathy, a specific description of the JPSE, and a discussion regarding the effects of the changing economics of medical practice and healthcare systems that can alienate the physician-patient relationship.

### **Empathy in Medical School**

In the review for literature related to empathy in medical school training programs, the findings were diverse with multiple research designs, varying scales and surveys used, differing sample sizes, and inconsistent findings between studies. In addition, international studies on empathy have shown differing findings compared to American educational experiences. These findings may be related to cultural factors, traditional expectations, or general differences in curriculum, training, or healthcare models (Hojat et al., 2009). One study showed that offered training courses "designed to enhance the physicians' emotion-handling skills" were "associated with reduced emotional distress in patients" (Zachariae et al., 2003), but, as noted, empathy training varies across the world and is not explicitly defined in curriculum standards here in the

United States (LCME, 2015; ACGME, 2015). Because of the large variance in studies, training differences, and diverse educational programs, this literature review focused on empathy studies within the United States after the year 2000.

Multiple cross-sectional and longitudinal studies have shown that empathy decreases as one matriculates through medical school and residency training programs (Hojat et al., 2004; Hojat et al., 2009; Newton et al., 2000; Newton et al., 2008; Chen et al., 2007; Stratton et al., 2008). These studies have used various empathy scales and have shown similar findings. In their systematic literature review of the existing data related to empathy in medical school, Neumann et al. found that all but one of the studies reviewed showed “significant declines in empathy as training progressed,” (2011, p. 1008) usually when students began interactions with patients. This international study was noted to have specific issues related to sample size and inconsistent findings from a previous study; it also did not represent a United States population of medical students (Neumann et al., 2011). In all studies reviewed, empathy declined as students progressed through school, with the vast majority of studies indicating the largest empathy decrease when students began clinical interactions (Chen et al., 2007; Hojat et al., 2004; Hojat et al., 2009; Newton et al., 2000; Newton et al., 2008; Stratton et al., 2008).

Demographic data was an important indicator for empathy decline in some studies. Specifically, in a large longitudinal study, performed by researchers who developed the JSPE, it was found that empathy scores dropped significantly during the third year of medical school and found clear-cut gender and specialty differences within this population. In all years of the study, women were significantly more likely to have higher empathy scores versus their male cohort, in addition to those pursuing “people-

specific” specialties (Hojat et al, 2009). Hojat and his research colleagues defined “people-specific” specialties as those individuals going into fields that deal with people directly, which included family practitioners, internal medicine, pediatricians, emergency room physician, psychiatrists, and obstetric-gynecologists. The comparison group of “technology-specialties” included anesthesiologists, pathologists, radiologists, and surgical specialties (2009). The decline in technology-related specialties was more than double that in patient-centered specialties (Hojat et al., 2009).

While gender-specific influences and career choices were also highlighted by Chen et al. (2007) and Stratton et al. (2008), many studies indicate varying findings related to gender and age impact. Specialty choice was the most indicative of empathy score in several studies. It was noted that whereas gender and age showed mixed results in various studies, numerous studies have supported the finding that specialty-choice may be a determinant related to empathy (Neumann et al., 2011). This finding was also seen by (Newton et al., 2000; Newton et al., 2008) using the Mehrabian’s Balanced Emotional Empathy Scale; those students choosing “non-core,” technology-based specialties had significantly lower empathy scores with less influence of gender. Hojat et al. (2004) also indicated no connection between gender and empathy in an earlier study that examined similar demographic relationships as their 2009 study.

These findings put to question the idea of identifying students that may have higher likelihood of empathy decline. Students with lower empathy scores at the beginning of medical school (i.e. men pursuing technology-based specialties) decreased the most when compared to students with higher empathy scores; this indicates the potential of vulnerable, “at-risk” medical students who can lose their sense of empathy

more easily than other student counterparts (Hojat et al., 2009). Of note, however, Newton et al. (2008) highlighted a population of “at risk” students, or those with the largest decrease in empathy during medical school, as females going into technology or non-patient centered specialties.

There has been little focus on actual training and education and empathy. One study noted there is no connection between academic performance and empathy, with empathy and emotional intelligence being separate from knowledge and tests scores (Hojat et al., 2004). Other studies have shown that medical students are not taught quality communication skills, a key component of empathy, while in medical school. These studies indicate that communication is a key clinical skill needed to perform the highest levels of care for patients. Specifically, the ability to communicate develops relationships with patients that can help them cope with negative information, help physicians detect distress or lack of comfortableness, and create clinic scenarios with less depression, anxiety, and increased self-efficacy (Zachariae et al., 2003), yet this is not being accomplished in American medical schools.

### **Empathy in Residency**

Data also supports a decline in empathy during residency in American training programs. These studies, mostly completed in general medicine/internal medicine programs using validated self-assessment scales, indicated that “enthusiasm at the beginning of internship soon gave way to depression, anger and fatigue” (Bellini, 2002, p. 3143), low energy and vigor (Bellini & Shea, 2005), and less compassion towards patients; as noted during the medical school literature review, these studies used a myriad of scales and surveys and had varying designs and findings, but all indicated empathy

declines throughout training (Bellini, 2002; Bellini & Shea, 2005; Mangione et al., 2002; Rosen et al., 2006; Shanafelt et al., 2005; West et al., 2006; West et al., 2007).

Residency empathetic studies indicate that high levels of distress may be related to lower empathy scores, especially during the internship year. While this data shows depression, fatigue and stress can eventually be managed during residency, empathy scores remain low throughout time in the training program; however, in some residents depression and fatigue levels never recovered (Bellini & Shea, 2005). Specific studies indicated that as residents progress through their specialty training, empathy levels decline as stress and burnout increase (Bellini, 2002; Bellini & Shea, 2005; Rosen et al., 2006; Shanafelt et al., 2005; West et al., 2006). Themes of these studies indicated poor sleep, exhaustion, burnout, low quality of life, and depression were common in residency and could potentially moderate a resident's ability to provide empathetic care (Bellini, 2002; Bellini & Shea, 2005; Rosen et al., 2006; Shanafelt et al., 2005; West et al., 2006). Residents with high mental well-being, social support, and self-care had higher levels of empathy (Shanafelt et al., 2005).

West (2007) noted that in residents, medical knowledge and skills did not correlate to empathy scores; in fact, as medical knowledge increased throughout training, empathy declined significantly. It was also noted that residents that had higher levels of distress, burnout and fatigue perceived themselves to make more errors, despite evidence to the contrary. These residents with high levels of self-perceived medical errors and self-reported high levels of stress all had corresponding low levels of empathy (West et al., 2006).

Empathy training is becoming more common in residency education with new ideas in creating an empathy-based curriculum. One such study indicated that adding modules into residency education increased quality of care in medicine through these curriculum additions (Riess et al., 2012). Evaluating the potential to “teach” empathy, Riess and colleagues enrolled residents at Harvard and assessed patient’s perception of the doctor’s ability to show care and compassion and understand patient concerns” (Riess et al., 2012). These residents were divided into a control and experimental group. The findings of this study indicated that residents, evaluated by a second set of patients, showed significant improvements in empathetic behavior when they had undergone an empathy-focused, neuroscience-based curriculum; control group residents had worse empathy scores after this study (Riess et al., 2012).

Table 1: Empathy Studies during Medical Training

Author	Study Design	Scales	Results
Bellini, 2002	Longitudinal survey of residents (4 measurement timeframes); n = 60 (retention varied by timeframe)	IRI, POMS	Noted progressive decline in empathy during training; trends of increased depression, fatigue, anger, and personal distress
Bellini & Shea, 2005	Longitudinal survey of residents (6 measurement timeframes) across 3 years; n = 60 (retention varied by timeframe)	IRI, POMS	Progressive decline in empathy with no recovery of scores; noted distress early in residency that returned to baseline near the end; residents did not recover fatigue, depression by end of residency

Author	Study Design	Scales	Results
Chen et al., 2007	Cross-sectional study of medical students before school entry and after each year; n = 658 (91% retention)	JPSE-S	Steady decline in empathy in students from beginning of medical, which large decrease between years 2 and 3; higher empathy is patient-center specialties
Hojat et al., 2004	Longitudinal study of medical students during year 3; n = 125 (56% retention)	JPSE-S	Empathy declined over this year with no association with gender/age; exam scores did not correlate with empathy
Hojat et al., 2009	Longitudinal study in medical students; n = 456 (78% retention)	JPSE-S	Empathy declines in medical students in the third year of medical school (clinical training); trends related to gender and specialty-choice noted.
Mangione et al., 2002	Cross-sectional and longitudinal of residents, grouped by age; n = 98 (84% retention)	JPSE-S; "humanistic qualities"	Statistically insignificant findings, but trends in decline of empathy in early residency; also determined trends connecting humanistic qualities to empathy
Newton et al., 2000	Cross-sectional study of medical students; n = 548 (unreported retention)	BEES	Empathy and specialty choice; showed a decline, especially in men; patient-centered career choices indicated more empathetic student

Author	Study Design	Scales	Results
Newton et al., 2008	Longitudinal study on medical students (4 cohorts); n = 419 (78% retention)	BEES	At admission, similar empathy scores; these scores declined progressively with largest decrease as students transitioned to clinical years. Higher empathy noted in patient-centered career choices and females, although females going into technology-based careers had the largest decline in empathy.
Riess et al., 2012	Longitudinal study of residents (patient-rated empathy scores); n=99	CARE Measure	Patient-rated empathy scores increased in residents who had undergone empathy training compared to a control group.
Rosen et al., 2006	Longitudinal study in residents; n = 47 (80% retention)	Epworth Sleepiness Scale; depression (BDI), IRI, and MBI	Empathy declined throughout study; residents had increased levels of poor sleep depression and burnout.
Shanafelt et al., 2005	Cross-sectional study in residents; n= 50 (50% retention)	Quality of Life, IRI, wellness strategies/ work-life balances	Higher empathy scores seen in residents with higher mental well-being



Author	Study Design	Scales	Results
Stratton et al., 2008	Cross-sectional study of medical students (first and third year); n = 64 (69% retention)	IRI, TMMS (EI)	Empathy and emotional intelligence decreased during medical school, but remained higher for females; distress increased as one progressed.
Thomas et al., 2007	Cross-sectional study of 3 medical facilities, surveying medical students; n = 545 (50% retention)	IRI, MBI, Quality of Life, 2 depression screening questions	Burnout had strongest effect on empathy decline, while higher quality of life was protective; medical students entered training with highest levels of empathy compared to disciplines, but this dramatically decreases throughout training.
West et al., 2006	Longitudinal study in residents; n = 184 (84% retention)	Self-Perceived medical errors, Quality of Life, MBI, depression, IRI	Medical errors were related to quality of life, burnout, depression, and stress; increased levels of distress and lower empathy scores increased chance of self-perceived medical errors.

Author	Study Design	Scales	Results
West et al., 2007	Longitudinal study in residents; n = 55 (73% retention)	ITI and IRI	Medical knowledge increased throughout training, but empathy declined; no correlation or connection between knowledge and empathy

### Effects of Career and Educational Demands

Healthcare has entered a time where there is an increasing focus on the science of medicine at the detriment of the art. Students and residents have reported entering intimidating environments, increasing levels of stress and distress, depression, sleep deprivation, harassment, and other negative factors that lead to poor career satisfaction and less compassion in medicine (Neumann et al., 2011). There is a fear of making mistakes, an increasingly demanding curriculum that continues to grow, multiple time pressures, and stressful training environments. In addition, the bureaucracy of medicine and the idea of the medical totem pole, where students rank below residents who rank below attending physicians, has created a culture where individuals cannot speak up, those at the top set the attitude of the clinical experience, and empathy and humanism may seem like a waste of time in the effort to get work done (Hojat et al., 2009).

With the major decrease of empathy in medical school and residency, multiple theories or possible contributions were attributed to the erosion. Hojat and colleagues (2009) discuss the notion of the “battered-child” or the “heart-hardening” that develops while in medical school and residency. With few role models, increased reliance on EMR and computer diagnosis, the sheer volume of medical information and education, healthcare market changes and governmental influences, constraints on time, patient and work environments, and little consistency in training on empathy or its relation to clinical

outcomes and evidence-based medicine, the healthcare providers become stressed to the point of needing “re-humanization” (Hojat, et al., 2009). One study found that burnout progressively develops during medical education but can be ameliorated with good support and stress reduction programs (Santen, 2010). Burnout continues to increase through training and causes detrimental effects on the physician-patient relationship due to an “increasingly stressful medical workplace brought on by changes in contemporary medical care that include disparities in access and quality, inequities in compensation, and increased work demands with decreased control over multiple aspects of daily work life” (Williams et al., 2009, p. 4).

Formal research regarding stress in medical students is dated, limited, and controversial. In one study, 10% of medical students met the DSM-V criteria for depression (Stecker, 2004). In another, Moffatt et al. (2004) studied first year medical students using the General Health Questionnaire (GHQ-12) at the start and end of the academic year; this study found that the level of stress more than doubled over the course of the year in this cohort. In a review of 40 articles, researchers found a high prevalence of affective disorders among medical students, with “levels of overall psychological distress consistently higher than in the general population and age-matched peers by the later years of training” (Dyrbye et al., 2006, p. 359). Later studies Dyrbye et al. noted that stress, burnout and depression in medical students led to lower quality of life (2006), worse professionalism (2010), thoughts of leaving medical school (2010), higher rates of suicidal ideation (2008). These findings were supported by other studies, as well. Chang et al. (2013) noted increased levels of suicidality in students that were stress and burnt out, and Santen (2010) found connections between well-being and burnout. In a 2013

study, Chang et al. utilizing the PRIME-MD and Maslach Burnout Inventory noted that students had the highest level of depression and burnout in their third year of medical school. Over 60% of students surveyed had depressive symptoms, while 55% were noted to be burnt-out on one of the three sub scales of the MBI. Data, however, is limited in regard to what caused these higher levels of stress, depression and anxiety.

In one commentary regarding stress research in medical students, one educator concluded “...it appears that there is some indication that medical students experience more stress than non-students of similar ages, but not necessarily more than other student groups” (Adams, 2004, p. 464). Some stress was seen as beneficial with its role as an “impetus that many people need to learn and achieve targets” (Adams, 2004, p. 464), especially when a student is taught to cope with the demands and has better social support, but with the limited research and evidence, medical schools “should be clear about what they are trying to achieve when instigating programs to reduce stress in students and should demand that any intervention programs are based on sound theory and subject to robust evaluation” (Adams, 2004, p. 464).

In several studies, burnout is a result of these career and educational demands; high levels of burnout have been documented in academic physicians as well as private physicians, with both being linked to changes in healthcare and demands of the job (Deckard, Hicks, & Hamory, 1992; Ramirez et al., 1995)

### **Defining and Understanding Burnout**

The concept of burnout has been discussed at length in the literature, and in this thesis, it has been limited to the construct and test of that construct developed by Maslach and Jackson in the Maslach Burnout Inventory (MBI). Burnout is defined as a

psychological phenomenon that occurs as a result of stress and encompasses three domains: feeling of personal accomplishment, emotional exhaustion and depersonalization (Maslach & Jackson, 1986). As summarized by Williams et al. (2009), each has a significant impact individually on an individual's feeling of burnout and as a whole, especially within healthcare because burnout continues to increase through medical training and cause detrimental effects on the physician-patient relationship with negative health outcomes for both involved in that relationship.

Personal or professional achievement or accomplishment reflects one's personal perception of conquering one's goals related to their work and a sense of accomplishment or success in their career (Maslach & Jackson, 1981; Maslach & Jackson, 1986; Williams et al., 2009). High levels of burnout usually result in low perceptions of accomplishment or valuing one's role in their service industry.

Emotional exhaustion characterizes a lack caring about things, the service provided, or people previously considered important per Williams et al. (2009); especially within healthcare, this is reflected in physicians that experience a chronic state of physical fatigue and emotional distress imparted on their daily lives through personal and professional demands, in addition to the continuous stress of their career. Emotional exhaustion is effectively a depletion of affective reserves from emotional overextension and exhaustion from one's work (Hobfoll, 1989; Maslach & Jackson 1986).

Theoretically, emotional exhaustion can be linked to the theory of the Conservation of Resources (COR), which can include physical, social and psychological resources; in stressful careers, like healthcare, chronic depletion of resources like self-worth, autonomy, social support, time, and focus on non-patient care can affect vulnerable

physicians and trainees (Hobfoll, 1989; Hobfoll, 2001; Williams et al., 2009). As noted, burnout can be negative predictor of patient care quality, especially in the realm of overwhelming emotional exhaustion (Shirom, Nirel, & Vinokur, 2006). There is also a strong correlation between emotional exhaustion, depletion of emotional resources, and depersonalization (Williams et al., 2009).

Depersonalization has been defined as “a negative, callous, or excessively detached response to other people who are usually the recipients of one’s service or care” (Moore, 2000, p. 335). Depersonalization refers to an emotional detachment from others and can develop as a defensive response to emotional exhaustion (Williams et al., 2009). Hobfoll notes in the fourth corollary of the COR theory “those who lack resources are likely to adopt a defensive posture to conserve their resources” (2001, p. 356), meaning individuals began to conserve resources when chronically depleted and emotionally drained. “That is, as physicians become increasingly emotionally exhausted and command fewer resources, they cope by being increasingly careful about how they invest their resources at work (Williams et al., 2009, p. 7). This corresponds to earlier models of burnout and depersonalization (Leiter & Maslach, 1988), and highlights that as physicians experience more stress in their jobs through career demands, some respond by depersonalizing interactions with patients to conserve limited emotional, physical, and mental resources, becoming more withdrawn and cynical in their profession (Williams et al., 2009). Specific to this, in 2008, Halbesleben and Rathert found a positive correlation in their research that physicians that were more emotionally exhausted had poorer relationships with patients, identified as depersonalization; in effect, patients that perceived this hostility or distance within their physician-patient relationship had poorer

outcomes (Halbesleben & Rathert, 2008) that was connected to poor physician communication (Williams et al., 2009).

In the theory of the Conservation of Resources (COR), individuals that feel more autonomous, have low task complexity, have supervisory support, and an ‘internal locus of control’ tend to have lower levels of burnout compared to individuals with poor autonomy, higher career demands, and low emotional regulation due to work intensity (Hobfoll, 1989). Moore’s “Attributional Model of Work Exhaustion Consequences” (2000) furthers the connections between the three aspects of burnout and external/internal loci of control.

Specifically, Moore (2000) identifies antecedents and consequences to emotional exhaustion, summarizing previous research and identifying her framework; this framework adds independent and dependent attitudinal reactions with casual searches for internal and external causes for workplace unhappiness, leading to burnout. The framework identifies organizational problems as the precursor or antecedents to emotional exhaustion, with little to no effects of personal factors, individual variables or demographics influencing burnout (Moore, 2000). Antecedents to emotional exhaustion identified include conflict, ambiguity, and overload in work roles, interpersonal conflict in the workplace, and lack of autonomy and rewards; consequences of this burnout include decreased job satisfaction, reduced self-esteem (a component of depression and personal accomplishment), reduced organizational commitment, increased turnover, and depersonalization (Moore, 2000.)

## Measuring Burnout

Maslach and Jackson (1981) defined the concept of burnout as a continuous variable of physical, mental and emotional exhaustion with multiple degree ranges based on emotional distress (1981). In this original research and development of this scale, it was noted that burnout has significant effects on job performance, satisfactions, and turnover. Created in 1981, the Maslach Burnout Inventory (MBI) was developed to measure the level of burnout in the human services industry. As noted, in the primary analysis of the inventory, three subscales emerged related to emotional exhaustion, depersonalization, and personal accomplishment (Maslach & Jackson, 1981). The first two themes have a positive correlation to burnout and stress, while personal accomplishment is inversely related (Maslach & Jackson, 1981). As described by Rafferty et al., the “emotional exhaustion subscale assesses feelings of being emotionally overextended and exhausted by one's work” (1986, p.488). The depersonalization subscale was classified as a sense of “unfeeling and impersonal response toward recipients of one's service,” while personal accomplishment was described as “feelings of incompetence and lack of achievement in one's work” (Rafferty et al., 1986, p. 488). This burnout scale reports the emotional toll, cynicism, and development of negative feelings in those individuals that help people dealing with psychological, social or physical ailments. Of note, the development of this tool was tested and validated multiple times in health and service occupations, including physicians (Maslach & Jackson, 1981).

In one particular study, Rafferty et al. (1986) discussed the scale and its validity within family practice resident physicians. Residents were given a packet of materials that included the MBI and assessments of self-reported burnout (9-point Likert scale



regarding personal burnout). Each resident was also evaluated on the same Likert scale by the program director and psychologist within the department. The study found “compared with the MBI normative sample, these family practice physicians reported moderate to high levels of burnout on both frequency and intensity dimensions of all MBI subscales. These findings are consistent with expectations for physicians with heavy responsibilities for direct patient care, as predicted by Maslach and Jackson, and lend support for the validity of the MBI” (Rafferty, 1986, p. 490). Particularly in this study regarding the 3 main subscales, on both the MBI and self-report Likert scales, residents reported high levels of emotional exhaustion and depersonalization, identifying high sensitivity and correlating to other physician self-reports; there was also a significant emphasis on poor job satisfaction and low personal accomplishment (Rafferty et al., 1986). In addition, the evaluation from the program director found consistent findings to the MBI scale of high emotional exhaustion and low personal accomplishment; the psychologist’s findings highlighted high levels of emotional exhaustion (Rafferty et al., 1986). This highlights that the MBI was able to capture visible burnout characteristics like emotional exhaustion, but, with valid use, the MBI identified other aspects of burnout not so readily apparent.

The inventory has been validated multiple times in recent studies outside the original researcher in other healthcare areas. This literature review focused on post-millennium publications specific to healthcare and physician burnout that could represent a similar context of career demands, technological advances, and stress in the population study. The MBI has been validated by these studies, indicating accurate and reliable findings related to 3 specific subscales surveying for emotional exhaustion,

depersonalization, and personal accomplishment (Benevides-Pereira & Neves-Alves, 2007; Embriaco et al., 2007; Kalliath et al., 2000; Rohland, Kruse, & Rohrer, 2004; Schaufeli et al., 2001). There was high commonality in a variety of physicians from numerous specialties that reported some level of burnout in at least one of the subscales of the MBI (Benevides-Pereira & Neves-Alves, 2007; Embriaco et al., 2007; Kalliath et al., 2000; Rohland, Kruse, & Rohrer, 2004; Schaufeli et al., 2001). As summarized by Moore, the MBI “is a generally accepted and psychometrically sound method for assessing job burnout in human service professions” (2000, p. 325).

### **Measuring Depressive Symptoms**

The Patient Health Questionnaire-9 (PHQ-9) is a brief measure of depression severity; specifically, the PHQ-9 is a depression scale, which scores each of the nine depression criteria in the Diagnostic and Statistical Manual of Mental Disorders, IV (DSM-IV) as “0” (not at all) to “3” (nearly every day) for a maximum score of 27 (Kroenke, Spitzer, & Williams, 2001). A tenth question is also asked, "How difficult have these problems made it for you to do the work, take care of things at home, or get along with other people?" to measure functional impairment and show correlation between quality of life, functional status, and health care usage measures (Kroenke and Spitzer, 2002). In the original validity and reliability study conducted in 8 primary care and 7 obstetrical clinics, PHQ-9 scores greater than 10 had a sensitivity of 88% and a specificity of 88% for Major Depressive Disorder (Kroenke, Spitzer, & Williams, 2001). The PHQ-9 relies on total score ranging from 0 to 27 and is classified according to depression severity: 0-4 none, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-27 severe

The internal validity of the PHQ-9 produced Cronbach alphas of .86 (Ob-Gyn studies) and .89 (primary care studies), and external validity was achieved by replicating the findings between two large, diverse samples: 3,000 primary care patients and 3,000 obstetrics-gynecology patients (Kroenke, Spitzer, & Williams, 2001). In 580 structured interviews by trained mental health professionals, DSM-IV criteria consistency was established, showing that individuals who scored in the moderate range ( $\geq 10$ ) on the PHQ-9 were 7 to 13.6 times more likely to be diagnosed with major depression by a mental health professional; individuals scoring in the “none” range ( $\leq 4$ ) on the PHQ-9 had a less than a 1 in 25 chance of having clinical depression (Kroenke, Spitzer, & Williams, 2001). Finally, construct validity of the PHQ-9 was established by identifying an association with functional status, disability days, symptom-related difficulty, and utilizing health care services (Kroenke, Spitzer, & Williams, 2001).

Some researchers have commented on the severity scores within the PHQ-9, comparing it to other scales that have higher cutoffs for depression. Specifically, in one study, the PHQ-9 was compared to a similar scale, and both were found to be reliable, have convergent validity, and respond to change (treatment); however, commentary reflected on the differences in severity categorization and the emphasis severity plays in clinical decision-making and treatment (Cameron et al., 2008). This question of severity categorization validity was addressed in a successive study. Similar findings were found in the primary validity and reliability studies completed in 2001. These findings were conducted within a psychiatric population studied and supported the PHQ-9 as a valid, reliable depression severity scale. Specifically, internal consistency produced a high Cronbach alpha ( $\alpha=.87$ ), and the study used a higher cut-off severity ranking than the

original validity study ( $\geq 13$ ). The PHQ-9 demonstrated sensitivity (.83) and specificity (.72) that did not vary between genders, meeting DSM-V criteria for depression consistently (Beard et al., 2016). In other comparison studies, the PHQ-9 was found to valid and reliable with the added benefit of brevity and specificity to depression criteria from the DSM-IV/DSM-V compared to other scales (Milette et al., 2010; Titov et al., 2010).

### **Relationship between Stress, Burnout, and Depression on Empathy**

Research regarding the impact of stress and burnout on empathy is limited; however, in the paucity of literature, there have been key findings. Larson and Yao reported “the cognitive and emotional effort involved in empathy strain the already overextended psychological resource physicians have, contributing to burnout and even causing emotional pain for some” (2005). This is confirmed by Shanafelt et al. (2012), who by utilizing the Maslach Burnout Inventory, (MBI) noted the highest level of burnout was seen in those physicians at the “front line of care access,” which includes internists, family physicians, and emergency department providers. The same study noted that physicians were more likely to be burnt out and dissatisfied with work-life balance compared to the general population (Shanafelt et al. 2012); an earlier study by Shanafelt et al. (2002) found that three-quarters of internal medicine residents exhibited burnout symptoms and reported more suboptimal care. Burnt-out trainees and physicians have significant impacts on service quality and job performance (Halbesleben & Rathert, 2008).

Higher degrees usually confer protective factors towards burnout, yet this phenomenon is not seen in medical doctors (Dyrbye et al., 2014). Stress and burnout have

been noted to erode professionalism and promotes a negative culture of self-care (Wallace & Lemaire, 2009), influences the quality of care (Dyrbye, 2010), increases medical errors (Shanafelt et al., 2010), poor patient care (Shanafelt et al., 2002), promotes early retirement (Shanafelt et al., 2014), leads to broken interpersonal relationships (Balch, 2011), leads to higher levels of substance abuse (Oreskovich, 2012; Jackson et al., 2016), and increases suicidality (Dyrbye et al., 2008). In 2006, West specifically noted the feeling of increased distress in residents causing increased medical errors and lower levels of empathy (2006).

In a follow-up study, Shanafelt et al. (2014) repeated a 2012 study using the MBI and found that more than 55% of physicians reported burnout in the three categories, with their findings reflecting a larger trend in healthcare: physicians cutting hours or leaving the profession altogether with a national shortage of physicians currently. The same study noted that feelings of stress and burnout lead to depressive symptoms and impacted the doctor-patient relationship negatively.

Notably, no data connecting poor well-being and stress to lower clinical knowledge has been identified. In one particular study with medical residents, there was a limited association between medical competence according to ACGME milestones and resident well-being; however, these same researchers identified that empathy declined in congruence with level of self-reported well-being (West, Shanafelt, & Cook, 2010). In a congruent study, multiple dimensions of quality of life and resident well-being indicated no effect on clinical performance or medical knowledge as judged by self-reports and reports from other healthcare team members (Beckman et al., 2012). These researchers specifically commented on empathy and burnout in their study and identified a key

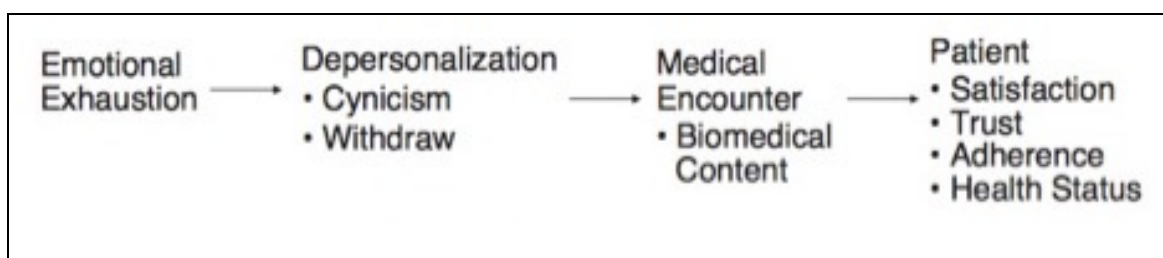
component seen in observational reports from supervisors. As in other studies, residents that were perceived to more empathetic were deemed to be better physicians and preferred by their patients; however, supervising residents “perceived interns with higher burnout to have better communication with patients, families, allied health, and other providers” (Beckman, et al., 2012, p. 328). They explained and theorized that these empathetic doctors with good clinical knowledge could seem counterintuitive, but “many physicians who experience burnout may sustain high levels of professional achievement for long durations. Furthermore, the most dedicated physicians might be more likely to place professional duties—including the time-consuming task of effectively communicating with patients, family members, support staff, and colleagues—above all other aspects of personal life” (Beckman, et al., 2012, p. 328). These physicians then become increasingly burned out and, eventually, lose the compassion and empathy that their patients comment on.

During the review of literature, no studies were found that examined the relationship between empathy, stress and burnout with validated scales designed for this specific population; specifically, a study design that utilized self-report surveys that were developed for use in medical trainees.

### **Previous Theoretical Framework: Connecting Burnout, Depression and Empathy and Patient Care**

Williams et al. theorize that emotional exhaustion impacts depersonalization, identified in the Maslach Burnout Inventory, and in turn affects physician communication and therefore patient outcomes (Figure 1) (2009). Specific to this theoretical framework, is Hobfoll’s Conservation of Resources (COR) Theory that reflects upon resource use and

relationship to stress (1989). Resources are defined “as those objects, personal characteristics, conditions, or energies that are valued by the individual or that serve as a means for attainment of these objects” (Hobfoll, 1989, p. 516). Williams et al. summarizes resource loss in 3 ways: “(1) loss of resources, (2) threat to resources, or (3) inadequate return on resource investment” (Williams et al., 2009, p.6). With poor resource return or chronic depletion, a physician can become more emotionally exhausted, leading to higher depersonalization, compounding into burnout and eventual poor health outcomes (Williams et al., 2009).



*Figure 1: Williams et al. (2009) Conceptual Model/Theoretical Framework*

Current research identifies some merit to this proposed theoretical model, but as noted in Halbeselen and Rathert’s study (2008) that much of the burnout research is focused on antecedents and has failed to identify specific mechanisms leading to poor patient outcomes. Williams et al. (2009) identified the negative impact depersonalization has on communication between the doctor and the patient. This theoretical framework highlights that physician burnout may lead to suboptimal communication behaviors resulting in poor health outcomes. This framework also coincides with Moore’s Attributional Model of Work Exhaustion Consequences (2000), identifying specific consequences resulting from emotional exhaustion at work for physicians. Using these theories, Williams et al. (2009) theorized that once a physician has become emotional exhausted, depersonalization is a defense mechanism and the focus of medical

appointments is no longer patient –centered, but “biomedical” in nature. They note, “engaging in biomedical communication consumes fewer resources than engaging in both biomedical and psychosocial communication” (Williams et al., 2009), likely leading to less empathetic, compassionate care as a response to physician burnout or depression.

### **Summary**

Medical schools, residency training programs, and fellowships have been tasked with developing well-rounded physicians; that is, doctors that are capable of providing evidence-based, up-to-date care in a compassionate, empathetic manner (ACGME, 2015; LCME, 2015; Wolfe, 2001). Empathetic care has been identified as an impetus in healthy patient outcomes ranging from increased compliance, improved communication and understanding, better healing, fewer medical errors, less malpractice claims, and happier patients and physicians (Beckman and Frankel, 2003; Coulehan et al., 2001; Di Blasi et al., 2001; Hickson, 2002; Hickson et al., 2007; Hojat et al., 2011; Kim, Kaplowitz, and Johnston, 2004; Krasner et al., 2009; Neumann et al., 2007; Neumann et al., 2011; Rakel, et al., 2011; Schillinger, et al., 2007; Zachariae et al., 2003). However, research has shown that as one progresses through medical training, empathy levels decline while stress, burnout, career demands, and depression increase (Chen et al., 2007; Hojat et al., 2004; Hojat et al., 2009; Newton et al., 2000; Newton et al., 2008; Stratton et al., 2008). Burnout has lead to cynical, withdrawn, emotionally exhausted physicians, some of which are experiencing clinical depression, while the physician-patient relationship is harmed due to worsening of communication, compassion, and empathetic care from these practitioners, coping with their stress (Halbeselen & Rathert 2008; Moore, 2000; Williams et al., 2009). Few studies have looked at this complex relationship, with even



fewer that have been validated within healthcare professionals (Hojat et al. 2002; Hojat et al., 2009) or connecting burnout with depression and decrease in empathy.

In Chapter 3, methodological techniques are discussed regarding collection and data analysis of these self-report scales in capturing the variables of burnout, depression and empathy. The study also captured demographic data to correlate and draw conclusions regarding trainee traits that may highlight “at-risk” individuals and trend information that can be used in medical training and residency training programs.

## **Chapter 3**

### **Methodology**

Educational governing boards continue to express a need to develop a healthcare force capable of competent, clinically-based, empathetic care to better health outcomes, decrease patient dissatisfaction, improve communication, and increase understanding. Previous research has identified potential demographic data that correlates to empathy scores in medical students and residents progressing through medical school and training programs. There is a lack of research related to influences on these empathy scores outside of this demographic data. Research is needed to identify potential variables that may hinder the development of empathetic doctors or cause its deterioration as one progresses through medical education. There has been a clear increase in clinical, educational, and career demands in medical students and residents that have led to increased stress, burnout, and affective disorders. However, correlational studies linking these two phenomena are scarce.

#### **Scales**

This study addressed the paucity of literature related to career and educational burnout and depression to determine an effect, if any, on empathy in medical students and residents. The Maslach Burnout Inventory (MBI), the Patient Health Questionnaire (PHQ-9) and the Jefferson Scale on Physician Empathy (JSPE) were utilized to study this complex relationship. All scales have been internally and externally validated and capture the variables being studied.

The MBI is a 22-question scale that captures components of stress and burnout; this scale is specific to professional and healthcare workers providing services to clientele.

The MBI is ranked from “a few times a year” to “every day” 0-6 (7 points). The subscales identified particular components of burnout with emotional exhaustion (EE) as the sum of 9 items, depersonalization (DP) as the sum of 5 items, personal accomplishment (PA) as the sum of 8 items. Higher scores in each subscale would indicate higher levels of burnout in that particular component of burnout (Maslach & Jackson, 1986) (Table 2).

Table 2: MBI Scale Trends

	LOW	MODERATE	HIGH
Emotional Exhaustion	<b>0-16</b>	<b>17-26</b>	<b>27+</b>
Depersonalization	<b>0-6</b>	<b>7-12</b>	<b>13+</b>
Personal Accomplishment	<b>39+</b>	<b>32-38</b>	<b>0-31</b>

These sub-scales are not combined to reveal one ultimate burnout score because, as noted, burnout is a multidimensional construct. The MBI measures levels of burnout as low, moderate or high for each of the three sub-scales. In the scales of emotional exhaustion (EE) and depersonalization (DP), higher average scores correspond to higher degrees of perceived burnout. Inversely, lower mean scores in personal accomplishment (PA) corresponds to higher degrees of perceived burnout (Maslach & Jackson, 1986).

The PHQ-9 scale evaluates depressive symptoms in participants over the course of the previous two weeks before completing this study. Nine items representing DSM-IV criteria are each scored from 0 (none) to 3 (every day), and total score is classified according to depression severity: 0-4 none, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-27 severe (Kroenke, Spitzer, & Williams, 2001). The PHQ-9 has been validated internally and externally; its brevity and ability to capture clinical criteria for

depression allows it to be a quality research tool in identifying depressive symptomology in the population (Kroenke, Spitzer, & Williams, 2001).

Finally, the JSPE is a 20-question scale scored, each item ranked from 1-7 (1, 3, 6, 7, 8, 11, 12, 14, 18, 19 reverse-scaled). Total score corresponds to empathy level, with higher scores indicating higher levels of empathy. Hojat et al. (2002; 2004; 2009; 2011) developed a reliable, valid scale to measure medical student and physician empathy. There are three official versions of the JSPE: in the sample collection, trainees were given scales that corresponded to their level of training, student versus resident. Residents were asked to complete the version developed for physicians and other practicing health professionals (HP-Version). Students were asked to complete the medical student version (S-version). Per scale information, all versions have similar content; wording modifications were required to conserve content validities for each population in the development of the scales (Hojat et al., 2002). A respondent was required to answer at least 16 (80%) of the 20 items to be included in analysis, per scoring guidelines. Per developers, no national norm tables or cut off scores exist, and the scale was scored by comparing an individual sample and reviewing means/standard deviations.

### **Demographic Data**

For the resident population, we evaluated demographic data related to age, gender, race/ethnicity, year of training, and specialty choice, which was then categorized into patient-centered versus technology- or procedure-based with limited patient interactions. We also evaluated a further data point regarding where each resident was trained, stratified between an American or international medical school. Age included less than 25, 25-26, 27-29, 30-31, 32-34, 35- 36 and greater than 36. Race and ethnicities

included were Caucasian, African American/Black, Asian, Hispanic and/or Latino, and Other.

For the student population, we also evaluated demographic data related to age, gender, race/ethnicity, year in school, and categorized expected specialty choice; undecided students were not included in data related to specialty choice. Age was broken down into two year increments which included less than 22, 22-24, 25-27, 28-30, 31-33, 34-36, and greater than 36. Race and ethnicities included were Caucasian, African American/Black, Asian, Hispanic and/or Latino, and Other. Year in training was stratified by year in school, corresponding to year 1, 2, 3, 4, and for a subset of the population, greater than 4 years of medical school. The final demographic data evaluated in this study asked students to identify their expected specialty choice that was later stratified into patient-centered versus technology- or procedure-based with limited patient interactions.

### **Research Questions**

These surveys were employed to gather, prepare and analyze data to address the research question that will be examined as part of this study. The question asked evaluates the independent variables of stress/burnout and depression level and its association with the dependent variable, empathy score. The question sought to answer the relationship between stress and burnout on empathy and understand the impact of certain demographic characteristics on the variables. The null hypothesis highlights that trainee burnout and depression will have no impact on empathy scores; additionally, no demographic data will be indicative of trainees that might be at higher risk for burnout, depression, or low empathy.

## **Participants**

This study utilized archival data collected by the Department of Psychiatry at a southwestern medical school. Scales were purchased with the aid of a grant from the American Psychiatric Association and the Substance Abuse and Mental Health Services Association. Students and residents voluntarily completed demographic data, the MBI, PHQ-9 and JPSE in the process of this study. The data collected was sampled from the medical student population and residency training programs at this institution during the 2016-2017 academic year. Recruitment was via e-mails sent from medical clerkship directors, residency and fellowship program directors, and the Student Affairs Department at this medical school.

Participation was voluntary and elicited from a medical school population ( $n \approx 1,000$ ) and residency/fellowship training programs (60 + training programs). The population studied is demographically diverse with an equal representation between medical students and residents.

## **Data Collection Procedure**

The data was collected online and utilized the MBI, PHQ-9, in conjunction with the JPSE. The JPSE also captured demographic data of the studied population, including race/ethnicity, gender, age, expected specialty choice (students) or specialty choice (residents), year of training, sexual orientation, and whether medical school was completed domestically or abroad (residents). These scales were presented simultaneously to capture stress, burnout, and depression while measuring the empathy score of the participant.

## **Data Analysis**

Demographic data and summary scores for MBI, PHQ-9, and JSPE are presented overall and by class. Correlation between MBI and PHQ-9 with JSPE was measured by Pearson's correlation coefficient. Based on the outcome of this initial test, it was appropriate to perform a regression analysis and univariate modeling to determine if demographic data could be used in order to identify "at-risk students" or trainee characteristics that are protective or indicative of issues with stress, burnout, depression, or declines in empathy. All analysis was conducted using STATA, and a two-sided  $\alpha=0.05$  level of significance determined statistical significance.

## **Summary**

The emphasis of this research study centered on the relationship, if any, between stress, burnout, depression and empathy in archival data collected from medical trainees voluntary self-reports at a southwestern medical university. This study utilized the Jefferson Scale of Physician Empathy (JPSE), the Maslach Burnout Inventory (MBI), which highlights 3 subscales of emotional exhaustion, depersonalization, and personal accomplishment, and the Patient Health Questionnaire-9 (PHQ-9) to capture of the variable of empathy, stress/burnout, and depression, respectively. These self-reports scales were correlated as a whole and individually with each other and by training level. After this initial evaluation there was a need to complete regression analysis in regards to demographic data collected. These results are reported in Chapter 4 and discussed at length in Chapter 5 of this thesis.

## **Chapter 4**

### **Results**

In the primary analysis of the archival data, data was evaluated as a complete entity. The sample was separated into students and residents, and initial evaluation looked at the levels of empathy (Jefferson Scale of Physician Empathy), burnout (Maslach Burnout Inventory), focusing on the three subscales of emotional exhaustion, depersonalization, and sense of personal accomplishment, and depressive levels (Patient Health Questionnaire-9) between the two trainee groups. To be included in this analysis, the respondent had to complete, at a minimum, the Jefferson Scale of Physician Empathy and the Maslach Burnout Inventory.

With a precursory glance at the data, there were several statistically significant differences in the data when comparing students to residents. Specifically, there were significant differences in students when looking at burnout subscales of emotional exhaustion and depersonalization and depressive symptoms. Levels of empathy and personal accomplishment remained consistent in the sample between students and residents. These significant differences lead to separation of each cohort for individual analysis of students and residents alone. Of note, the resident population trended with lower empathy, higher emotional exhaustion, depersonalization and depression, and a slightly lower sense of personal accomplishment.

#### **Preliminary Data Analysis**

In the student sample, the study focused on two specific relationships: 1) identifying relationships between empathy, burnout, and depression; 2) identifying



demographic data that correlates with increasing or decreasing empathy, burnout and depression scores. The study was able to identify several statistically significant relationships in both of these categories. This data consistently showed that students were, on average, more empathic than those residents further in their training.

Table 3: Comparative Evaluation of Student Versus Resident Data

	Mean Empathy	Mean Burnout (emotional exhaustion)*	Mean Burnout (depersonalization)*	Mean Burnout (personal accomplishment)	PHQ-9 (depressive symptoms)*
Students	112.2	19.7 (M)	9.6 (M)	30.6 (H)	4.8 (mild)
Residents	109.2	26.0 (M)	13 (H)	30.4 (H)	7 (mild)

*Note.*

Student Sample Size: n = 73

Resident Sample Size: n = 107

\*Statistically significant

(L): Low Range

(M): Moderate Range

(H): High range

In regards to burnout and depression, our results indicated that students and residents had significant differences, but all respondents ranged in the moderate to high ranges on subscales and were mildly to moderately depressed. Univariate analysis and modeling was completed to understand relationships between demographic data and empathy, burnout, and depression. The study also completed correlational analysis in students between each scale/subscale to determine relationships in these students between their self-reported empathy, burnout and depression. Specilaty-choice categorization and frequency is seen in Tables 4 & 5.

Table 4: Patient-based Specialty Categorization

	Students	Residents
Family Medicine	1	1
Psychiatry	13	18
Pediatrics	9	16
Internal Medicine	13	23
OBGYN	1	3
Neurology	1	5
Preventative Medicine	0	0
Physical Medicine/Rehabilitation	2	2
Emergency	4	5
Ophthalmology	3	4
Public Health	0	0
Total	47	77

Table 5: Technology/Procedure Specialty Categorization

	Students	Residents
Anesthesiology	3	8
Urology	1	1
Radiology	1	3
Otolaryngology	1	1
Neurosurgery	0	0
Dermatology	2	2
Orthopedic Surgery	3	2
Surgery	6	6
Pathology	0	2
Plastic Surgery	0	0
Surgery: Other	0	6
Total	17	28

### Student Empathy

In this cohort, average empathy scores were noted to be 112.2, out of a possible total of 140, in the sample size of 73. Students showed three specific trends related to empathy and demographic data; these characteristics, as identified in Table 6, show significant relationships between empathy and gender, year in school and specialty-choice. Males were noted to have significantly lower empathy scores in this sample, averaging 6 points less than the female respondents with a p-value of 0.13. Third year medical students were noted to have a significant drop in their empathy scores with a p-

value of .006; in the sample, older students were able to show some rebound to first year levels, but did not reach their pre-third year levels. Finally, students that indicated a likely selection of a technology- or procedure-based specialty were noted to have significantly lower empathy scores than peers choosing a more patient-centered specialty, indicated by a p-value of .011. There was also a significant finding in this particular sample regarding the age group of 31-33 having a 15-point decrease in their empathy scores compared to other age groups.

Table 6: Correlational Data for Student Demographics and Empathy

Student Demographic		Frequency	Empathy	
			Mean(SD)	p-value
Gender	Male	29	108.6 (2.64)	0.013*
	Female	44	114.5 (1.45)	
Age	<22	2	101.00 (4)	0.151
	22-24	19	113.74 (1.72)	0.914
	25-27	37	113.38 (2.05)	.000 C
	28-30	12	110.75 (3.97)	0.503
	31-33	2	95 (16)	0.035*
	34-36	1	110	0.777
Race	AA/Black	3	124 (5.03)	0.065
	Asian	12	114.58 (2.38)	0.32
	Hispanic/Latino	6	114.5 (6.01)	0.468
	Other	4	109.25 (4.09)	0.809
	White	48	110.75 (1.81)	0.00 C
Year in School	1st Year	14	110.57 (1.98)	0.278
	2nd Year	7	118.43 (3.70)	0.403
	3rd Year	16	104.86 (3.93)	.006*
	4th year	35	114.49 (1.76)	0.00 C
	> 4th year	1	125	0.363
Specialty Choice	Patient-Centered	75	114.53 (1.65)	.011*
	Technology-Centered	38	105.12 (3.19)	

\*Statistically significant; C = Control for that group of demographics

## Student Burnout and Depression

In Tables 7 through 10, the study shows the results for the three MBI burnout subscales and the depression subscale. For burnout and depression self-reports in the student sample, research noted a significant finding in 2<sup>nd</sup> and 3<sup>rd</sup> year students to be more emotionally exhausted; 2<sup>nd</sup> year medical students were ranged from 2-7 points higher than their peers in other years, p-value of .045. Third year students had a similar

range with a p-value of .05. All of these emotional exhaustions scores, in both populations, were in the moderate to high ranges (Table 7). Additionally, male students and students choosing a technology-or procedure-based specialty were more likely to have more depersonalization in their work indicated by p-values of .02 and .01, respectively (Table 8). Third year students were noted to be significantly less likely to feel personally accomplished at least 4 points less than peers, at a significance of .002. Anecdotally, the data shows low personal accomplishment in students just starting school, as well (Table 9). Finally, seen in Table 10, 2nd (p-value .019) and 3rd year students (p-value .008) were noted to have higher levels of depressive symptoms than their peers; this trend was also seen in students choosing technology- or procedure-based specialties (p-value .04).

Table 7: Correlational Data for Student Demographics, Emotional Exhaustion

Student Demographic		Burnout (EE)			Burnout Range
		Frequency	Mean (SD)	p-value	
Gender	Male	29	20.1 (1.78)	0.596	M
	Female	44	19.41 (1.28)		M
Age	<22	2	19 (13)	0.867	M
	22-24	19	22.68 (1.73)	0.061	M
	25-27	37	17.92 (1.44)	.000 C	M
	28-30	12	19 (2.92)	0.715	M
	31-33	2	26 (3)	0.214	M
	34-36	1	25	0.434	M
Race	AA/Black	3	14.33 (3.38)	0.304	L
	Asian	12	17.67 (2.17)	0.455	M
	Hispanic/Latino	6	22.17 (4.38)	0.548	M
	Other	4	24.25 (6.09)	0.345	M
	White	48	19.83 (1.28)	0.00 C	M
Year in School	1st Year	14	19.43 (2.31)	0.483	M
	2nd Year	7	24.86 (3.91)	.045*	M
	3rd Year	16	22.69 (2.84)	0.05*	M
	4th year	35	17.49 (1.16)	0.00 C	M
	> 4th year	1	16	0.867	M
Specialty Choice	Patient-Centered	75	18.17 (1.31)	.030*	M
	Technology-Centered	38	22.53 (1.95)		M

\*Statistically significant; C = Control for that group of demographics

(L): Low Range

(M): Moderate Range

(H): High range

Table 8: Correlational Data for Student Demographics, Depersonalization

Student Demographic		Burnout (DP)			Burnout Range
		Frequency	Mean(SD)	p-value	
Gender	Male	29	11.96 (1.26)	.020*	M
	Female	44	8.11 (1.01)		M
Age	<22	2	7 (7)	0.627	M
	22-24	19	7.26 (1.20)	0.271	M
	25-27	37	9.36 (1.14)	.000 C	M
	28-30	12	12.25 (2.31)	0.198	H
	31-33	2	17.5 (1.5)	0.097	H
	34-36	1	1.5	0.089	M
Race	AA/Black	3	5.33 (1.86)	0.322	L
	Asian	12	10.41 (1.92)	0.687	M
	Hispanic/Latino	6	11.6 (1.96)	0.527	M
	Other	4	9.25 (4.52)	0.946	M
	White	48	9.5 (1.04)	0.00 C	M
Year in School	1st Year	14	5.14 (1.48)	0.009	M
	2nd Year	7	11.33 (2.11)	0.848	M
	3rd Year	16	10.86 (1.68)	0.959	M
	4th year	35	10.77 (1.21)	0.00 C	M
	> 4th year	1	1	0.151	M
Specialty Choice	Patient-Centered	75	9.30 (0.91)	.010*	M
	Technology-Centered	38	11.82 (2.11)		M

\*Statistically significant; C = Control for that group of demographics

(L): Low Range

(M): Moderate Range

(H): High range

Table 9: Correlational Data for Student Demographics, Personal Accomplishment

Student Demographic		Burnout (PA)			Burnout Range
		Frequency	Mean (SD)	p-value	
Gender	Male	29	29.52 (1.44)	0.425	H
	Female	44	31.25 (1.47)		M
Age	<22	2	29 (2)	0.799	H
	22-24	19	29.9 (2.35)	0.752	H
	25-27	37	30.73 (1.63)	.000 C	H
	28-30	12	30.92 (1.68)	0.952	H
	31-33	2	31.5 (1.5)	0.91	M
	34-36	1	34	0.73	H
Race	AA/Black	3	31.67 (5.78)	0.809	M
	Asian	12	33.58 (2.85)	0.275	M
	Hispanic/Latino	6	27.33 (4.75)	0.446	H
	Other	4	28 (6.1)	0.621	H
	White	48	30.35 (1.2)	0.00 C	H
Year in School	1st Year	14	28.71 (2.77)	0.06	H
	2nd Year	7	29.29 (5.02)	0.199	H
	3rd Year	16	25.625 (2.28)	0.002*	H
	4th year	35	33.89 (1.02)	0.00C	M
	> 4th year	1	28	0.5	H
Specialty Choice	Patient-Centered	75	31.32 (1.3)	0.144	M
	Technology-Centered	38	28.53 (2.26)		H

\*Statistically significant; C = Control for that group of demographics

(L): Low Range

(M): Moderate Range

(H): High range

Table 10: Correlational Data for Student Demographics, Depression

Student Demographic		Frequency	Depression		Depression Category
			Mean(SD)	p-value	
Gender	Male	29	5.4 (.65)	0.302	Mild
	Female	44	4.45 (.6)		Mild
Age	<22	2	8 (0)	0.176	Mild
	22-24	19	5.53 (.78)	0.237	Mild
	25-27	37	4.25 (.70)	.000 C	Mild
	28-30	12	4.73 (.88)	0.714	Mild
	31-33	2	7 (2)	0.319	Mild
	34-36	1	2	0.558	None
	AA/Black	3	3.5 (1.5)	0.561	Mild
Race	Asian	12	3.67 (.99)	0.246	Mild
	Hispanic/Latino	6	4.8 (1.43)	0.866	Mild
	Other	4	5.5 (1.76)	0.842	Mild
	White	48	5.10 (.58)	0.00C	Mild
Year in School	1st Year	14	4.93 (.8)	0.222	Mild
	2nd Year	7	7.33 (1.28)	.019*	Mild
	3rd Year	16	6.5 (1.07)	.008*	Mild
	4th year	35	3.5 (.6)	0.00 C	None
	> 4th year	1	5	0.686	Mild
Specialty Choice	Patient-Centered	75	4.13 (.45)	.04*	Mild
	Technology-Centered	38	5.69 (1.28)		Mild

Overall, this data indicated that a vast majority of students were in the moderate range of emotional exhaustion and depersonalization in their work, while remaining in the low range for personal accomplishment. There is also a significant trend for a majority of the students to be in the mild range of depression, which has clinical significance and impacts on other variables and well-being. Despite the significant findings noted above, the respondents seem to be exhausted emotionally, distanced and detached from their work, with little feeling of achievement or accomplishment, and have diagnostically-clear depressive symptoms.

### **Correlational Data Between Student Empathy, Burnout and Depression**

Captured in Table 11, students showed trends between empathy, burnout and depression. In the sample, students, that self-reported a level of burnout and depression, showed lower levels of empathy. Emotional exhaustion decreased empathy scores by 0.5 points, while higher depersonalization decreased empathy by .4 points. Higher feelings of personal accomplishment increased empathy scores by .3 points, while higher depressive

symptoms could decrease empathy by .25. That is, higher levels of emotional exhaustion, depersonalization, and depression decreased empathy, while feelings of personal accomplishment could be more protective and increase empathy.

Table 11: Student Empathy, Burnout and Depression Scale Correlations

	Empathy	Burnout (EE)	Burnout (DP)	Burnout (PA)	Depression
Empathy	1				
Burnout (EE)	-0.46	1			
Burnout (DP)	-0.38	0.44	1		
Burnout (PA)	0.29	-0.17	-0.04	1	
Depression	-0.25	0.38	0.17	-0.44	1

Emotional exhaustion correlated with depersonalization and increased depression, and was inversely related to high personal accomplishment. Feelings of depersonalization and depression increased emotional exhaustion in the sample by .44 and .38, respectively. Depersonalization was also positively impacted by depression, showing that as student's scores of depersonalization increased, so did depressive symptoms. Personal accomplishment negatively impacted depressive reports by .44 points.

### **Resident Empathy**

In the resident sample, we found significant effects that correlated with the student data. As with the student sample, we identified relationships between empathy, burnout, and depression and evaluated demographic data that can potentiate empathy, burnout and depression scores. In correlational studies between scales, the study found significant trends for the resident population. In this cohort, average empathy scores were noted to be 109.2, out of a possible total of 140, in the sample size of 107 (Table 3). Further analysis of the empathy correlations to demographics, as well as to burnout and



depression scores. This is followed by a completed correlational analysis to also determine relationships between empathy, burnout and depression.

Empathy scores in the resident data showed significant correlations between specific demographic characteristics and self-report score; these are noted in Table 12. In congruence with the student data, male residents were significantly less empathetic than female students with an average 4-point spread; residents specializing in a technology- or procedure-based specialty also showed a significant difference, with residents in more patient-centered specialties having, on average, a 7-point higher empathy score. Although not statistically significant, interns or first-year residents, new to residency, were noted to have a relevant scoring, 6-points lower than the control group empathy score. On average, despite grouping, these residents had lower empathy scores compared to students.

Table 12: Correlational Data for Resident Demographics and Empathy

Resident Demographic		Frequency	Empathy	
			Mean (SD)	p-value
Gender	Male	41	106.85 (2.44)	0.013*
	Female	66	110.68 (1.32)	
Age	25-26	9	106.33 (2.39)	0.533
	27-29	43	109.35 (1.79)	0.00 C
	30-31	25	107.64 (2.36)	0.607
	32-34	20	110.7 (4.18)	0.705
	35-36	6	111.17 (6.15)	0.752
	>37	3	113.67 (2.85)	0.584
Race	AA/Black	3	113.67 (5.55)	0.533
	Asian	36	108.22 (1.63)	0.817
	Hispanic/Latino	11	114.55 (3.61)	0.19
	Other	6	102.33 (10.97)	0.243
	White	49	108.8 (1.84)	0.00 C
Year in Training	Intern/PGY-1	22	103.82 (1.88)	0.113
	PGY-2	22	112.05 (2.48)	0.548
	PGY-3	24	109.8 (2.73)	0.00 C
	PGY-4	15	108 (3.44)	0.668
	Fellow	22	110.27 (3.27)	0.898
Specialty 0.00 Choice	Patient-Centered	112	110.73 (1.40)	0.000*
	Technology-Centered	37	103.61 (2.67)	
Medical School Training	USA	82	109.96 (3.31)	0.938
	International	25	108..99 (1.29)	



## Resident Burnout and Depression

The reports from residents on burnout/depression are seen in Tables 13-16.

Statistically significant findings included a higher depersonalization score in residents that trained at a US medical school versus internationally, and higher depersonalization in some older physician-residents. There was also a higher depersonalization correlation in interns and residents grouped to the youngest age group. Although other statistical differences are not found in this part of the sample, this data does show significance when compared to students, along with clinical and educational relevance.

All residents were in the moderate to high range of emotional exhaustion; an interesting findings noting that in this sample, women reported more EE than males. Although not statistically significant, interns and their correlating age reported the highest levels of emotional exhaustion. There were few outliers in this data that represented that much of the population, despite demographic influence, were emotionally exhausted.

Table 13: Correlational Data for Resident Demographics, Emotional Exhaustion

Resident Demographic		Frequency	Burnout (EE)		Depression Category
			Mean (SD)	p-value	
Gender	Male	41	24.85 (1.90)	0.596	M
	Female	66	26.76 (1.53)		H
Age	25-26	9	30.44 (4.95)	0.413	H
	27-29	43	26.79 (1.66)	0.00 C	H
	30-31	25	29.08 (2.67)	0.454	H
	32-34	20	22.3 (2.63)	0.174	M
	35-36	6	20 (4.41)	0.201	M
	>37	3	19.67 (8.21)	0.327	M
	AA/Black	3	18 (7.09)	0.255	M
Race	Asian	36	21 (2.13)	0.811	M
	Hispanic/Latino	11	26.55 (4.24)	0.977	H
	Other	6	31.33 (4.70)	0.362	M
	White	49	26.43 (1.68)	0.00 C	M
	Intern/PGY-1	22	30.32 (2.66)	0.07	H
Year in Training	PGY-2	22	25.27 (2.82)	0.647	M
	PGY-3	24	23.58 (1.92)	0.00 C	M
	PGY-4	15	25.47 (3.26)	0.647	M
	Fellow	22	25.91 (3.03)	0.528	M
Specialty Choice	Patient-Centered	112	26.13 (1.39)	0.464	H
	Technology-Centered	37	26.43 (2.412)		H
Medical School Training	USA	82	26.34 (1.38)	0.636	H
	International	25	25 (2.36)		M

\*Statistically significant; C = Control for that group of demographics

(L): Low Range

(M): Moderate Range

(H): High range

Table 14: Correlational Data for Resident Demographics, Depersonalization

Resident Demographic		Frequency	Burnout (DP)		Burnout Range
			Mean (SD)	p-value	
Gender	Male	41	12.83 (1.10)	0.216	H
	Female	66	13.10 (0.88)		H
Age	25-26	9	19 (2.43)	0.05*	H
	27-29	43	14.23 (1.01)	0.00 C	H
	30-31	25	13.16 (1.41)	0.525	H
	32-34	20	9.7 (1.22)	.014*	M
	35-36	6	8.33 (2.07)	.045*	M
	>37	3	10.67 (7.31)	0.216	M
	AA/Black	3	8 (0)	0.465	M
Race	Asian	36	13.08 (1.24)	0.897	H
	Hispanic/Latino	11	13.29 (0.94)	0.652	H
	Other	6	14.36 (2.32)	0.841	H
	White	49	12.67 (3.95)	0.00 C	H
	Intern/PGY-1	22	17.64 (1.55)	.001*	H
Year in Training	PGY-2	22	13.41 (1.57)	0.209	H
	PGY-3	24	10.88 (1.18)	0.00 C	M
	PGY-4	15	11.6 (1.88)	0.746	M
	Fellow	22	11.5 (1.35)	0.756	M
	Patient-Centered	112	13.13 (.081)	0.609	H
Specialty Choice	Technology-Centered	37	12.87 (1.33)		H
Medical School Training	USA	82	13.84 (0.77)	0.025*	H
	International	25	10.24 (1.33)		M

\*Statistically significant; C = Control for that group of demographics

(L): Low Range

(M): Moderate Range

(H): High range

A majority of residents were also found to be in the high range of depersonalization, with the intern population 4-points above the total average. Although depersonalization trended down in later years of training and age, it remained in the moderate range throughout training (Table 14). Females also trended slightly higher than males in DP.

Table 15: Correlational Data for Resident Demographics, Personal Accomplishment

Resident Demographic		Frequency	Burnout (PA)		Burnout Range
			Mean (SD)	g-value	
Gender	Male	41	31.32 (1.09)	0.896	M
	Female	66	29.85 (0.94)		H
Age	25-26	9	28.22 (2.5)	0.361	H
	27-29	43	30.74 (0.99)	0.00 C	H
	30-31	25	29.4 (1.72)	0.478	H
	32-34	20	31 (1.74)	0.9	H
	35-36	6	31.17 (3.00)	0.897	M
	>37	3	31.33 (5.6)	0.896	M
Race	AA/Black	3	34.33 (4.84)	0.389	M
	Asian	36	29.86 (1.29)	0.713	H
	Hispanic/Latino	11	30.55 (2.14)	0.976	H
	Other	6	29 (3.66)	0.652	H
	White	49	30.47 (1.03)	0.00 C	H
Year in Training	Intern/PGY-1	22	29.5 (1.44)	0.456	H
	PGY-2	22	31.36 (1.39)	0.93	M
	PGY-3	24	31.17 (1.27)	0.00 C	M
	PGY-4	15	30.6 (2.56)	0.82	H
	Fellow	22	28.95 (1.85)	0.323	H
Specialty Choice	Patient-Centered	112	30.65 (0.81)	0.159	H
	Technology-Centered	37	29.09 (1.62)		H
Medical School Training	USA	82	29.95 (0.85)	0.248	H
	International	25	31.92 (1.31)		M

\*Statistically significant; C = Control for that group of demographics

(L): Low Range

(M): Moderate Range

(H); High range

Personal accomplishment remained in the low range with similar scores to student reports. Depression scores were noted to be in the high-mild range, significant compared to the student population. Females again had lower sense of personal accomplishment, while interns and corresponding age high levels of burnout associated with decreased personal achievement. In our depression findings, all respondents were, on average, in the mild depressive category. Males were more depressed, as were younger respondents and those at the beginning and end of their training in residency.

Table 16: Correlational Data for Resident Demographics, Depression

Resident Demographic		Frequency	Depression		Depression Category
			Mean (SD)	R-value	
Gender	Male	41	7.22 (1.08)	0.48	Mild
	Female	66	6.86 (0.76)		Mild
Age	25-26	9	7.78 (2.47)	0.79	Mild
	27-29	43	7.14 (0.97)	0.00 C	Mild
	30-31	25	6.96 (1.39)	0.913	Mild
	32-34	20	7.5 (1.44)	0.839	Mild
	35-36	6	4.33 (1.48)	0.326	Mild
	>37	3	7.5 (7.5)	0.939	Mild
Race	AA/Black	3	3.33 (0.88)	0.294	Mild
	Asian	36	6.29 (0.99)	0.45	Mild
	Hispanic/Latino	11	7.09 (1.8)	0.891	Mild
	Other	6	10 (3.64)	0.353	Moderate
	White	49	7.39 (0.97)	0.00 C	Mild
Year in Training	Intern/PGY-1	22	8.31 (1.48)	0.1	Mild
	PGY-2	22	7.91 (1.33)	0.151	Mild
	PGY-3	24	5.17 (1.09)	0.00 C	Mild
	PGY-4	15	4.53 (1.37)	0.762	Mild
	Fellow	22	8.76 (1.62)	0.064	Mild
Specialty Choice	Patient-Centered	112	7.27 (0.72)	0.967	Mild
	Technology-Centered	37	6.55 (1.31)		Mild
Medical School Training	USA	82	7.22 (1.4)	0.855	Mild
	International	25	6.93 (0.70)		Mild

### Correlational Data Between Resident Empathy, Burnout and Depression

Residents showed similar patterns between empathy, burnout, and depression compared to students. Table 17 demonstrates these findings. Again, emotional exhaustion, depersonalization, and depression were negative influencers on empathy corresponding with decreases by .46, .45, and .18, respectively. Feelings of personal accomplishment correlated in producing higher empathy scores. Emotional exhaustion positively correlated with depersonalization and depression (.74, .63 points), while personal accomplishment had a negative impact on the variable (.59). Depression also has the potential to increase feelings of depersonalization, while decreasing a sense of personal accomplishment in this resident population. Depersonalization was noted to be inversely-related to personal accomplishment in this population.

Table 17: Resident Empathy, Burnout and Depression Scale Correlations

	Empathy	Burnout EE	Burnout DP	Burnout PA	Depression
Empathy	1				
Burnout EE	-0.46	1			
Burnout DP	-0.45	0.74	1		
Burnout PA	0.44	-0.59	-0.58	1	
Depression	-0.18	0.63	0.5	-0.43	1

### Summary

Students and residents were noted to have significant differences in emotional exhaustion, depersonalization and depression scores; the data also trended for residents to have less sense of personal accomplishment and lower empathy scores. As a whole, residents had higher levels of emotional exhaustion, depersonalization, and depression, and lower personal sense of achievement in their work compared to students. In both populations, empathy was negatively impacted by emotional exhaustion, depersonalization, and depressive symptoms. Personal accomplishment correlated with higher empathy scores.

Demographically, males and technology- or procedure-based specialty choice correlated with lower empathy in both students and residents; this was also true for third-year medical students. Students in the technology- and procedure-based fields had significantly higher emotional exhaustion, depersonalization and depression scores; students in their 2<sup>nd</sup> and 3<sup>rd</sup> year also reported significant emotional exhaustion and depression with those same 3<sup>rd</sup> year students having a lower sense of personal accomplishment. Residents felt significantly depersonalized if they trained in the United States, were younger and in their intern year, or were older in their program.

## **Chapter 5**

### **Discussion**

Medical schools and residency training programs have been tasked with educating students on clinical knowledge and producing physicians capable of evidence-based clinical care in an empathetic, compassionate manner (Wolfe, 2001). As noted, healthcare education has continuously changed, and despite being commissioned to produce empathetic doctors, these institutions have few blueprints or extensively used educational interventions to increase empathy in providers. With changes in healthcare, including technology, charting, government regulations, and patient load/demands, there has been a trend in trainees feeling overwhelmed, overworked, and under-valued. Students and residents alike are more capable to be focused on the work and demands of being a physician, without time to embrace or appreciate their role in healthcare (Bellini, 2002; Bellini & Shea, 2005; Neumann et al., 2011; Rosen et al., 2006; Shanafelt et al., 2005; Stratton et al., 2008; West et al., 2006). Research has shown that despite recommendations to produce empathetic physicians by governing boards, empathy in students and residents is decreasing (Bellini, 2002; Bellini & Shea, 2005; Chen et al., 2007; Hojat et al., 2004; Hojat et al., 2009; Mangione et al., 2002; Newton et al., 2000; Newton et al., 2008; Rosen et al., 2006; Stratton et al., 2008; West et al., 2006; West et al., 2007; Shanafelt et al., 2005), there is higher likelihood of producing stressed-out trainees with higher levels of burnout, stress, depression, poor self-care, and decreased empathic responses (Bellini, 2002; Bellini & Shea, 2005; Neumann et al., 2011; Rosen et al., 2006; Shanafelt et al., 2005; Stratton et al., 2008; West et al., 2006). The overall

themes of these studies discuss the need for protections to trainee well-being to prevent stress, burnout, and depression and preserve empathetic care.

In the sample, we noted that although these trends have been noted or alluded to in other studies, there remains limited data connecting the phenomenon. In addition, few studies have connected the variables of stress, depression and burnout to empathy scores in one population; even fewer have captured data from one institution to include all levels of training, students through fellowship. In addition, in the literature review, we noted little of the research utilized a model that only used scales validated in medical students and residents, including the Jefferson Scale of Physician Empathy and the medical personnel version of the Maslach Burnout Inventory. The results of this study are unique in these aspects and provide insight by validating past research findings in other major projects and identifying important correlations in burnout and depression, empathy, and demographic characteristics. This data aids in the development of a conceptual model of interactions between burnout, stress, depression, and empathy, highlights possible protective factors and noteworthy “at risk” trainees, in addition to identifying areas that might be responsive to educational intervention in medical school and residency training programs. Future research will be discussed in regards to these findings in hopes of promoting continued research in the intricacies of these relationships and potential modulation to increase empathic trainees that can cope, respond to or seek intervention for their burnout or depression.

### **Student Empathy, Burnout, and Depression**

As noted in the results, students exhibited a range of empathy, burnout, and depression scores that correlated as a group and according to some demographic patterns.

Past research has resulted in conflicting findings related to demographic groupings that impact empathy scores. Particularly in the student sample, male students proved to have lower empathy corresponding to numerous other studies and their findings; this in its self could warrant a discussion regarding male versus female emotional development. However, when looking at this data in totality, these same male students have higher levels of emotional exhaustion, significant depersonalization, and depressive symptoms, and a decreased sense of personal achievement. The depersonalization, significant when compared to the female student cohort, is of particular interest, as detachment from patient care in general would likely facilitate a decrease in empathy by simple nature of the concept in connecting to patient suffering. When reviewing this data and understanding the correlation between these variables between the scales, there is a higher likelihood that male students overwhelmingly experience negative feelings during their training related to poor regulation of emotional investment, cynicism, poor self-value, and a detachment from patient care compared to female students in the same cohort; clinically relevant is the overlap in the negative emotion, self-worth and – appreciation, and distaste of the job and the experience of depressive symptoms that could require medical treatment. In practical application, medical schools implementing interventions to increase empathy and overall trainee well-being should be aware of this trend in male medical students.

Similar to the landmark study by Hojat et al. (2009), students also highlighted a significant drop in empathy during their third year of medical school; this finding highlights that many students enter medical school with a certain level of empathy that, on average, drops significantly once leaving the basic science era of their schooling. As



noted, empathy has important effects on patient-care and self-care; the hallmark of third year education in medical school is the transition from textbook and laboratory emphasis to that of patient care. This leaves much to extrapolate upon regarding education, medical school experience, and empathy, burnout and depression.

The data shows that empathy remains at its highest level during the preceding year, but there is significant stress and burnout in both years, as noted by the burnout/depression data. As students prepare for their first licensing exam in their 2<sup>nd</sup> year of medical school, a noted stressful time in every medical student's career, we theorize their reservoir of well-being and resiliency fade. While empathy remains high, these students become more and more detached from their education endeavors and academic pursuits, and in all likelihood, their training begins to increase in difficulty with an important evolution from a traditional learning model familiar from collegiate years to a full-fledged career with several new, challenging difficulties. The transition from academician to clinician likely facilitates more burnout, and these students who have begun to experience emotional exhaustion, detachment, less personal confidence in their work, and affective symptoms begin to have even more negative emotional effects in their new, unfamiliar role. This highlights a specific time frame in medical school training where empathy or burnout interventions may prove useful in increasing compassionate care for future patients and the student, as well.

Empathy trends in students pursuing a technology-based career also supports past research; however, the data pinpoints to correlational data may not rest entirely upon distinct, inherent personality traits. As noted, more patient-centered career student selections significantly showed higher empathic findings, which could be expected from

an individual pursuing this type of career. While some may argue that empathy is an inherent characteristic, specific to an individual, the data shows there is high linkage between someone's compassionate understanding and care provided and one's emotional depletion, investment in their work, and feeling of effective achievement in provision of care; some characteristics also have clear linkages to clinical depression.

In this sample, the technology-based students were found to have significant differences in their reports of emotional exhaustion, depersonalization, and depressive symptoms. Their sense of personal accomplishment also trended lower. There were clear differences indicating that this sample of students that were selecting, not yet practicing, these specialties were more depressed, less attached and invested in their daily studying or work, emotional drained with little reservoir of well-being or resiliency, with little appreciation for their contributions or achievement.

This is significant, as these students are subjected to the same curriculum, learning experiences, and demands as those choosing more patient-centered careers while in medical school. Although we cannot prove causation, it seems that those students affected the most by burnout and depression could possibly have feelings of less empathy and then choose a career that has less patient interactions or needs for communication and understanding. Conversely, students that enter training with low empathy may have poor emotional understanding, responses, and coping that could potentiate emotional exhaustion, less investment and interest in their work, low sense of self-worth or – achievement, and be at risk for depression. Educationally and clinically, the importance of this finding highlights the need to determine the directionality of this relationship, if any, and provide training to increase empathic understanding that could aid in patient

care, but also self-care, and increase interventions to decrease emotional turmoil, increase coping, and prevent burnout and depression in this vulnerable population.

### **Resident Empathy, Burnout, and Depression**

The resident sample identified some key statistically significant findings that indicate important differences in demographics in the population; although there were fewer noted than in the student population, these statistically significant findings were important predictors of residents that should be monitored for empathic, burnout or depressive problems compared to their cohort. Specifically, we noted, as in the student population, that male residents were significantly less empathic than their female peers, as were technology-based specialties in this sample. Although not statistically significant in this study, we also noted a large drop in empathy during the first year of residency in which interns first begin their work as a treating medical physician. On average, residents were more burned out, depressed and less empathic than students in this sample.

These findings highlight a consistent and important aspect of empathic care and need for implementation of well-being exercises into training to capture those male students training with these coexisting components. Although causation cannot be proved, there is consistent data in this study and others indicating that male residents may benefit from empathy training and curricular interventions that stress the importance and practice of well-being and burnout management.

In addition, there is a significant need for programming for new trainees first becoming doctors and beginning to practice in residency. We highlight significant findings in the age group 25-26 in high levels of depersonalization that parallels to the same significant finding in interns; this age group corresponds to the common age for

medical school graduates that are beginning residency and their internship. This age cohort is noted to trend with lower average empathy scores, high burnout and depressive findings, although they are not statistically significant. In conjunction, those in intern year show a high level of emotional exhaustion, depersonalization, and depressive symptoms with their low sense of achievement. In the age category, there was a significant finding of depersonalization in the oldest cohorts (ages 32-36), which needs further exploration, but could be linked to longer time in training or some age effect on becoming more detached from work.

Another significant finding was seen in the population that was only studied in the resident population: location of medical school training. Residents identified their country of training as in the United States or internationally for this evaluation. Both populations were close to the total average of the population in empathy, emotional exhaustion, personal accomplishment and depression, but American graduates had significant higher levels of depersonalization, placing them into the highest range versus the moderate range seen in international graduates. This is an interesting phenomenon that was unexpected, and requires further research. Speculatively, this finding could relate to different training models, which lead to higher levels of emotional withdrawal and cynicism that develop over time, specific to American medical training.

### **Total Trainee Well-being**

The study offers some key insight in the relationships between empathy, burnout, and depression. As noted, these variables are distinctly linked, likely modulating the other and creating a healthcare force with empathy that is trending down, and burnout and depression that are increasing. When expounding, the current education and clinical

experience of a medical trainee develops healthcare providers burdened with burnout and depressive symptoms that are failing to provide, in some cases, empathic care to patients, eventually deteriorating health outcomes for those clients and even the provider, as well. This leads to a discussion of intervention and curricular needs to prevent the loss of empathy and the promotion of well-being in American medical trainees.

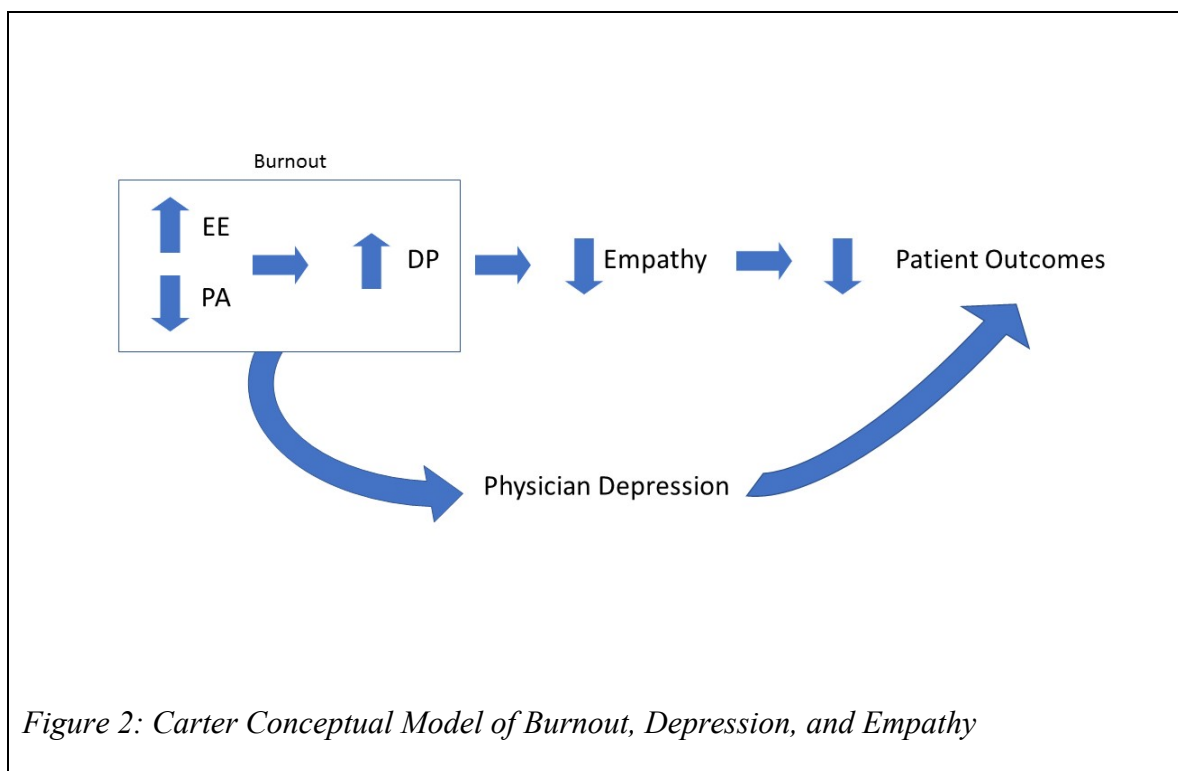
In medical training, students are required to spend long hours to learn copious amounts of material to matriculate; per guidelines, students must learn evidenced-based, basic science and clinical knowledge while also balancing life demands, changing healthcare systems and delivery, and becoming new practitioners with challenging clinical responsibilities; the data indicates significant challenges in students balancing patient care with their own well-being, and most students are showing risks for burnout and depression before becoming actual physicians in charge of clinical care. The study adds that there are significant demographic predictors like gender, year in school, and specialty choice that medical schools may need to screen and monitor, as those students may have a higher likelihood of experiencing these negative variables. Also, as discussed, medicine is hierarchical in nature, with much of clinical training being passed down, including empathic-care and self-care modeling; there is strong likelihood that the poor empathy and high burnout and depressive symptoms are perceived or unconsciously passed to students through their interaction with older trainees. Implementation of empathic training or preventive measures to protect from burnout and depression are necessary to prevent these negative trends, in addition to awareness, screening, and possible intervention for students experiencing this phenomenon currently.

When students matriculate without the skills to regulate empathy and self-care, they become residents with the same limited skill-set; as noted, the demands of residents also change as one transitions from knowledge acquisition in medical school to practical application of their education in their specialty. Residents are tasked with more clinical duties, higher patient loads, longer shift-work, and more teaching responsibilities, with the same life and educational demands. Theoretically, an individual who does not practice self-care or has not been trained in empathy in medical school likely does not develop those skills in residency without some type of intervention. It is also important to note, as seen in this data, that many of the protective factors for empathy and burnout in medical school, like gender, year in school, age, and career choice no longer provide the same defense to this population; the data shows there remains demographic trends with gender, age, year in residency and specialty, but as a whole the nature of residency may lead to decreased empathy and physician well-being.

The data indicates a consistent trend, indicating some trainees advance through their education becoming less empathic, more burnt-out, with higher rates of depression. The correlational data shows a complex relationship between empathic care, emotional exhaustion, depersonalization and detachment from clinician role, along with poor investment in care, low sense of self-worth in the role, and an ever-increasing presence of depressive symptoms ranging from low mood, insomnia, energy, and focus to physician suicidality. As a cognitive term, empathy can be taught, which can impact patient care. Interventions that reflect upon self-care and physician well-being can be added to medical and residency education, as well, leading to lower levels of burnout and depression, and likely reinvestment into empathic, compassionate clinical care.

## Conceptual Model

As we have demonstrated, there are significant correlations between empathy, burnout, and depression on patient care and physician well-being. There remains a significant trend of medical trainees, as they progress through training, to see decreases in empathy and well-being, theorized due to the impact burnout and depression have on the individual. This has significant repercussions in provision of care, health outcomes, and even physician health. Reflecting upon the Williams et al. (2009) conceptual model of burnout, empathy, the conservation of resources, and patient care, this study offers more insight into the connections between the components of burnout and depression on empathy, in addition to demographic trends that warrant further investigation and likely intervention. The Carter Conceptual Model of Burnout, Depression, and Empathy (Figure 2) highlights these findings, offering another conceptual representation of burnout, depression, empathy and patient care.



*Figure 2: Carter Conceptual Model of Burnout, Depression, and Empathy*

As seen in Carter's conceptual model (Figure 2), burnout is highlighted as a possible impetus to depression and decreasing empathy. Increasing emotional exhaustion, a significant and diagnostic portion of depression is shown to work in conjunction with a lower sense of accomplishment, effectiveness, and perceived self-worth in their career to form a sense of lower personal achievement. These components of burnout (Maslach & Jackson, 1986) influence a sense of higher depersonalization. By definition, this aspect of burnout is synonymous with psychological withdrawal from relationships, a key component of empathy. This development of a negative, cynical, and callous attitude, with continuing loss of emotional reservoir and resiliency and poor feelings of effectiveness or making a difference, lead to decreased empathy.

Following the Conservation of Resources (Hobfoll, 1989) and Williams et al. (2009) model, providers can become withdrawn and focused on the biomedical, clinical aspects of their career, forgetting the compassion and caring needed in the physician-patient relationship, all in an attempt to conserve precious emotional, and sometimes physical, resources that are lost through burnout. This burnout syndrome, through emotional turmoil, decreasing self-worth, increasing physical and mental exhaustion, and stress can also manifest into clinical depression. Clinical depression consists of low moods and negative thinking, insomnia and sleep disturbances, appetite changes, decreases of energy and concentration, memory lapses, and possible suicidal ideations (American Psychiatric Association, 2013).

As depicted in the Carter conceptual model, depression and low empathy can affect the patient experience, leading to negative health outcomes. Each component affects outcomes via poor relationships and through physician loss of well-being. The



symptoms of depression, just like physical health conditions, can affect the ability for a physician to be effective in their job for a myriad of reasons, and shows that burnout affects both physician and patient health outcomes. These physician-linked experiences can occur alone, but as shown by our data, usually correspond in congruence. That is, as physicians become more burnt out, empathy declines, they become less invested and involved in communication and compassionate care. In conjunction, they manifest symptoms and feelings that are on the clinical depression spectrum. These depressive symptoms, with and ongoing decline in empathic care, affect patient care and eventual patient outcomes.

### **Future Research**

As noted in this study, we evaluated several demographic variables that impact empathy, burnout and depression. Although not statistically significant, there were some interesting findings in race, empathy scores and feelings of burnout and depression. This would be an interesting avenue to pursue to determine protective factors that might exist when evaluating a larger population of those ethnicities. More information regarding religion, sexual orientation, trainee health status, geography, college major, and numerous other demographic characteristics is needed to fully understand how personal traits impact these variables. Future research might also focus on quantitatively predicting the level burnout, depression, and empathy scores are impacted by each other. Qualitative research with comments or narratives may highlight themes and experience of trainees in regards to these variables as they progress through medical training. Early career physicians and late career physicians might also be an interesting research component to understand these trends after training and during a full career. Poor

empathy and high burnout and depression may also impact a physician's clinical and medical knowledge late in the model that might show an impact on both the science and art of medical practice.

As the trend of poor physician well-being and decreasing empathy has been noted in this and other studies, there exists a need for curricular intervention and possible changes to training models going forward. Each aspect could be approached in an individual manner or in conjunction, to determine effective interventions to increase physician resiliency, with physical and emotional well-being, and empathic communication and understanding. Empathy is a cornerstone of patient care, indicating a need for trainees to be taught valuable skills to promote good outcomes. Further research would need to implement a curriculum and follow it to its conclusion with analysis of outcomes for patient care and physician wellness.

## **Conclusion**

Medical schools and residency training programs have been tasked with creating a healthcare force capable of providing quality patient care, based in empathic understanding and clinical, medical knowledge. Our data shows that some medical trainees may experience poor empathy, high emotional exhaustion, depersonalization in care, and depressive symptoms, while feeling ineffective in their work. The analysis of data identified clear significant trends in certain students and residents that proved more protective in these areas, while highlighting "at- risk" trainees for developing a burnout syndrome, clinical depressive symptoms and decreasing empathy. High correlation between these variables were noted, with burnout and depression negatively impacting empathy. The trend continues and worsens as trainees advance in their studies and

clinical duties, highlighting poor emotional resiliency and stress management as education transitions to clinical care. Students and residents, alike, are burnt out in their work, and some have begun to experience symptoms of clinical depression.

As burnout increases, empathy declines and depression is present. The conceptual model captures this phenomenon and highlights a significant impact that poor physician well-being and empathy may play in patient care and health outcomes. There remains a significant need to understand this development in medical training to create effective interventions to combat these complex variables that negatively impact the health of both patients and physicians.

## References

- Accreditation Council for Graduate Medical Education. (2015). *Common Program Requirements*. Retrieved from <http://www.acgme.org/What-We-Do/Accreditation/Common-Program-Requirements>
- Adams, J. (2004). Straining to describe and tackle stress in medical students. *Medical Education*, 38(5), 463-464. doi:10.1111/j.1365-2929.2004.01810.x
- American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. Arlington, VA, American Psychiatric Association, 2013.
- Balch, C. M., Shanafelt, T. D., Sloan, J., Satele, D. V., & Kuerer, H. M. (2011). Burnout and career satisfaction among surgical oncologists compared with other surgical specialties. *Annals of Surgical Oncology*, 18(1), 16-25. doi:10.1245/s10434-010-1369-5
- Beard, C., Hsu, K. J., Rifkin, L. S., Busch, A. B., & Bjorgvinsson, T. (2016). Validation of the PHQ-9 in a psychiatric sample. *Journal of Affective Disorders*, 193, 267-273. <http://dx.doi.org/10.1016/j.jad.2015.12.075>
- Beckman, H. B., & Frankel, R. M. (2003). Training practitioners to communicate effectively in cancer care: It is the relationship that counts. *Patient Education and Counseling*, 50(1), 85-89. doi:10.1016/s0738-3991(03)00086-7
- Beckman, T. J., Reed, D. A., Shanafelt, T. D., & West, C. P. (2012). Resident physician well-being and assessments of their knowledge and clinical performance. *Journal of General Internal Medicine*, 27(3), 325-330. doi:10.1007/s11606-011-1891-6
- Bellini, L. M. (2002). Variation of mood and empathy during internship. *Journal of the American Medical Association*, 287(23), 3143. doi:10.1001/jama.287.23.3143
- Bellini, L. M., & Shea, J. A. (2005). Mood change and empathy decline persist during three years of internal medicine training. *Academic Medicine*, 80(2), 164-167. doi:10.1097/00001888-200502000-00013
- Benevides-Pereira, A. M., & Alves, R. D. (2007). A study on burnout syndrome in healthcare providers to people living with HIV. *AIDS Care*, 19(4), 565-571. doi:10.1080/09540120600722775
- Cameron, I. M., Crawford, J. R., Lawton, K., & Reid, I. C. (2008). Psychometric comparison of PHQ-9 and HADS for measuring depression severity in primary care. *British Journal of General Practice*, 58(546), 32-36. doi:10.3399/bjgp08x263794

- Chang, E., Eddins-Folensbee, F., & Coverdale, J. (2013). Survey of the prevalence of burnout, stress, depression, and the use of supports by medical students at one school. *Academic Psychiatry, 36*(3), 177. doi:10.1176/appi.ap.11040079
- Chen, D., Lew, R., Hershman, W., & Orlander, J. (2007). A cross-sectional measurement of medical student empathy. *Journal of General Internal Medicine, 22*(10), 1434-1438. doi:10.1007/s11606-007-0298-x
- Coulehan, J. L., Platt, F., & Egner, B. (2001). "Let me see if I have this right ...": Words that help build empathy. *Annals of Internal Medicine, 135*(3), 221. doi:10.7326/0003-4819-135-3-200108070-00022
- Deckard, G. J., Hicks, L. L., & Hamory, B. H. (1992). The occurrence and distribution of burnout among infectious disease physicians. *Journal of Infectious Diseases, 16*, 224-228.
- Di Blasi, Z., Harkness, E., Ernst, E., Georgiou, A., & Kleijnen, J. (2001). Influence of context effects on health outcomes: a systematic review. *The Lancet, 357*(9258), 757-762. doi:10.1016/s0140-6736(00)04169-6
- 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*(4), 354-373. doi:10.1097/00001888-200604000-00009
- Dyrbye, L. N. (2008). Burnout and suicidal ideation among U.S. medical students. *Annals of Internal Medicine, 149*(5), 334. doi:10.7326/0003-4819-149-5-200809020-00008
- Dyrbye, L. N., Thomas, M. R., Power, D. V., Durning, S., Moutier, C., Massie, F. S., . . . Shanafelt, T. D. (2010). Burnout and serious thoughts of dropping out of medical school: a multi-institutional study. *Academic Medicine, 85*(1), 94-102. doi:10.1097/acm.0b013e3181c46aad
- Dyrbye, L. N., West, C. P., Satele, D., Boone, S., Tan, L., Sloan, J., & Shanafelt, T. D. (2014). Burnout among U.S. medical students, residents, and early career physicians relative to the general U.S. population. *Academic Medicine, 89*(3), 443-451. doi:10.1097/acm.0000000000000134
- Embriaco, N., Papazian, L., Kentish-Barnes, N., Pochard, F., & Azoulay, E. (2007). Burnout syndrome among critical care healthcare workers. *Current Opinion in Critical Care, 13*(5), 482-488. doi:10.1097/mcc.0b013e3282efd28a
- Fallowfield, L. (1992). The ideal consultation. *British Journal of Hosp Med, 47*, 364-367. Retrieved July 13, 2016.

- Halbesleben, J. R., & Rathert, C. (2008). Linking physician burnout and patient outcomes: Exploring the dyadic relationship between physicians and patients. *Health Care Management Review*, 33(1), 29–39.
- Halpern, J. (2011). From detached concern to empathy: humanizing medical practice. *New York: Oxford University Press*.
- Hickson, G. B. (2002). Patient complaints and malpractice risk. *JAMA*, 287(22), 2951. doi:10.1001/jama.287.22.2951
- Hickson, G. B., Federspiel, C. F., Blackford, J., Pichert, J. W., Gaska, W., Merrigan, M. W., & Miller, C. S. (2007). Patient complaints and malpractice risk in a regional healthcare center. *Southern Medical Journal*, 100(8), 791-796. doi:10.1097/smj.0b013e318063bd75
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513-524. doi:10.1037//0003-066x.44.3.513
- Hobfoll, S. E. (2001). The influence of culture, community, and the self in the stress process: Advancing conservation of resources theory. *Applied Psychology*, 50(3), 337–421.
- Hojat, M., Gonnella, J. S., Mangione, S., Nasca, T. J., Veloski, J. J., Erdmann, J. B., . . . Magee, M. (2002). Empathy in medical students as related to academic performance, clinical competence and gender. *Medical Education*, 36(6), 522-527. doi:10.1046/j.1365-2923.2002.01234.x
- Hojat, M., Mangione, S., Nasca, T. J., Rattner, S., Erdmann, J. B., Gonnella, J. S., & Magee, M. (2004). An empirical study of decline in empathy in medical school. *Medical Education*, 38(9), 934-941. doi:10.1111/j.1365-2929.2004.01911.x
- Hojat, M., Vergare, M. J., Maxwell, K., Brainard, G., Herrine, S. K., Isenberg, G. A., . . . Gonnella, J. S. (2009). The devil is in the third year: A longitudinal study of erosion of empathy in medical school. *Academic Medicine*, 84(9), 1182-1191. doi:10.1097/acm.0b013e3181b17e55
- Hojat, M., Louis, D. Z., Markham, F. W., Wender, R., Rabinowitz, C., & Gonnella, J. S. (2011). Physicians' empathy and clinical outcomes for diabetic patients. *Academic Medicine*, 86(3), 359-364. doi:10.1097/acm.0b013e3182086fe1
- Jackson, E. R., Shanafelt, T. D., Hasan, O., Satele, D. V., & Dyrbye, L. N. (2016). Burnout and alcohol abuse/dependence among U.S. medical students. *Academic Medicine*, 91(9), 1251-1256. doi:10.1097/acm.0000000000001138
- Kalliath TJ, O' Driscoll MP, Gillespie DF, Bluedorn AC (2000) A test of the Maslach Burnout Inventory in three samples of healthcare professionals. *Work Stress*. 14:35–50  
<http://dx.doi.org/10.1080/026783700417212>.

- Kim, S. S., Kaplowitz, S., & Johnston, M. V. (2004). The effects of physician empathy on patient satisfaction and compliance. *Eval Health Prof.*, 27(3), 237-251. doi:10.1177/0163278704267037
- Krasner, M. S., Epstein, R., & Beckman, H. (2009). Association of an educational program in mindful communication with burnout, empathy, and attitudes among primary care physicians. *JAMA*, 302(12), 1284. doi:10.1001/jama.2009.1384
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9), 606-613. doi:10.1046/j.1525-1497.2001.016009606.x
- Larson, E. B., & Yao, Y. (2005). Clinical empathy as emotional labor in the patient-physician relationship. *JAMA*, 293(9), 1100. doi:10.1001/jama.293.9.1100
- Leiter, M., & Maslach, C. (1988). The impact of interpersonal environment on burnout and organizational commitment. *Journal of Organizational Behavior*, 9, 297-308.
- Levinson, W. (2000). A study of patient clues and physician responses in primary care and surgical settings. *JAMA*, 284(8), 1021. doi:10.1001/jama.284.8.1021
- Liaison Committee on Medical Education. (2015). Function and Structure of a Medical School: Standards for Accreditation of Medical Education Programs Leading to the M.D. Degree. Retrieved August 9, 2016, from <http://www.lcme.org/publications.htm>.
- Lown, B. A., Rosen, J., & Marttila, J. (2011). An agenda for improving compassionate care: A survey shows about half of patients say such care is missing. *Health Affairs*, 30(9), 1772-1778. doi:10.1377/hlthaff.2011.0539
- Maguire, P., Faulkner, A., Booth, K., Elliott, C., & Hillier, V. (1996). Helping cancer patients disclose their concerns. *European Journal of Cancer*, 32(1), 78-81. doi:10.1016/0959-8049(95)00527-7
- Malterud, K. (2001). Qualitative research: standards, challenges, and guidelines. *The Lancet*, 358(9280), 483-488. doi:10.1016/s0140-6736(01)05627-6
- Mangione, S., Kane, G. C., Caruso, J. W., Gonnella, J. S., Nasca, T. J., & Hojat, M. (2002). Assessment of empathy in different years of internal medicine training. *Medical Teacher*, 24(4), 370-373. doi:10.1080/01421590220145725
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior*, 2(2), 99-113. doi:10.1002/job.4030020205
- Maslach, C., & Jackson, S. E. (1986). Maslach Burnout Inventory Manual. Palo Alto, CA: Consulting Psychologist Press.

- Mercer, S., & Reynolds, W. (2002). Empathy and quality of care. *The British Journal of General Practice*, 52, 9-12.
- Milette, K., Hudson, M., Baron, M., & Thombs, B. D. (2010). Comparison of the PHQ-9 and CES-D depression scales in systemic sclerosis: internal consistency reliability, convergent validity and clinical correlates. *Rheumatology*, 49(4), 789-796. doi:10.1093/rheumatology/kep443
- Moore, J. E. (2000). Why is this happening? A causal attribution approach to work exhaustion consequences. *Academy of Management Review*, 25(2), 335-349.
- Neumann, M., Wirtz, M., Bollschweiler, E., Mercer, S. W., Warm, M., Wolf, J., & Pfaff, H. (2007). Determinants and patient-reported long-term outcomes of physician empathy in oncology: A structural equation modeling approach. *Patient Education and Counseling*, 69(1-3), 63-75. doi:10.1016/j.pec.2007.07.003
- Neumann, M., Edelhäuser, F., Tauschel, D., Fischer, M. R., Wirtz, M., Woopen, C., . . . Scheffer, C. (2011). Empathy decline and its reasons: A systematic review of studies with medical students and residents. *Academic Medicine*, 86(8), 996-1009. doi:10.1097/acm.0b013e318221e615
- Newton, B. W., Savidge, M. A., Barber, L., Cleveland, E., Clardy, J., Beeman, G., & Hart, T. (2000). Differences in medical students' empathy. *Academic Medicine*, 75(12), 1215. doi:10.1097/00001888-200012000-00020
- Newton, B. W., Barber, L., Clardy, J., Cleveland, E., & O'sullivan, P. (2008). Is there hardening of the heart during medical school? *Academic Medicine*, 83(3), 244-249. doi:10.1097/acm.0b013e3181637837
- Ong, L., Haes, J. D., Hoos, A., & Lammes, F. (1995). Doctor-patient communication: A review of the literature. *Social Science & Medicine*, 40(7), 903-918. doi:10.1016/0277-9536(94)00155-m
- Oreskovich, M. R. (2012). Prevalence of alcohol use disorders among American surgeons. *Archives of Surgery*, 147(2), 168. doi:10.1001/archsurg.2011.1481
- Rafferty, J. P., Lemkau, J. P., Purdy, R. R., & Rudisill, J. R. (1986). Validity of the Maslach Burnout Inventory for family practice physicians. *Journal of Clinical Psychology*, 42(3), 488-492. doi:10.1002/1097-4679(198605)42:3<488::aid-jclp2270420315>3.0.co;2-s
- Rakel, D., Barrett, B., Zhang, Z., Hoeft, T., Chewning, B., Marchand, L., & Scheder, J. (2011). Perception of empathy in the therapeutic encounter: Effects on the common cold. *Patient Education and Counseling*, 85(3), 390-397. doi:10.1016/j.pec.2011.01.009



- Ramirez, A. J., Graham, J., Richard, M. A., Cull, A., Gregory, W. M., Leaning, M. S., et al. (1995). Burnout and psychiatric disorder among cancer clinicians. *British Journal of Cancer*, 71, 1263–1269.
- Riess, H., Kelley, J. M., Bailey, R. W., Dunn, E. J., & Phillips, M. (2012). Empathy training for resident physicians: A randomized controlled trial of a neuroscience-informed curriculum. *Journal of General Internal Medicine*, 27(10), 1280-1286. doi:10.1007/s11606-012-2063-z
- Rohland, B. M., Kruse, G. R., & Rohrer, J. E. (2004). Validation of a single-item measure of burnout against the Maslach Burnout Inventory among physicians. *Stress and Health*, 20(2), 75-79. doi:10.1002/smi.1002
- Rosen, I. M., Gimotty, P. A., Shea, J. A., & Bellini, L. M. (2006). Evolution of sleep quantity, sleep deprivation, mood disturbances, empathy, and burnout among interns. *Academic Medicine*, 81(1), 82-85. doi:10.1097/00001888-200601000-00020
- Santen, S. A., Holt, D. B., Kemp, J. D., & Hemphill, R. R. (2010). Burnout in medical students: Examining the prevalence and associated factors. *Southern Medical Journal*, 103(8), 758-763. doi:10.1097/smj.0b013e3181e6d6d4
- Schaufeli, W. B., Bakker, A. B., Hoogduin, K., Schaap, C., & Kladler, A. (2001). On the clinical validity of the Maslach Burnout Inventory and the burnout measure. *Psychology & Health*, 16(5), 565-582. doi:10.1080/08870440108405527
- Schernhammer, E. (2005). Taking their own lives — The high rate of physician suicide. *New England Journal of Medicine*, 352(24), 2473-2476. doi:10.1056/nejmp058014
- Schillinger, D., Piette, J., Grumbach, K., Wang, F., Wilson, C., Daher, C., . . . Bindman, A. B. (2003). Physician communication with diabetic patients who have low health literacy. *Archives of Internal Medicine*, 163(1), 83. doi:10.1001/archinte.163.1.83
- Shanafelt, T. D., West, C., Zhao, X., Novotny, P., Kolars, J., Habermann, T., & Sloan, J. (2005). Relationship between increased personal well-being and enhanced empathy among. *Journal of General Internal Medicine*, 20(7), 559-564. doi:10.1007/s11606-005-0102-8
- Shanafelt, T. D., Balch, C. M., Bechamps, G., Russell, T., Dyrbye, L., Satele, D., . . . Freischlag, J. (2010). Burnout and medical errors among American surgeons. *Annals of Surgery*, 251(6), 995-1000. doi:10.1097/sla.0b013e3181bfdab3
- Shanafelt, T. D., Boone, S., Tan, L., Dyrbye, L. N., Sotile, W., Satele, D., . . . Oreskovich, M. R. (2012). Burnout and satisfaction with work-life balance among U.S. physicians relative to the general U.S. population. *Archives of Internal Medicine*, 172(18), 1377. doi:10.1001/archinternmed.2012.3199
- Shanafelt, T., Bradley, K., Wipf, J., & Back, A. (2002). Burnout and self-reported patient care

- in an internal medicine residency program. *Annals of Internal Medicine*, 136, 358–367.
- Shanafelt, T. D., Raymond, M., Kosty, M., Satele, D., Horn, L., Phippen, J., . . . Gradishar, W. J. (2014). Satisfaction with work-life balance and the career and retirement plans of U.S. oncologists. *Journal of Clinical Oncology*, 32(11), 1127-1135. doi:10.1200/jco.2013.53.4560
- Shirom, A., Nirel, N., & Vinokur, A. D. (2006). Overload, autonomy, and burnout as predictors of physicians' quality of care. *Journal of Occupational Health Psychology*, 11(4), 328–342.
- Squier, R. W. (1990). A model of empathic understanding and adherence to treatment regimens in practitioner-patient relationships. *Social Science & Medicine*, 30(3), 325-339. doi:10.1016/0277-9536(90)90188-x
- Stecker, T. (2004). Well-being in an academic environment. *Medical Education*, 38(5), 465-478. doi:10.1046/j.1365-2929.2004.01812.x
- Stratton, T. D., Saunders, J. A., & Elam, C. L. (2008). Changes in medical students' emotional intelligence: An exploratory study. *Teaching and Learning in Medicine*, 20(3), 279-284. doi:10.1080/10401330802199625
- Strauss, A., & Corbin, J. (2015). Basics of qualitative research: techniques and procedures for developing grounded theory. *Los Angeles: SAGE*.
- Thomas, M. R., Dyrbye, L. N., Huntington, J. L., Lawson, K. L., Novotny, P. J., Sloan, J. A., & Shanafelt, T. D. (2007). How do distress and well-being relate to medical student empathy? A multicenter study. *Journal of General Internal Medicine*, 22(2), 177-183. doi:10.1007/s11606-006-0039-6
- Titov, N., Dear, B., McMillan, D., Anderson, T., J., Zou, & Sunderland, M. (2011). Psychometric Comparison of the PHQ-9 and BDI-II for measuring response during treatment of depression. *Journal of Cognitive Behavior Therapy*, 40(2), 126-136. <http://dx.doi.org/10.1080/16506073.2010.550059>
- Wallace, J. E., & Lemaire, J. (2009). Physician well-being and quality of patient care: An exploratory study of the missing link. *Psychology, Health & Medicine*, 14(5), 545-552. doi:10.1080/13548500903012871
- Weiner, S. J., & Auster, S. (2007). From empathy to caring: Defining the ideal approach to a healing relationship. . *The Yale Journal of Biology and Medicine*, 80(3), 123-130.
- West, C. P., Huschka, M. M., Novotny, P. J., Sloan, J. A., Kolars, J. C., Habermann, T. M., & Shanafelt, T. D. (2006). Association of perceived medical errors with resident distress and empathy. *JAMA*, 296(9), 1071. doi:10.1001/jama.296.9.1071

- West, C. P., Huntington, J. L., Huschka, M. M., Novotny, P. J., Sloan, J. A., Kolars, J. C., . . . Shanafelt, T. D. (2007). A prospective study of the relationship between medical knowledge and professionalism among internal medicine residents. *Academic Medicine*, 82(6), 587-592. doi:10.1097/acm.0b013e3180555fc5
- West, C. P., Shanafelt, T. D., & Cook, D. A. (2010). Lack of association between resident doctors' well-being and medical knowledge. *Medical Education*, 44(12), 1224-1231. doi:10.1111/j.1365-2923.2010.03803.x
- Williams, E. S., Lawrence, E. R., Campbell, K. S., & Spiehler, S. (2009). The effect of emotional exhaustion and depersonalization on physician–patient communication: A theoretical model, implications, and directions for future research. *Biennial Review of Health Care Management: Meso Perspective Advances in Health Care Management*, 3-20. doi:10.1108/s1474-8231(2009)0000008005
- Wolfe, A. (2001). Institute of Medicine report: Crossing the quality chasm: A new health care system for the 21st century. *Policy, Politics, & Nursing Practice*, 2(3), 233-235. doi:10.1177/152715440100200312
- Zachariae, R., Pedersen, C. G., Jensen, A. B., Ehrnrooth, E., Rossen, P. B., & Maase, H. V. (2003). Association of perceived physician communication style with patient satisfaction, distress, cancer-related self-efficacy, and perceived control over the disease. *British Journal of Cancer*, 88(5), 658-665. doi:10.1038/sj.bjc.6600798





## Jefferson Scale of Empathy

Physician/Health Professions (HP - version)

**Instructions:** Using a ball-point pen, please indicate the extent of your agreement or disagreement with each of the following statements by marking the appropriate circle to the right of each statement.

Please use the following 7-point scale (a higher number on the scale indicates more agreement).  
Mark one and only one response for each statement.

1 — 2 — 3 — 4 — 5 — 6 — 7  
Strongly Disagree Strongly Agree

	1	2	3	4	5	6	7
1. My understanding of how my patients and their families feel does not influence medical or surgical treatment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. My patients feel better when I understand their feelings.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. It is difficult for me to view things from my patients' perspectives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. I consider understanding my patients' body language as important as verbal communication in caregiver-patient relationships.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. I have a good sense of humor that I think contributes to a better clinical outcome.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Because people are different, it is difficult for me to see things from my patients' perspectives.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. I try not to pay attention to my patients' emotions in history taking or in asking about their physical health.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Attentiveness to my patients' personal experiences does not influence treatment outcomes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. I try to imagine myself in my patients' shoes when providing care to them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. My patients value my understanding of their feelings which is therapeutic in its own right.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Patients' illnesses can be cured only by medical or surgical treatment; therefore, emotional ties to my patients do not have a significant influence on medical or surgical outcomes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. I try to understand what is going on in my patients' minds by paying attention to their non-verbal cues and body language.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. I believe that emotion has no place in the treatment of medical illness.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Empathy is a therapeutic skill without which success in treatment is limited.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. An important component of the relationship with my patients is my understanding of their emotional status, as well as that of their families.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. I try to think like my patients in order to render better care.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I do not allow myself to be influenced by strong personal bonds between my patients and their family members.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. I do not enjoy reading non-medical literature or the arts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. I believe that empathy is an important therapeutic factor in medical or surgical treatment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## Jefferson Scale of Empathy

### Scoring Algorithm

A respondent must answer at least 16 (80%) of the 20 items; otherwise, the form should be regarded as incomplete and excluded from the data analysis.

If a respondent fails to answer 4 or fewer items, the missing values should be replaced with the mean score calculated from the items the respondent completed.

To score the scale: Items 1, 3, 6, 7, 8, 11, 12, 14, 18, and 19 are reverse scored items (i.e., Strongly Agree=1 Strongly Disagree=7), while the other items are directly scored on their Likert weights (i.e., Strongly Disagree=1 Strongly Agree=7).

The total score is the sum of all item scores.

The higher the score, the more empathic the behavioral orientation.

***PLEASE NOTE: This scoring algorithm is provided for the sole use of scoring JSE forms purchased for a single project. Copying or sharing the algorithm with any other person or entity is prohibited.***



## Appendix B: Maslach Burnout Inventory (MBI)

For use by Rustin D Carter only. Received from Mind Garden, Inc. on November 17, 2016



To whom it may concern,

The above-named person has made a license purchase from Mind Garden, Inc. and has permission to administer the following copyrighted instrument up to the quantity purchased:

**Maslach Burnout Inventory Forms:** Human Services Survey, Human Services Survey for Medical Personnel, Educators Survey, General Survey, or General Survey for Students.

Three sample items from a single form of this instrument may be reproduced for inclusion in a thesis or dissertation. An entire form or instrument may not be included or reproduced at any time in any published material. Citation of the instrument must include the applicable copyright statement listed below.

Copyright statements:

**MBI - Human Services Survey - MBI-HSS:** Copyright ©1981 Christina Maslach & Susan E. Jackson. All rights reserved in all media. Published by Mind Garden, Inc., [www.mindgarden.com](http://www.mindgarden.com)

**MBI - Human Services Survey for Medical Personnel - MBI-HSS (MP):** Copyright ©1981, 2016 by Christina Maslach & Susan E. Jackson. All rights reserved in all media. Published by Mind Garden, Inc., [www.mindgarden.com](http://www.mindgarden.com)

**MBI - Educators Survey - MBI-ES:** Copyright ©1986 Christina Maslach, Susan E. Jackson & Richard L. Schwab. All rights reserved in all media. Published by Mind Garden, Inc., [www.mindgarden.com](http://www.mindgarden.com)

**MBI - General Survey - MBI-GS:** Copyright ©1996 Wilmar B. Schaufeli, Michael P. Leiter, Christina Maslach & Susan E. Jackson. All rights reserved in all media. Published by Mind Garden, Inc., [www.mindgarden.com](http://www.mindgarden.com)

**MBI - General Survey for Students - MBI-GS (S):** Copyright ©1996, 2016 Wilmar B. Schaufeli, Michael P. Leiter, Christina Maslach & Susan E. Jackson. All rights reserved in all media. Published by Mind Garden, Inc., [www.mindgarden.com](http://www.mindgarden.com)

Sincerely,

Robert Most  
Mind Garden, Inc.

For use by Rustin D Carter only. Received from Mind Garden, Inc. on November 17, 2016

### MBI Human Services Survey for Medical Personnel

How often:	0	1	2	3	4	5	6
	Never	A few times a year or less	Once a month or less	A few times a month	Once a week	A few times a week	Every day

How often  
0-6

Statements:

1. \_\_\_\_\_ I feel emotionally drained from my work.
2. \_\_\_\_\_ I feel used up at the end of the workday.
3. \_\_\_\_\_ I feel fatigued when I get up in the morning and have to face another day on the job.



### Appendix C: Patient Health Questionnaire-9 (PHQ-9)

PHQ-9 Score	Provisional Diagnosis	Treatment Recommendation <i>Patient Preferences should be considered</i>
5-9	Minimal Symptoms*	Support, educate to call if worse, return in one month
10-14	Minor depression ++ Dysthymia* Major Depression, mild	Support, watchful waiting Antidepressant or psychotherapy Antidepressant or psychotherapy
15-19	Major depression, moderately severe	Antidepressant or psychotherapy
>20	Major Depression, severe	Antidepressant and psychotherapy (especially if not improved on monotherapy)

Over the past 2 weeks, how often have you been bothered by any of the following problems?	Not At all	Several Days	More Than Half the Days	Nearly Every Day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3
3. Trouble falling asleep, staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself - or that you're a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or, the opposite - being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

UNIVERSITY of  
**HOUSTON**

DIVISION OF RESEARCH  
Institutional Review Boards

APPROVAL OF SUBMISSION

November 16, 2017

Rustin Carter

rdcarter@uh.edu

Dear Rustin Carter:

On November 16, 2017, the IRB reviewed the following submission:

Type of Review:	Initial Study
Title of Study:	Physician Wellness: Impact of Stress, Burnout, and Depression on Medical Trainee Empathy
Investigator:	Rustin Carter
IRB ID:	STUDY00000622
Funding/ Proposed Funding:	Name: Unfunded
Award ID:	
Award Title:	
IND, IDE, or HDE:	None
Documents Reviewed:	<ul style="list-style-type: none"><li>• Permission letter--archival data, Category: Letters of Cooperation / Permission;</li><li>• UT IRB approval--archival data, Category: Additional IRB approval letters;</li><li>• Empathy IRB , Category: IRB Protocol;</li></ul>
Review Category:	Exempt
Committee Name:	Not Applicable
IRB Coordinator:	<a href="#">Sandra Arntz</a>

The IRB approved the study from November 16, 2017 to November 15, 2022, inclusive.

To ensure continuous approval for studies with a review category of "Committee Review" in the above table, you must submit a continuing review with required explanations by the deadline for the October 2018 meeting. These deadlines may be found on the compliance website (<http://www.uh.edu/research/compliance/>). You can submit a continuing review by navigating to the active study and clicking "Create Modification/CR."

For expedited and exempt studies, a continuing review should be submitted no later than 30 days prior to study closure.



DIVISION OF RESEARCH  
Institutional Review Boards

If continuing review approval is not granted on or before November 15, 2022, approval of this study expires and all research (including but not limited to recruitment, consent, study procedures, and analysis of identifiable data) must stop. If the study expires and you believe the welfare of the subjects to be at risk if research procedures are discontinued, please contact the IRB office immediately.

Unless a waiver has been granted by the IRB, use the stamped consent form approved by the IRB to document consent. The approved version may be downloaded from the documents tab.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library within the IRB system.

Sincerely,

Office of Research Policies, Compliance and Committees (ORPCC)  
University of Houston, Division of Research  
713 743 9204  
[cphs@central.uh.edu](mailto:cphs@central.uh.edu)  
<http://www.uh.edu/research/compliance/irb-cphs/>