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Sayli Sonsurkar April 8, 2024

Compassion Meditation to Improve Psychological Wellbeing Among Volunteer Collegiate Emergency Medical Technicians (EMTs)

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Abstract

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Emergency Medical Technicians (EMTs) play a crucial role delivering life-saving care to acutely ill or injured patients. On some college campuses, student volunteer EMTs provide emergent care to their peers and the greater community. EMTs routinely face significant physical and psychological stressors, with frequent exposure to traumatic events, and often with little to no knowledge of patients' outcomes. Providers at these collegiate-based emergency medical services (CBEMS) may be at greater risk for psychological distress due to their dual status as EMTs and college students. CBEMS providers must balance an already grueling profession with the demands and rigor of a college education. CBEMS providers also experience

Here, we used a randomized, waitlist-controlled design to investigate the feasibility, perceived benefit, and effectiveness of CBCT (Cognitively-Based Compassion Training) to improve CBEMS provider wellbeing. CBCT is derived from the Indo-Tibetan Buddhist *lojong* (Tib: བློ་སྦྱོང་, Wylie: blo sbyong) or mind-training tradition and was adapted to be accessible to those of any or no faith tradition. CBCT is an analytical style of meditation that combines exercises for stabilizing attention with contemplation of aphorisms, visualizations, self-inquiry, and related meditative exercises for cultivating and reinforcing compassion.

First, we conducted semi-structured interviews with volunteer CBEMS EMTs (n=5) to elucidate the prehospital environment and factors exacerbating stress and potentially bolstering their resilience. Participants (n=13) also responded to open-ended prompts regarding their interactions with patients, providers, and the EMS system. Transcripts were coded by two independent coders. Next, EMT providers were randomly assigned to CBCT or to a waitlist group (n=23, 8 CBCT, 15 waitlist), and all participants completed validated self-report measures of burnout, compassion satisfaction, secondary traumatic stress, perceived stress, and compassion malleability before and after CBCT. We conducted paired and independent t-tests on all self-report variables to identify significant effects of group and time; group-by-time interactions were assessed using PROC MIXED repeated measures to evaluate the effectiveness of CBCT.

Semi-structured interviews and recorded prompts revealed important insights about factors that exacerbate stress among student EMTs. Participants discussed experiencing excessive rumination, difficulty transitioning between academic and occupational roles, and empathic entanglements from treating their peers. We found that participants randomized to CBCT training reported a significant increase in compassion malleability ($p=0.003$) and reduced burnout ($p=.04$). This mixed methods study indicates that CBCT is effective in improving well-being among undergraduate EMTs and it yields insights that could improve conditions for CBEMS EMT providers and their patient

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ABBREVIATIONS

EMS: Emergency Medical Services
EMT: Emergency Medical Technician
CBEMS: Collegiate-Based Emergency Medical Services
EEMS: Emory Emergency Medical Services
NCEMSF: National College EMS Foundation
CBCT: Cognitively-Based Compassion Training
STS: Secondary Traumatic Stress
CF: Compassion Fatigue
CS: Compassion Satisfaction
CBT: Cognitive Behavioral Therapy
MBP: Mindfulness-Based Program
CCT: Compassion Cultivation Training
SCT: Sustainable Compassion Training

CHAPTER 1: INTRODUCTION

Imagine you are a college student, sitting in your Biology class, when your Emergency Medical Services (EMS) radio blares. You gather your belongings and hastily leave class -- attempting not to cause too much of a distraction. You meet your partner at your truck outside the building to learn that the call is high acuity: a cardiac arrest. With lights flashing and sirens blaring, together you race to the dispatched location. Cardiac monitor, medications, and advanced airway measures in hand, you calmly but diligently proceed to the location – determined to save a life. You are the first ones to arrive on scene. You knock on the door announcing yourself and then enter. Limp on the couch, blue and cold, no pulse and with obvious signs of death you find your classmate. Your bag drops. Your heart sinks. Yet, there is no time to feel. Beside him, you see his parents, crying, on their knees. You crouch down, hold their hands, and inform them that their child has passed away*. "We regret to inform you that your son has passed away. We are so sorry for your loss."* They fall into your arms. You hold them till the police and other agencies arrive. You give a report and fill out paperwork. And then you return to class.

On many campuses across North America, collegiate-based EMS organizations (CBEMS) provide emergent prehospital care to their communities. The tragic story above is from a call I experienced working as an Advanced Emergency Medical Technician (EMT) for my university's collegiate EMS organization. While a more extreme circumstance, these experiences are not entirely uncommon. Many collegiate student EMT providers can recount difficult experiences of responding to one's peers, ranging from alcohol intoxication, anaphylaxis, overdoses, traumas,

and more. EMTs are typically faced with significant physical and psychological stressors and frequent exposure to traumatic events, but often have little to no time for reflection or closure (Regehr et al., 2002). Furthermore, the prehospital setting is uniquely stressful; whereas hospital care occurs in a sterile, controlled environment, prehospital care occurs in residences, public areas, or the side of the road, and entails extreme time sensitivity. EMS professionals also face significant physical and psychological stressors from exposure to distinctly stressful events. Such events may include the death of a child, elderly abuse, and incidents involving multiple casualties (Regehr et al., 2002). The profession is also physically grueling, with shifts exceeding 12 or 24 hours, exposure to patient illnesses and communicable diseases, and tasks such as lifting patients and carrying heavy equipment (Weaver et al., 2015).

CBEMS providers must balance an already grueling profession with the demands and rigor of a college education. Their dual status as both college students and EMS personnel places them at greater risk for psychological distress. In addition, CBEMS providers face the added affective component of responding within one's own community and to one's peers. A survey of 474 CBEMS providers at a national conference showed that 32% self-reported depression and 20% reported thoughts of self-harm (Friedman et al., 2020). Additionally, 33% reported not feeling comfortable with seeking help for themselves (Friedman et al., 2020). In comparison, the prevalence of depression in college students as a whole ranges from 7% to 17% (Friedman et al., 2020). Thus, CBEMS providers may be at higher risk for development of mental health disorders compared to their non-provider peers.

Routine exposure to high acuity, critical incidents can take a significant toll on providers' wellbeing, placing them at high risk for psychological distress. High workload, systematic

frustration, and exhaustion can lead to burnout (Maslach, 1986). In the last few decades, research has also recognized that the act of witnessing and helping others through their trauma causes a unique kind of psychological distress for the helpers (Stamm, 2010). Secondary traumatic stress (STS) refers to the psychological symptoms gained through exposure to another individual suffering a certain trauma or extreme stress (Baird & Kracen, 2006). In addition, empathic entanglements (synchronization of emotional states between people), are more likely in these CBEMS populations due to the peer-to-peer nature, also place providers at risk for compassion fatigue (Orlovsky, 2006). Compassion Fatigue is regarded as the cost of caring; the state when one has overused one's capacity to care for another. This not only negatively impacts providers but also places their patients at risk, since it can result in decreased productivity, more sick days, and higher employee turnover (Najjar et al., 2009). The national nursing association in Canada has even named compassion fatigue as a substantial challenge to nursing practice (Sinclair et al., 2017). For the past two decades, the term has been globally accepted as a validated construct and clinical reality (Sinclair et al., 2017). However, some argue that there is more research needed into how compassion presents in healthcare to generate a more evidence-based patient-informed definition of both compassion and compassion fatigue (Sinclair et al., 2017).

Current coping mechanisms generally used by prehospital providers largely center around repressive coping and the suppression of feelings after high acuity events (Bonanno, 2004). These mechanisms, however, have been positively correlated with psychological problems such as PTSD, anxiety, and depression (Brown et al., 2002). Other common coping methods in the profession include dark humor, substance use, peer communication, avoidance,

dissonance, and cognitive restructuring (Alexander & Klein, 2001). Certain coping methods, such as self-help and approach coping strategies have been associated with positive outcomes like relating to others, personal strength, and spiritual change. Others, such as avoidant coping and self-punishment, are associated with increased distress with symptoms of avoidance, intrusion, and hyperarousal. Many, however, note that it is important to recognize that coping strategy effectiveness depends on the context of specific trauma incidents (Kirby et al., 2011). Mechanisms that are typically maladaptive, may actually be useful in some critical situations (Kirby et al., 2011). Thus, more intentional and evidence-based methods that mitigate traumatic stress symptomatology and serve as proactive measures are essential for both provider and patient safety. Given that these providers are at the forefront of their careers, preventative measures have the potential to have even greater benefit.

To address the vital need for evidence-based approaches to mitigate stress and bolster resilience in this population, this thesis introduces and evaluates the feasibility, perceived benefit, and efficacy of a compassion-based meditation protocol at a CBEMS system for a Southern liberal arts research university. This thesis draws on scholarship and insight from psychology, Tibetan studies, linguistics, and public health. Chapter 2 delves into the dual status of CBEMS providers. Reviewing each status' stressors independently, this chapter demonstrates the significant psychological risk that CBEMS providers are faced with. Next, this work will examine the individual statuses of these providers as (1) college students and (2) EMT providers, and where stressors arise in these identities and roles.

Next, Chapter 3 reviews the theory and evidence for compassion meditation protocols more generally and how they may be particularly beneficial for groups such as the one of

interest. We will focus specifically on Cognitively-Based Compassion Training (CBCT), the protocol investigated in this thesis. CBCT is based on Indo-Tibetan Buddhist *lojong,* or mind training, practices and was designed and secularized by Lobsang Tenzin Negi, Ph.D., a Teaching Professor in the Department of Religion, and co-founder and executive director of the Center for Contemplative Sciences and Compassion-Based Ethics at Emory University. CBCT was intentionally designed to be accessible to those of any or no faith tradition. Practices and exercises employed in CBCT are regarded as "cognitive" or "analytical" types of meditation – which refer to a process of arriving at personal insights through mental investigation (Ash et al., 2021). Analytical meditation differs from meditation practices that focus instead on somatic experiences of compassion (Silva & Dodson-Lavelle, 2011). CBCT instead uses cognitive reappraisals and mental retraining to restructure perspectives and actively cultivate empathy, impartiality, and compassion (Silva & Dodson-Lavelle, 2011). CBCT is also grounded in significant scientific research and has been used in diverse participant groups, from veterans diagnosed with PTSD, to educators, to healthcare personnel (Ash et al., 2021). These studies show that CBCT decreases stress biomarkers and the inflammatory response to stress, as well as depression, loneliness, and PTSD symptoms (Desbordes et al., 2012; Dodds et al., 2015; Lang et al., 2019; Pace et al., 2012). In addition, CBCT also increases compassion and related neural activity, empathy, self-compassion, and hopefulness (LoParo et al., 2018; Mascaro et al., 2013; Ozawa-de Silva et al., 2012; Reddy et al., 2013). Chapter 3 draws on Tibetan Buddhist frames of thoughts that have led to the development of CBCT and reviews the CBCT studies done thus far.

Finally, Chapters 4 and 5 focus on the original research of this project-- the development, implementation, and evaluation of the experimental protocol itself used to

introduce and evaluate CBCT delivered to Emory EMS. Specifically, Chapter 4 presents the methodology and development for this randomized, waitlist-controlled longitudinal study. This mixed methods examination incorporated semi-structured interviews, self-reported survey measures, and short recorded prompts with thematic analysis to provide a thorough understanding of the EEMS system itself and the effect of compassion meditation training on EEMS volunteer well-being. Mindfulness studies far too often focus only on quantitative efficacy measures without looking deeper into feasibility and specific needs of the population. Thus, this study thoroughly investigates a preventative intervention using interdisciplinary methodology and a unique compassion meditation protocol. Chapter 5 presents the results of this study and discusses their implications and limitations. This project goes beyond simply testing CBCT and has the potential to drastically improve the quality of life of EEMS providers and others that face similar occupational environments and demand.

"You might also want to analytically meditate on how you might have contributed in some way to the situation that made you angry. And while in the midst of anger, your tendency is to perceive the person who harmed you as 100% bad. But deeper analysis will make you realize that every human being is composed of both positive and negative characteristics, and you can try to get a more realistic view of the person, thereby diluting the anger harbored against the person." -- Dalai Lama

CHAPTER TWO:

THE DUAL STATUS OF CBEMS PROVIDERS: A LITERATURE REVIEW

The History and Breadth of CBEMS Organizations:

Collegiate-Based EMS organizations (CBEMS) provide first responder and emergency medical services to over 250+ college campuses across North America (King et al., 1996). 25% of college campuses have such programs (King et al., 1996). CBEMS organizations have evolved greatly in the last twenty-five years with new organizations established every year (Friedman et al., 2018). From 2001 to 2006 there was an average of 4.3 new CBEMS groups instituted each year (Fisher et al., 2006). In 2018, there were approximately 20 million undergraduate students enrolled at US colleges (Monahan et al., 2021). This presents a large patient population for collegiate EMS agencies. Moreover, they respond to professors, staff, visitors, and the greater neighboring community.

College campuses are wide-ranging communities, filled with thousands of students, faculty, staff, and visitors of all ages. Large populations of individuals are congregated in relatively small areas, creating a need for prehospital care as well as presenting complex physical layouts with difficult access (Fisher et al., 2006). For this reason, campus safety and preparedness organizations must devise robust measures to ensure safe practices and preventative measures. Around 90% of four-year public and private college campuses rely on jurisdictional EMS agencies via local 911 (Monahan et al., 2021). Yet, CBEMS organizations provide advantageous complementary capabilities and unique benefits. For example, they offer rapid response times, easy integration into campus gatherings and events, and unique learning

opportunities for students (Fisher et al., 2006). CBEMS providers also often have a heightened understanding of the intricacies of campus buildings and layouts, resulting in a more efficient response. For example, an Atlanta based jurisdictional ambulance company in 2022 had an average response time of 22-29 minutes for critical and emergent calls and 46-89 minutes for lower acuity and non-acute requests (Polansky, 2022). In contrast, in 2023, reports from an Atlanta based CBEMS show an average response time of 4 minutes. The average response time for CBEMS agencies across North America is 2.6 minutes (Fisher et al., 2006). Furthermore, student EMS providers have the distinct ability to offer peer-to-peer support and to establish a strong foundation in the subsequent chain of medical care (Gorstein & Riviello, 2018). This can be distinctly advantageous in mental health crises as students may feel more comfortable speaking with a CBEMS provider as opposed to a local non-campus EMS provider (Friedman, Bartho, et al., 2022). CBEMS systems also tend to have a greater emphasis on mental health and wellness compared to their local non-campus counterparts (Friedman, Bartho, et al., 2022). Some have raised questions about confidentially and privacy with these peer-to-peer provider-patient relationships (Friedman, Bartho, et al., 2022). Yet, these concerns are mitigated by the fact that all EMT providers including CBEMS providers are held to the same Health Insurance Portability and Accountability (HIPAA) standards and legal guidelines as their non-campus-based counterparts. However, as noted in Chapter 1, the peer-to-peer factor can be an additional stressor for CBEMS providers, as responding to one's peers or seeing patients on campus when not on shifts can be especially distressing.

The internal operating structure of CBEMS systems typically involve staffing by students with oversight from campus health systems, campus safety departments, or student

government bodies (Fisher et al., 2006). EMS system capacities differ by agency with some providing only first responder care while others own and operate multiple transport vehicles (Fisher et al., 2006). An estimated 32% offer transport capabilities (Fisher et al., 2006). Since, the EMS scope of practice differs by state, systems also have different operational capabilities as well. Providers in these organizations range from staffing by those certified as a Basic EMT to Advanced EMT to the Paramedic level. Basic EMTs provide out of hospital emergency care and transportation for emergent patients. They have the basic skills, knowledge, and competencies to transport patients from low acuity to critical life threatening emergencies. 130 hours of course work, clinical training, as well as examinations are required for this level of licensure (*National Registry of Emergency Medical Technicians,* 2024). Advanced EMTs provide basic and limited advanced emergency medical care and transport for patients. AEMTs must complete an additional 150-200 hours of classroom training after the basic level, along with field training and examinations (*National Registry of Emergency Medical Technicians,* 2024). Paramedics are allied health professionals that provide advanced emergency medical care. They possess complex knowledge and skills. Paramedic courses typically range from 6 months to 2 years of training (*National Registry of Emergency Medical Technicians,* 2024).

CBEMS systems also typically take part in standby operations for special events and gatherings on campus as well as community outreach safety events. In addition, these systems are typically run by volunteers. In addition to standard services and operations, CBEMS are often called into unique service opportunities during acute crises. A report on Tulane Emergency Medical Services described how they stepped up to provide care for those displaced by Hurricane Katrina. The Tulane CBEMS services initially worked as a local disaster-response

team caring for their peers that had been evacuated. After the storm passed, the teams packed up their two ambulances and a trailer and headed for the Louisiana Emergency Operations Center to triage patients, assist in search and rescue, and deliver drugs and medical supplies (Fisher et al., 2006). Emory EMS (EEMS) has also made significant contributions to their community from providing flu and COVID-19 vaccines, to working 14+ special event standby events a month when in service, to taking part in campus education and safety events.

To increase learning and community among CBEMS, the National College EMS Foundation (NCEMSF) was formalized in 1993 to provide collegiate EMTs with avenues for development (Friedman et al., 2018). This organization facilitates communication and offers resources and spaces for advancement among collegiate EMTs (Friedman et al., 2018). Prior to the conception of NCEMSF, systems functioning in isolation and newer groups had no outlet for guidance from more established older organizations (Fisher et al., 2006). NCEMSF offers education and advocacy on the legitimacy of CBEMS. Despite being licensed providers of equal education and training, there is a common sentiment that CBEMS providers offer lower quality of care than traditional EMS professionals (Friedman et al., 2018). This sentiment presents as a potential stressor for CBEMS providers as they are asked to meet the same expectations, without the same regard.

Current research on CBEMS organizations, while limited, largely centers around descriptive case studies of individual system operational preparedness for various medical emergencies. For example, Stefos and Nable report on the implementation of a high-performance cardiopulmonary resuscitation (CPR) protocol at Georgetown EMS (Stefos & Nable, 2016). Jeffrey et al. report on naloxone administration for suspected opioid overdose by

Georgetown EMS (Jeffery et al., 2017). Friedman et al. show a systematic evaluation of characteristics and outcomes of cardiac arrests across several national CBEMS systems (Friedman, Koenig, et al., 2022). Friedman et al. present a first response service model for mass-gathering medical care at a college music festival by Skidmore EMS (Friedman et al., 2019). Ordway et al. investigated EMS resource utilization at college campus mass gathering events (Ordway et al., 2018). Gorstein et al. evaluated proper response and treatment guidelines for collegiate providers (Gorstein & Riviello, 2018). Goroff and Farinelli review relevant clinical presentation and treatment guidelines for benzodiazepine and alcohol co-ingestion for collegiate EMS providers (Goroff et al., 2018). Some groups have provided surveys with descriptive statistics of CBEMS system providers, call volume, structure, etc. across the nation, such as Fisher et al. and King et al (King et al., 1996), Fisher et al., 2006). CBEMS organizations have evolved greatly in the last twenty-five years with new organizations implemented every year (Friedman et al., 2018). In comparison, there is only one known article regarding the mental health of CBEMS providers, which reports on the implementation of a mental health task force within Skidmore EMS (Friedman et al., 2020). Notably this paper did not evaluate the effectiveness or perceived benefit of the changes made.

Sources of Stress as College Student Status:

The mental health challenges of college students are well documented and are increasing in prevalence in recent years. College presents a challenging period for many students with stressors such as academic performance, interpersonal dynamics, and living away from home (Friedman, Bartho, et al., 2022). College students also develop new relationships, experiences, and identities with greater exploration of racial/ethnic, gender, and sexual areas

(Byrd & McKinney, 2012; Liu et al., 2019; Syed & Azmitia, 2009). Perhaps not surprisingly, then, early adulthood and late adolescence are common onset times for many psychiatric conditions (Kessler et al., 2007). Most lifetime psychiatric disorders have first onset by the age of 24 (Kessler et al., 2005). The Healthy Minds Study 2021-2022 surveyed 76,406 college students across the country and found that 44% of students reported some form of depression, 37% some form of anxiety, and 15% suicidal ideation (Zhou et al., 2022). A third of US college students in the past year reported feeling so depressed that it was difficult to function (ACHA, 2019). Depressive disorders are the most frequently noted psychiatric conditions in college students and are the leading cause of disability in the US (Acharya et al., 2018; Ferrari et al., 2013).

Certain factors also place individuals at higher risk for psychological distress in college. Female students are more likely to screen positive for major depression and anxiety conditions (Blanco et al., 2021). Depressive and anxiety symptoms are also more common in students from lower socioeconomic backgrounds (Hyun, 2017). Perfectionism and its associated personality characteristics have also been correlated with psychological distress (Rice et al., 2006). While perfectionism is multidimensional and can have positive associations, it is transdiagnostic and associated with many forms of psychopathology (Egan et al., 2011). This kind of perfectionism, known as maladaptive perfectionism, characterized by personally demanding standards and basis of one's self-worth on performance outcomes (Shafran et al., 2002). This involves critical self-evaluations, fear of making mistakes and/or failure, and substantial concern about negative evaluation by others (Frost et al., 1990). The COVID-19 pandemic also exacerbated many mental health concerns in college students. Wang et al. found in their cross-sectional survey of

2,031 Texas A&M college students that 71% noted their stress/anxiety levels increased during the pandemic and that less than half (43.25%) indicated they were able to cope with their current stressors (X. Wang et al., 2020).

Despite the demonstrated mental health challenges and stressors college students face, support services are underutilized. When students visited a counseling center around a quarter of them did not return for their last scheduled appointment and 14% declined further services (CCMH, 2021). Fewer than half of students that screened positive for major depression or anxiety disorders received any mental health services in the previous year, despite having nearly universal student health insurance and access to free medical and short-term therapy services (Eisenberg et al., 2007).

The stressors college students experience can have serious negative effects including impaired social functioning, lowered academic performance, and even dropping out or suicidal behavior. Depression among college students can lead to anxiety problems, substance abuse, poor academic performance, suicides, risky and violent behavior, and puts them at greater risk for other mental disorders later in life (Hysenbegasi et al., 2005; Naicker et al., 2013). Thus, college students alone represent a vulnerable group at risk for psychological distress. High-achieving, highly motivated, perfectionist students, that make up a significant population of elite college intuitions and CBEMS organizations, are at even higher risk.

Psychological Stressors and Symptomatology as EMT Providers:

The occupational requirements of EMS are intrinsically stressful. In the U.S there are approximately 17.4 million EMS emergency responses per year (H. E. Wang et al., 2013). EMS providers routinely provide care to patients in critical conditions, with unpredictable stressors

and threats to their own being. Many factors serve as stressors in EMS providers, including: dangerous and uncontrollable situations, distance from further resources, witnessing severe accidents and death, critical decision making under pressure, lack of control, long shifts, risk of infection, and threats by patients and other dangerous scenes (Afshari et al., 2021). EMS professionals are also exposed to pain and suffering daily when working (Regehr et al., 2002), rescuing individuals from trapped crashed vehicles, caring for victims of assault, collecting remains of suicide victims, and more (Regehr et al., 2002). A cross-sectional survey across nine EMS agencies found that one in two EMS professionals knew another EMS professional that had committed suicide (Renkiewicz & Hubble, 2022).

A. EMS and Burnout

Graham Greene, in his novel *A Burnt-Out Case*, was the first to use the term burnout (Greene, 2010). He writes of an architect who found little joy in life and no meaning in his profession. His term burnout was carried into the psychological sector by Herbert Freudenberger, who defined it as "becoming exhausted by making excessive demands on energy, strength, or resources" in an occupational setting (Freudenberger, 1974). Christina Maslach later incorporated the term into the scientific literature by defining it as a progressive development of fatigue, cynicism, and reduced care and commitment in social-care professions (Maslach & Leiter, 1976). After numerous empirical studies, Maslach and Jackson operationalized the definition as a psychological syndrome, noting that it involves emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach & Jackson, 1981). The "symptom" aspect of this definition was a key turning point that recognized the distinct symptomatology that deviated from normal character.

Burnout most commonly arises when there is a discrepancy between job demands and job-related resources, with demands outweighing resources (Demerouti et al., 2001). Job demands are physical, social, or organizational factors that necessitate physical and/or mental effort (Crowe et al., 2020). Job resources reflect systems in place that reduce burden, stimulate learning and development, or help achieve goals, etc. (Crowe et al., 2020). Edu-Valsania et al. present several theories that might provide explanations of how burnout arises, including: social cognitive theory, social exchange theory, organizational theory, structural theory, job demands-resource theory, and emotional contagion theory (Edú-Valsania et al., 2022). Certain personality traits also protect or enhance instances of burnout. Agreeableness, conscientiousness, extraversion, openness to experience, positive psychological capital, and problem-focused coping are known protectors of burnout (Edú-Valsania et al., 2022). On the other hand, neuroticism, external locus of control, type A personalities, alexithymia (emotional blindness) and emotion-focused coping are known risk factors for and enhancers of burnout (Edú-Valsania et al., 2022).

Individuals affected by burnout may experience significant negative psychological and health impacts. Psychological impacts may include sleeplessness, concentration and memory problems, anxiety, depression, dissatisfaction with life, irritability, and increased alcohol and tobacco consumption (Madsen et al., 2015; Maslach & Leiter, 2016; Shanafelt et al., 2003). Health consequences from studies looking at employees with high burnout rates conclude that these individuals are at higher risk for musculoskeletal pain, gastric issues, cardiovascular disorders, headaches, increased susceptibility to infections, insomnia, and chronic fatigue (Giorgi et al., 2017). The effects of burnout go beyond isolated provider distress and have in

fact been shown to increase absenteeism and attrition, reduced quality of patient care, and more frequent medical errors (Dewa et al., 2017; Peterson et al., 2011).

The effects of burnout are wide-ranging and complex in EMT providers. Based on empirical studies on 120 ambulance workers, Deniz et al. show that burnout affects occupational productivity by reducing overall satisfaction, performance, and commitment (DENİZ et al., 2016). In their cross-sectional study of EMS workers in Germany, Baier et al. went further to demonstrate the positive correlation between burnout and harm to patient safety (Baier et al., 2018). Crowe et al. found that among 1271 EMS professionals across 248 EMS agencies, the median agency-level burnout was 35% (Crowe et al., 2020). This study also found that in a quarter of these agencies, 50% or more of the EMS providers experienced burnout (Crowe et al., 2020).

B. EMS and Effects of Trauma: Secondary Traumatic Stress and Vicarious Traumatization

As is in the nature of EMS and other helping professions, providers are routinely exposed to the suffering of others. Providers experience both direct and indirect exposures to traumatic incidents. Direct exposure refers to immediate threats to the providers themselves that can cause emotional distress (Michael et al., 2016). Indirect exposures refer to secondary experiences as witnesses of other individuals' suffering or trauma (Michael et al., 2016). These indirect exposures are regarded as vicarious traumatization (Baird & Kracen, 2006). Vicarious traumatization refers to the pervasive shift in viewpoint due to a certain event. For example, a teacher working in a disadvantaged neighborhood may experience changes in the way they view the world due to the stories of difficulty they may have heard (Rauvola et al., 2019). They may come to view the world as less just and lose faith in their work (Rauvola et al., 2019).

The chronic and persistent psychological consequences are regarded as secondary traumatic stress (STS) symptoms (Cocker & Joss, 2016). STS refers to the psychological symptoms that are experienced after exposure to individuals suffering a certain trauma or extreme stress (Baird & Kracen, 2006). STS was first coined in a study of burnout in emergency department nurses (Joinson, 1992). Joinson suggested that by expressing empathy, these nurses absorbed the traumatic stress of their patients (Joinson, 1992). Figley et al. present a more current definition of STS as a set of psychosocial and emotional factors induced by specific events affecting helpers indirectly through another individual, such as a family member, friend, or client (Figley, 1995). There is some conceptual disagreement currently in the literature, however, in the distinctions between compassion fatigue and STS. Some claim that STS conceptually is synonymous with compassion fatigue while others see them as components that may lead to the other (Rauvola et al., 2019).

Symptoms of STS are often synonymous with post-traumatic stress disorder (PTSD) symptoms (Reinhard & Maercker, 2004). For instance, they involve involuntary rumination on witnessed trauma, emotional and situational avoidance, and increased negative emotional response (Reinhard & Maercker, 2004). Yet, PTSD and STS differ in their conception, since STS is uniquely based on exposure to a suffering or traumatized person rather than a trauma-invoking event itself. First responders (police officers, firefighters, EMS, etc.) in addition face increased risk compared to the general public at developing trauma disorders and associated mental health problems (Behnke et al., 2019). Studies show that EMS providers reflect even higher rates than other first responders (Berger et al., 2012).

While single traumatic events can place EMS providers at risk for trauma symptomology, frequent routine exposure to emotionally complex situations substantially increases vulnerability to develop mental and physical symptoms (Behnke et al., 2019). Prior studies also demonstrate that acuity of a call, or how critical it is, is not as decisive in terms of corresponding to psychological stressors as a provider's level of emotional response (Regehr et al., 2002). This emotional response is most typically associated with one's emotional entanglement with a patient. Thus, studies characterize empathy as a "double edged sword" in any helping profession -- given that it is necessary to connect with their patients but also dangerous to provider wellbeing (Ludick & Figley, 2017). Lampert and Glaser label the balance between compassion and emotional distance as detached concern (Lampert & Glaser, 2018). Cheryl Regehr et al. investigated this in 86 paramedics working in a large urban area (Regehr et al., 2002). In interviews, paramedics were asked to describe events they thought would be classified as most traumatic (Regehr et al., 2002). They discussed bloody, gory events, but were quick to add that these were not the ones that left them sleepless. The most troubling were not the dramatic incidents but rather the "individual who died alone, without the support of others; a child who did not benefit from a loving, caring environment; a family devastated by loss; or an individual so alienated that he took his own life" (Regehr et al., 2002). In these scenarios the provider contextualizes the individual by going beyond a cognitive understanding to developing a profound emotional connection.

C. EMS and Compassion Fatigue

EMS providers are also at risk for compassion fatigue (CF). CF is most commonly defined per Figley as a biological, psychological and social condition of exhaustion and dysfunction

resulting from prolonged exposure to compassion stress (Figley, 1995). Karen Krakower-Kaplan writes elegiacally that CF happens when compassion itself runs out; when there is no more compassion left to give (Krakower-Kaplan, 2005). She therefore asserts that, by definition, compassion fatigue is a type of burnout (Krakower-Kaplan, 2005). There are nuanced differences, however, between CF and burnout. Christina Orlovsky explains that the critical difference in burnout is that it originates from occupational stress and over-exhaustion, whereas compassion fatigue stems from empathic entanglements with victims of trauma (Orlovsky, 2006). Moreover, burnout itself usually has a gradual onset, while CF can be sudden. This differs from STS as well, since STS focuses more on the traumatic experiences rather than the consequences of a systematic prolonged exposure (Cocker & Joss, 2016). CF reflects a specific secondary traumatic stress syndrome.

Components of CF have been variably defined and incorrectly used interchangeably. Compassion fatigue, burnout, secondary traumatic stress, vicarious traumatization, and compassion satisfaction refer to distinct phenomena, but some studies classify them as coincidental. Two distinct outcomes of exposure contribute to CF: burnout and STS (see figure 1) (Cocker & Joss, 2016). Each aspect results from independently failed psychological defenses that together lead to the psychological state of compassion fatigue.

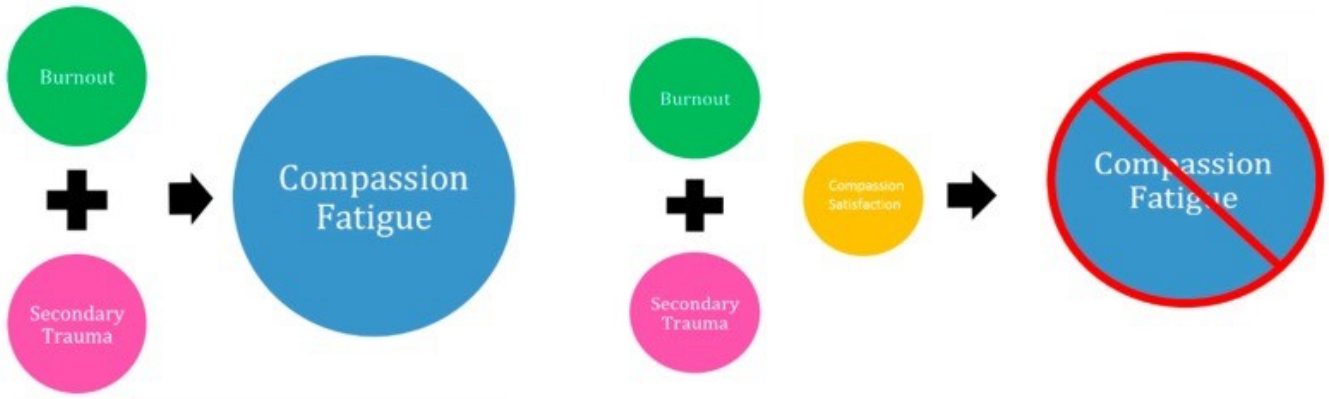

Figure 1: Conceptual Model of the Development and Reduction of Compassion Fatigue

(Cocker & Joss, 2016)

Together, secondary traumatic stress and burnout result in compassion fatigue taking a significant toll on providers and patients. Orlovsky et al. note that providers may feel consistently tired and/or irritable, lack joy in life, agonize over work or entering patient rooms, drink more alcohol, overeat, or feel physical ailments such as head- or bodyaches (Orlovsky, 2006). Boredom, cynicism, anxiety, loss of compassion, and general discouragement may also present with CF (Joinson, 1992). Stamm et al. explain how this directly impacts patients, as it results in decreased productivity, more sick days, and higher employee turnover (Stamm, 2010).

CF can manifest in varied ways. Recent media events have shown paramedics unethically interacting with patients (Renkiewicz & Hubble, 2022). Many of these involve frustration with patients or anger towards their professions. EMS personnel often also engage in dark humor to contextualize high acuity events (Renkiewicz & Hubble, 2022). These are both aspects of CF psychotraumatology (Renkiewicz & Hubble, 2022). Renkiewicz et al. found that nearly half of EMS professionals (n=686) showed signs of CF and the number increased in certain races, experiences of coworker suicide, childhood trauma, and likelihood of other stress syndromes (Renkiewicz & Hubble, 2022).

D. EMS and Effect of Compassion Satisfaction

Though the stressors of EMS are inherent to the profession, psychological distress does not need to be chronic or omnipresent. EMS professionals can be equipped with better coping mechanisms and resilience building strategies to bolster their wellbeing. CF can be mitigated with compassion satisfaction (CS)(see figure 1). CS can be defined as the pleasure and fulfillment associated with helping others or being good at one's job (Stamm, 2010). Thus, CF

and CS, respectively, can be seen as the negative and positive consequences of helping those suffering from some sort of trauma. Pearlman et al. importantly show therefore that compassion satisfaction plays a crucial role in mediating symptomatology observed and could be used to garner resiliency (Pearlman & Caringi, 2009). Likewise, CS can improve patient care and outcomes. Roger Squier reviews considerable evidence showing that empathic doctors and nurses provide greater quality of care and have patients that express higher service satisfaction (Squier, 1990). Emotional empathy additionally is shown to have influence on emergency treatment. Nightingale et al. observed 101 physicians and found that those incorporating emotional in practice were more likely to order laboratory tests and performed CPR for longer before ending treatment (Nightingale et al., 1991). Thus, CS represents a potential target to mitigate CF caused by STS and burnout (Cocker & Joss, 2016).

CHAPTER THREE:

MINDFULNESS AND COMPASSION BASED SOLUTIONS

Mindfulness and Compassion Introduction:

Research on mindfulness interventions has exploded in recent years. Mindfulness is rooted in Buddhist and other religious traditions but has grown in popularity in recent years in a broad range of secular applications. It has been used in health, education, and the workplace from preschool to adulthood. The number of research publications on mindfulness as well as the rate of increase from 2000 to 2020 are comparable to publications on Cognitive Behavioral Therapy (CBT) -- one of the most widely used psychotherapies (see figure 2) (Zhang et al., 2021).

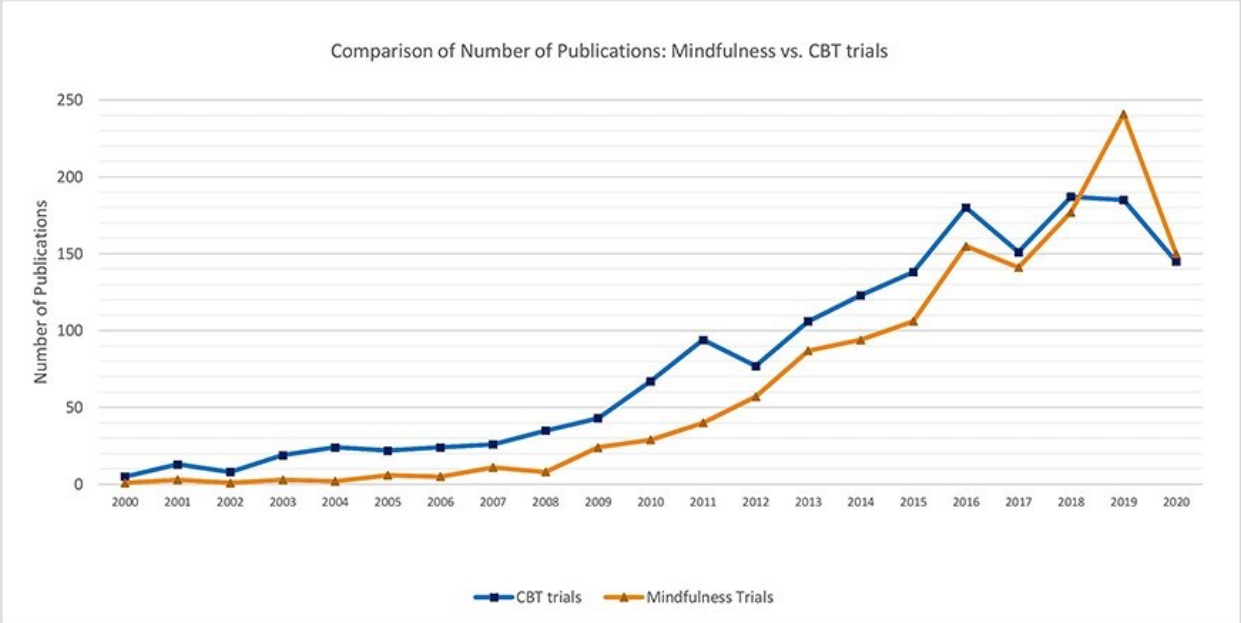

Figure 2: Comparison of Number of Publications between Mindfulness and CBT trials (Zhang et al., 2021)

Mindfulness is defined as a present moment awareness of thoughts, feelings, sensations in one's body, and the surrounding environment (Zhang et al., 2021) with a focus on two elements: attention (the *what*) and qualities of the attention (the *how*)(Baer et al., 2019). Table 1, adapted from Baer et al., summarizes some major contemporary "what" and "how" psychological definitions of mindfulness (Baer et al., 2019). Mindful behaviors and orientations involve being open, nonjudgmental, friendly, curious, accepting, compassionate, and kind (Baer et al., 2019). Mindfulness interventions have been used for a wide range of purposes. Mindfulness interventions aimed at mental health improvement are the most prominent with different interventions focused on depression and anxiety, stress, insomnia, eating disorders, addiction, psychosis, PTSD, ADHD, ASD, and cognition (Zhang et al., 2021). Physical health has also been a focus with possible effects on pain, hypertension and cardiovascular disease, weight control and obesity, diabetes, cancer, and respiratory health (Zhang et al., 2021). Improved social health with reduced anger, violence, and aggression along with increased prosocial behavior has also been observed (Zhang et al., 2021).

Mindfulness practices are those that embolden the how and what areas of mindfulness (Baer et al., 2019). In most of these practices, participants are instructed to focus on a certain aspect of the present and notice when the mind wanders from the intended focus. Participants are invited to approach this experience with a non-judgmental attitude and acceptance. This could manifest in informal routine activities (e.g.; walking, eating, etc.) or formal practices (e.g., sitting meditation) (Baer et al., 2019). Mindfulness-based programs (MBPs) integrate theory and practice from contemplative traditions with traditional scientific disciplines of psychology, medicine, and education (Crane et al., 2017). This chapter will investigate the main Buddhist

traditions relating to compassion cultivation, explore prominent MBPs, focusing predominantly on compassion building interventions, and then shift to focus on the intervention used in this work: CBCT.

Author	*What*	*How*
Kabat-Zinn, 1994, Kabat-Zinn, 2003	Paying attention, or the awareness that arises through paying attention	on purpose, in the present moment, and nonjudgmentally; with an affectionate, compassionate quality, a sense of openhearted, friendly presence and interest
Marlatt & Kristeller, 1999	Bringing one's complete attention to present experiences	on a moment-to-moment basis, with an attitude of acceptance and loving-kindness
Bishop et al., 2004	Self-regulation of attention so that it is maintained on the immediate experience	with an orientation characterized by curiosity, openness, and acceptance
Germer, Siegel, & Fulton, 2005	Awareness of present experience	with acceptance: an extension of nonjudgment that adds a measure of kindness or friendliness
Linehan, 2015	The act of focusing the mind in the present moment	without judgment or attachment, with openness to the fluidity of each moment

Table 1: *What* and *How* Psychological Descriptions of Mindfulness (Baer et al., 2019)

Major Buddhist Traditions on Compassion:

Compassion, and the correlated mindful practices that develop it, have been taught and followed since the early history of Buddhism (Lavelle, 2017). Its role on the path to enlightenment and practice, however, differ across the three main Buddhist traditions *Theravāda, Mahāyāna*, and *Vajrayāna* (Lavelle, 2017).

A. Theravāda Buddhism

Theravāda Buddhism, common in continental South Asia, is thought to be the earliest tradition (Amihai & Kozhevnikov, 2015). In this tradition, suffering is thought to manifest from a mistaken illusion of a fixed sense of self in one's mind that results in attachment and aversion (Lavelle, 2017). One reaches *nirvāṇa,* or freedom from this suffering, by conceptualizing impermanent nature of experience. The way of achieving this is explained in the Noble Eightfold Path that highlights conduct, meditation, and wisdom as essential (Lavelle, 2017). Wisdom, rather than compassion, is held as the key aspect on the path to liberation (Lavelle, 2017). Compassion is realized as a supportive component that is a means of cultivating attention for wisdom or insight. Practices for cultivating compassion are often grouped with developing the *apramāṇas* or four "immeasurable attitudes": love, compassion, joy, and equanimity (Lavelle, 2017). This typically involves extension of love or kindness to oneself, then to a near one, a neutral one, a challenging one, and, lastly, for all beings to be free from suffering (Lavelle, 2017). This tradition also incorporates meditative aspects of Shamatha and Vipassana, which are the object of meditation and one's mental activity respectively (Amihai & Kozhevnikov, 2015).

B. Mahāyāna Buddhism

Mahāyāna Buddhist practice, emerging at the start of the first century, is prominent in North Asia (Amihai & Kozhevnikov, 2015). It places a stronger emphasis on compassion's role in the path to enlightenment (Amihai & Kozhevnikov, 2015). Early Buddhist traditions upheld the idea of *arhat*—one that has achieved freedom from suffering and escaped cycles of rebirth. Mahāyāna, on the other hand, upholds the *bodhisattva*— one who remains in *samsara* (cycle of rebirth) and vows to do so until all beings are free from suffering (Lavelle, 2017). This tradition also emphasizes the importance of the nature of emptiness of all phenomena. In doing so, dualistic principles of self and object collapse and become one. This wisdom of emptiness is what frees one from samsara, and compassion allows one to communicate this wisdom to others so they too may be free (Lavelle, 2017). Compassion is known to be cultivated in this tradition predominantly by the "Seven-Point Cause and Effect Method" and the practice of "Equalizing and Exchanging Oneself with Others" (Lavelle, 2017). The Seven-Point Cause and Effect Method starts with practice in generating equanimity. Then, the seven steps ensue: (1) recognizing all as having been one's mother or close relative in some lifetime in order to regard all with affection, (2) recollecting memories of kindness of others (how parents/caretakers have supported oneself), (3)setting intention to repay this kindness, (4)generating loving-kindness (which is to see others happy), (5)cultivating compassion, (6) generating responsibility and conviction to relieve others suffering, and (7) making a commitment to work toward enlightenment for the benefit of all (Lavelle, 2017). The practice of "Equalizing and Exchanging Oneself with Others" involves reflection on oneself and others through the lens of happiness

and suffering (Lavelle, 2017). This incorporates *tonglen* ("sending and receiving") meditation. In this, one imagines receiving the suffering of others and sending them happiness.

Vajrayāna Buddhism

Vajrayāna or tantric traditions emerged at the start of the eighth century and incorporated elements of Hindu Tantric methods and Mahayana Buddhism (Amihai & Kozhevnikov, 2015). In this, compassion is understood as an innate aspect of awareness that arises when one's mind is freed from mistaken thoughts and beliefs (Lavelle, 2017). This notably built upon earlier ideas of Mahāyāna Buddhism. This tradition incorporates direct methods. One essential method is "deity yoga", in which one visualizes a chosen deity as a means of personal transformation. Practitioners also engage in "refuge" and "guru yoga" where one calls upon teachers and enlightened beings who are wise and compassionate (Lavelle, 2017).

Predominant Compassion and Mindfulness- Based Interventions:

Several modern compassion and mindfulness-based intervention exist. While they all similar purposes and have been used for similar populations, they differ in their origin and methods. This section aims to present an overview of mainstream interventions and examine their connection to the three main Buddhist traditions. Findings can be summarized in table 3.

Major Buddhist Tradition	Summary + View on Compassion	Compassion and Mindfulness-Based Intervention Connected
Theravāda Buddhism	-common in South Asia -thought to be earliest tradition -suffering thought to manifest from fixed sense of self, resulting in attachment and aversion - freedom from this by understanding impermanence -wisdom rather than compassion key for liberation - the apramāṇas or four "immeasurable attitudes": love, compassion, joy, and equanimity	-Mindfulness-Based Stress Reduction (MBSR)
Mahāyāna Buddhism	-prominent in North Asia, emerging at the start of first century -stronger emphasis on compassion's role in path to enlightenment -compassion cultivated through "Seven-Point Cause and Effect Method" and the practice of "Equalizing and Exchanging Oneself with Others" - incorporates *tonglen* ("sending and receiving") meditation.	- Compassion Cultivation Training (CCT) -Cognitively Based Compassion Training (CBCT) -Sustainable Compassion Training (SCT)
Vajrayāna Buddhism	-eighth century and incorporated elements of Hindu Tantric methods and Mahayana Buddhism -compassion innate aspect of awareness that arises when one's mind is freed from mistaken thoughts and beliefs -deity yoga, guru yoga, refuge	-Sustainable Compassion Training (SCT)

Table 3: Connections Between Major Buddhist Traditions and Compassion and Mindfulness Based Interventions

A. Compassion Cultivation Training (CCT)

Compassion Cultivation Training (CCT) was developed at Stanford University by Thupten Jinpa – a leading Tibetan scholar (Germer & Neff, 2019). In this eight-week program, various meditations systemically build on each other with the goal of developing omnidirectional compassion. CCT follows this training sequence: mindfulness; loving-kindness and compassion for a loved one; loving-kindness and compassion for oneself; cultivation of a sense of common humanity; kindness toward challenging and difficult persons; and finally active compassion (Lavelle, 2017). CCT is derived from Tibetan *tonglen* meditation where the meditator inhales the suffering of others, imagines the suffering dissolving in one's own radiant heart, and subsequently breathes out compassion for the sufferer (Germer & Neff, 2019). CCT defines compassion as a multidimensional mental state with four iterative aspects (Jazaieri et al., 2018). The first is that compassion involves a cognitive component with an awareness of suffering (Jazaieri et al., 2018). The next is an affective component that involves a caring and tender concern that arises from emotional resonance with others (Jazaieri et al., 2018). The third is an intentional component that includes a genuine wish to see relief of suffering in others (Jazaieri et al., 2018). The fourth and last is a "motivational or altrustic behavioral activation" that involves a readiness to take action to alleviate suffering (Jazaieri et al., 2018). CCT like CBCT uses analytical meditation to cultivate compassion (Lavelle, 2017). In addition, like CBCT, CCT takes inspiration from the Seven-Point Cause and Effect Method as well as from Equalizing and Exchanging Self with others (Lavelle, 2017).

CCT decreases fear of giving and receiving compassion for and from others as well as fear of self-compassion compared to a wait-list control group (Jazaieri et al., 2012). CCT also

increases self-compassion, increases mindfulness and happiness, and decreases worry and emotional suppression. Likewise, participants increase acceptance of negative moods states like anxiety or stress and experience feelings of calm over time (Jazaieri et al., 2018). Brito-Pons et al. show in a randomized waitlist controlled trial in Chile that CCT also increased empathic concern and identification with all of humanity (Brito-Pons et al., 2018). A pilot study in healthcare workers by Scarlet et al. found significant improvements in self-compassion, fear of compassion, mindfulness, and level of interpersonal conflict in a work setting (Scarlet et al., 2017).

B. Sustainable Compassion Training (SCT)

Sustainable Compassion Training (SCT), previously known as Innate Compassion Training (ICT) was developed by John Makransky, a professor of Buddhism and comparative theology at Boston College (Lavelle, 2017). SCT is adapted from Tibetan Buddhist practices but has been informed by dialogue from psychology and other religious traditions (Condon & Makransky, 2020). Three modes of contemplative practice make up SCT: a receptive , deepening, and inclusive modes (Condon & Makransky, 2020). The receptive mode helps practitioners unleash hidden qualities of love, compassion, acceptance, inner safety, and wisdom through meditation (Condon & Makransky, 2020). The deepening mode helps them settle into the source of caring qualities (Condon & Makransky, 2020). This involves openness, awareness, and attention focusing (Condon & Makransky, 2020). The last mode, inclusive, deals with meditations that aim to make one more aware of reductive impressions and learn to connect with people beyond these impressions (Condon & Makransky, 2020). SCT defines compassion as a caring concern with empathy and an action-oriented mindset to alleviate it in others (Condon &

Makransky, 2020). This definition includes affective empathy for the suffering of others. Recognizing empathic distress, however, they propose that one makes a conscious choice to feel empathy in a way that energizes compassion rather than falling into empathic distress, following the motivated choice theories rather than the view that compassion is a limited resource (Condon & Makransky, 2020).

SCT is adapted from Mahayana and Vajrayana Buddhist contemplative traditions and(Lavelle, 2017) utilizes contemplative reflective practices that are similar to those employed in CBCT and CCT, but these are supportive rather than formative (Lavelle, 2017). Instead SCT, fundamentally targets a practitioner's innate capacity for compassion (Lavelle, 2017). Such fundamental practices incorporate devotional style practices of recalling and being viewed by mentors, as well as practices in the deepening mode that deal with "letting things be" (Lavelle, 2017). SCT has been used by a wide range of groups including health professionals, social workers, counselors, teachers, and students.

C. Mindfulness-Based Stress Reduction (MBSR)

Mindfulness-Based Stress Reduction (MBSR) was developed by John Kabat-Zinn in 1979 at the Stress Reduction Clinic at UMass Medical Center (Praissman, 2008). It is a highly structured program that includes mindfulness-based meditation and yoga (Praissman, 2008). Participants are taught to perform a 'body scan,' a process in which one's attention is first focused on the breath and then moves through each section of the body (Praissman, 2008). Sitting meditation is also a component of MBSR. Participants focus their minds on the present by ignoring mental activity other than their current existence (Praissman, 2008). Overall, participnts are encouraged to incorporate these practices into their daily lives. Hatha yoga is

used along with the medtative practices. This practice is designed to be a focus for the mind so that other distractions drift away (Praissman, 2008). MBSR has been used in a wide range of clinical settings. Significant decreases in stress, depression, and anxiety were found among particiapnts, including decreases in depressive and anxiety symptoms in 38 subjects that had previously been diagnose with a mood disorder (Ramel et al., 2004), reduced anxiety overall in 18 women diagnosed with cardiovascular disease (Tacón et al., 2003), an overall improvement in quality of life and stress reduction (Carlson et al., 2004), and an increase in neural function and increased immunity (Davidson et al., 2003). MBSR is thought to have developed from teachings in Theravada Buddhism (Singh, 2023).

D. Cognitively-Based Compassion Training:

Cognitively Based Compassion Training (CBCT) was developed at Emory University in 2005 by Dr. Lobsang Tenzin Negi. Dr. Negi is a former monk and co-founder and Executive Director of the Center for Contemplative Science and Compassion Based Ethics at Emory University. He is also a teaching professor in Emory's Department of Religion and the founder and spiritual director of Drepung Loseling Monastery, Inc. in Atlanta, GA. CBCT is based on Indo-Tibetan Buddhist *lojong*, or mind training, practices and was secularized and designed to be accessible to those of any or no faith tradition (Ash et al., 2021). CBCT originally contained eight modules but has since gone through several revisions (Ash et al., 2021). CBCT currently involves a foundational practice and six integrative modules that build upon each other to promote resilience, compassion, and wellbeing (see Table 4)(Ash et al., 2021). Each module also incorporates a meditation exercise, known in CBCT as a "contemplative practice", as the primary training approach (Ash et al., 2021). The practices and exercises employed in CBCT are

regarded as “cognitive” or “analytical” kinds of meditation – which refer to a process of arriving at personal insights through mental investigation (Ash et al., 2021). This differs from practices that primarily focus on somatic experiences of compassion -- such as heart warmth, tingles, or other caring sensations (Silva & Dodson-Lavelle, 2011). CBCT instead uses cognitive reappraisals and mental retraining to restructure perspectives and actively cultivate traits such as empathy, impartiality, and compassion (Silva & Dodson-Lavelle, 2011).

CBCT modules	Practice topic
Foundational practice: Resting in a moment of nurturance	The value of kindness
I. Attentional stability and clarity[a]	The sensations of the breath
II. Insight into the nature of mental experience[a]	The present-moment experience
III. Self-compassion	Personal ups and downs from a broader perspective
IV. Cultivating impartiality	Others' shared desire for wellbeing
V. Appreciation and affection	Interdependence
VI. Empathic concern and engaged compassion	Others' vulnerabilities

[a]Modules I and II are present-moment practices, while the foundational practice and Modules III–VI are primarily analytical practices

Table 4: CBCT Practice Overview (Ash et al., 2021)

CBCT courses are typically taught over a 10-week period with a session each week meeting for 1.5 hours (Ash et al., 2021). This, however, may differ for certain settings and populations. CBCT instructors undergo a robust training process that includes a 1-week retreat and workshop, an 8-week seminar, and a 10-week supervised teaching assistantship (Ash et al., 2021). CBCT sessions typically incorporated pedagogical overview by instructors, guided meditations, and exercises and discussions (Ash et al., 2021).

The foundational CBCT practice deals with resting in a moment of nurturance. Participants are asked to recall a time they felt cared for and safe. They are then asked to experience that moment in their mind with deep detail -- noticing and sustaining the feelings of safety and comfort that arise with this memory. This nurturing moment practice promoted feelings of safety and comfort that can lead to openness, which is essential for resilience. (Ash et al., 2021)

In module 1, participants are instructed to concentrate their attention on a specific object. The sensations of breathing are often typically called on in CBCT. Participants are encouraged to notice when their thoughts stray, withdraw from the distraction without passing judgement, and then redirect their focus. (Ash et al., 2021)

In module 2, participants expand on the attention training skills introduced in module 1 but now apply them to less-specific objects of focus. Participants are asked to observe thoughts, feelings, and sensations as they evolve and manifest over time with the goal of observing mental activity without judgement or immediate reaction. When reactivity is observed, one is told to release the thought or feeling and return to the present-moment attention. Through this meta-awareness, participants develop insight into the impermanence

and transient nature of thoughts and emotions. De-reification, or decentering, is also developed as a skill in this module. This is the ability to experience thoughts as simply thoughts rather than true manifestations of the real world (Ash et al., 2021).

In module 3, participants begin to actively engage in analytical meditation. The goal of this module is to build a compassionate attitude towards oneself by broadly re-examining one's imperfections, vulnerabilities, adversities. Meditators are first prompted to consider how their thoughts and behaviors are reflections of an underlying desire for wellbeing – despite challenges and distress in life. Through analytical practices, participants consider which thoughts, emotions, and behaviors support and hinder their wellbeing and goals. Then, they are asked to reevaluate their own difficulties through two lenses: (1) all people experience challenges and vulnerabilities and (2) outcomes are based on many causes and circumstances and thus not fully in one's control. Here, participants develop self-compassion. CBCT crucially follows that self-compassion and other-oriented compassion are mutually exclusive. By training compassion for oneself, participants then have the confidence and capacity to respond to other's suffering with greater compassion (Ash et al., 2021).

In module 4, participants investigate their propensity to label others as belonging to the following three categories: dear one, stranger, or adversary. Participants reflect and visualize one person from each of these categories and consider their changing nature. They are asked to think of how individuals in all of these groups have a common desire for wellbeing. Recognition of this similarity fosters increased identification and thus increased affection. Here, participants develop an inclusive identification with others. There is a deepening of the notion that others are "just like me". This is designed to soften extreme, both good and bad, feelings for others.

This recognition of common humanity is the basis for the cultivation of extended other oriented compassion. (Ash et al., 2021)

In module 5, participants evaluate their interconnectedness and the ways they are dependent on others for their own wellbeing. Participants are prompted to ponder all the people that contributed to an object they rely on routinely (ex; their cellphone). How many people played a role in designing, developing, manufacturing, shipping, delivering a single cellphone? Participants are asked to note any feeling of gratitude that arise from this consideration. This awareness of interdependence allows others beyond one's inner circle to be included in the field of gratitude. When these feelings of gratitude emerge, participants are instructed to focus on them so that it can be lasting. Here, participants deepen a sense of gratitude for others. With this gratitude one can develop affection and subsequently compassion. Affection in CBCT is used as a transition of the Tibetan word "yid-'ong", which refers to tone being pleasing to the mind rather attractive romantically. In CBCT, affection is regarded as the most essential aspect of the cultivation of compassion. Participants will naturally exhibit affection towards their inner circle. CBCT aims to extend this affection to a greater circle of people through cognitive framing and critical thinking. (Ash et al., 2021)

In the final module, module 6, participants attune to the suffering of others. Participants are asked to recall an individual they see as vulnerable and allow compassionate feelings to arise for them. Stabilizing techniques (developed in module 1 and 2) are utilized to sustain these feelings. Here, empathy is developed. (Ash et al., 2021)

The CBCT integrative model, presented by Ash et al., depicts core capabilities trained in each module of CBCT (see figure 2) (Ash et al., 2021). This model mechanistically portrays how

the primary outcomes of CBCT, resilience, compassion, and wellbeing, are developed (Ash et al., 2021). The model is divided into two main paths: intrapersonal (Modules 1-3) and interpersonal (Modules 4-6) (Ash et al., 2021). The intrapersonal skills path focuses on the self and is intended to lead to greater psychological resilience. The interpersonal skills path shifts to relationships with others and has the goal of extended compassion for others. While CBCT is taught in a lesson-by-lesson linear model, each lesson is essential and interconnected, building and related to each other. CBCT's format closely follows that of the Seven -Point Cause and Effect Method (Lavelle, 2017). However, as a secular adaptation, CBCT does not discuss aspects of reincarnation and enlightenment (Lavelle, 2017). CBCT in addition utilizes aspects from Exchanging Self with Others (Lavelle, 2017). CBCT also differs from other compassion training programs in that it was developed primarily from the Buddhist tradition with little influence from western medicine. Furthermore, it heavily incorporates elements of mindfulness meditation and lovingkindness meditation (Silva & Dodson-Lavelle, 2011). Less analytical contemplative practices are not as concerned with questions of meaning and ethical arguments. Analytical practices, such as CBCT, deliberately involve cognitive exercises that result in the cultivation and reorientation of positive traits such as empathy, impartialty, and compassion (Silva & Dodson-Lavelle, 2011).

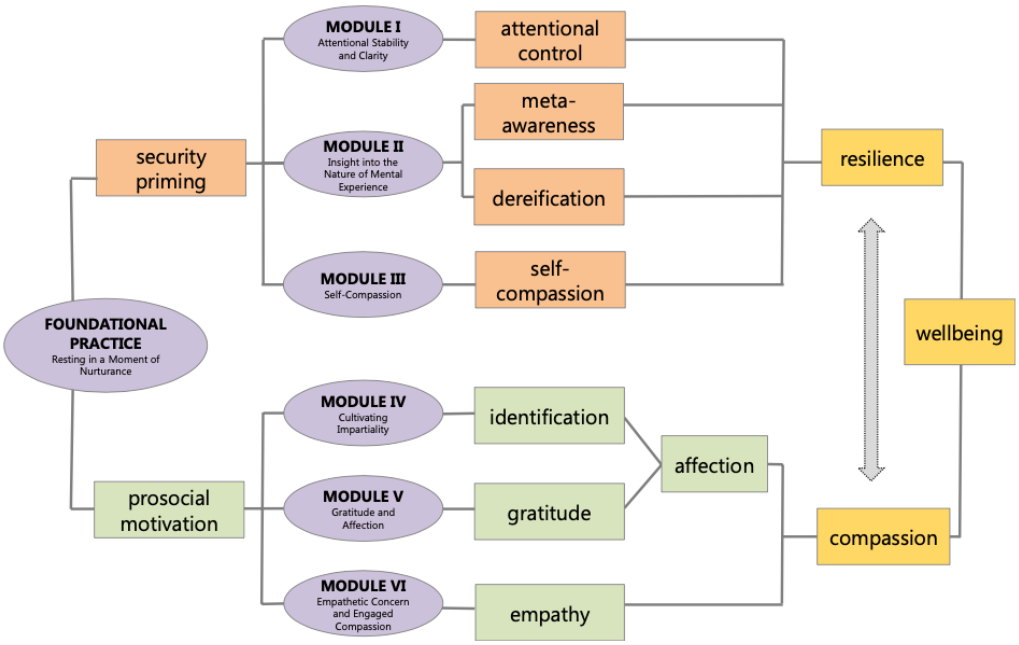

Figure 2: CBCT Integrative Model (Ash et al., 2021)

CBCT is grounded in significant scientific research. Past studies have demonstrated a reduction in stress and lower cortical levels, decreased inflammatory response, and increased adaptability to cortical surges from social stress (Pace et al., 2012). CBCT has also been associated with decreased depression (Desbordes et al., 2012; Mascaro et al., 2018) and greater empathic accuracy (Mascaro et al., 2013). It has also been employed for various diverse groups, from breast cancer survivors that reported lower depression and increased psychological functioning (Dodds et al., 2015), foster adolescents that showed increased hopefulness (Reddy et al., 2013), and increased self-compassion in a population of African American suicide attempters (LoParo et al., 2018).

CHAPTER FOUR:

METHODOLOGY

Research Overview:

This randomized, waitlist-controlled longitudinal study investigated how compassion meditation training may improve psychological wellbeing among volunteer collegiate EMTs. This work primarily focused on three major aims: (1) to characterize the specific needs of the population pre-randomization, (2) To examine the effect of training in CBCT on participant psychosocial wellbeing, and (3) To evaluate the feasibility, acceptability, credibility, and expectancy of CBCT for college student EMTs.

This study was approved by the Emory University Institutional Review Board. Here we report the results of a mixed-methods examination of this proactive approach to EMT psychological wellbeing. Study methodology involved semi-structured interviews, self-reported survey measures, and short recorded prompts. Semi-structured interviews (n=5) were first done on a subset of participants pre-randomization to elucidate the prehospital environment and factors exacerbating stress and bolstering resilience. Next, EMT providers (N=25, n=8 CBCT, n= 17 waitlist) completed self-report measures of burnout, compassion satisfaction, secondary trauma stress, perceived stress, and compassion malleability. Participants also responded to short open-ended prompts regarding their interactions with patients, providers, and EMS system. Audio responses were transcribed verbatim, blinded, and analyzed using thematic coding. EMT providers were randomized to either receive CBCT training or be placed on a waitlist. All study participants completed self-report measures prior to and post completion of CBCT. EMTs randomized to CBCT also completed post-CBCT self-report measures about

perceived benefit and adherence to practice. Additionally, all participants completed recorded prompts at both time points. Participants were consented at the start of the self-reported survey for all measures prior to any study-related procedures or data collection. This work incorporated a mixed method study design in the sense that each aim incorporated multiple methods as well that the findings from methods helped explain others.

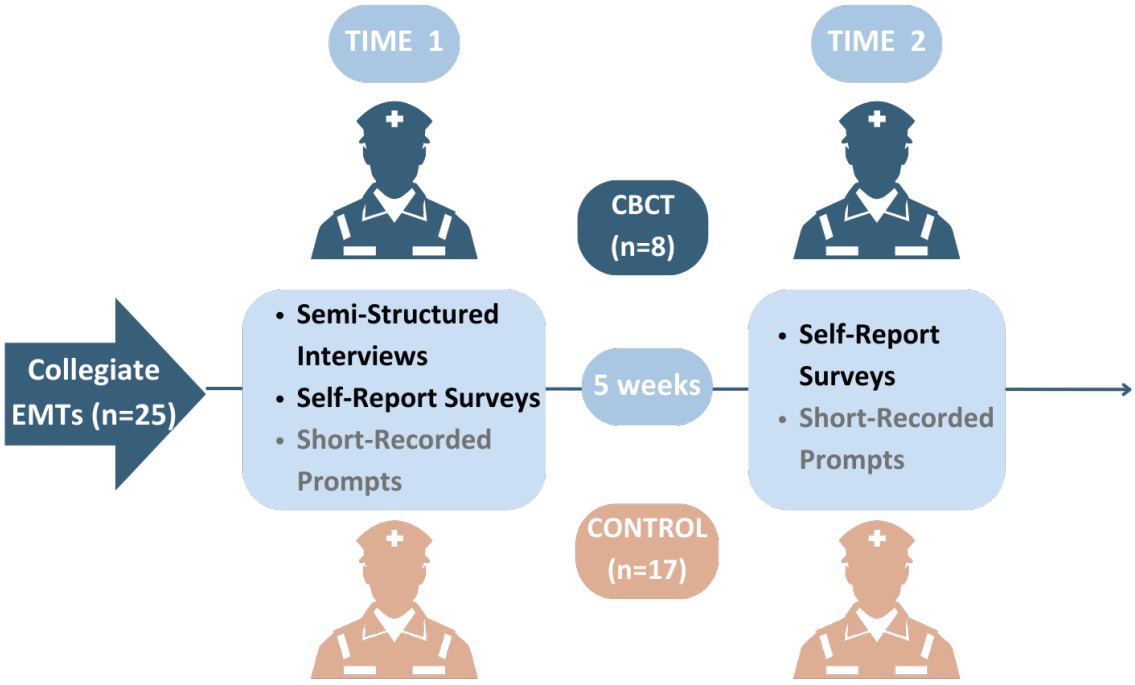

Figure 3: Methodology Flowchart

Institutional Review Board Process & Approval:

IRB protocol (IRB-00005393) was designed alongside Dr. Jennifer Mascaro (principal investigator), Dr. Mark Risjord, and Dr. Arri Eisen and was submitted for review November 21st, 2022. The protocols were approved on ADD DATE. I completed CITI certifications on Good Clinical Practice and ICH (April 29th, 2021) and Human Subjects Protection (April 29th, 2021).

Participants and EMS Agency:

Following IRB approval from the Emory University Institutional Review Board, participants were recruited from an undergraduate student operated volunteer EMS system. Participants were recruited via email and posted flyers. Interested parties were also given the opportunity to ask questions about the study. All participants were active EMT providers with the EMS system and at least 18 years old.

Emory Emergency Medical Services (EEMS) is a volunteer EMS organization, operated by students, with oversight from Emory's Office of Critical Event Preparedness and Response (CEPAR). The system, established in 1992, provides medical first responder services for emergency medical care to Emory University students, faculty, staff, visitors, and the surrounding community. Priors calls in the agency include anaphylaxis, drug overdose, cardiac arrest, motor vehicle collisions, behavioral health crises, and more (see figure 4) (*Emory EMS*, 2023. EEMS also works standby for several large events such as concerts, marathons, ceremonies, etc. on campus as well as in the greater city. In addition, EEMS offers educational workshops, such as bystander CPR training.

EEMS operates 24 hours per day, seven days per week during the academic school year. Weekly time commitments can range from 12 to 60 hours, depending on the position. Providers work at either the Basic EMT Level or Advanced EMT level. Providers in EEMS itself work as providers in field training (under supervision), cleared provider (independent provider), field training officer (FTO), or as a supervisor. All manager positions, divisions chiefs, and the chief are held by students. Providers work 12 hours shifts on either a two- or three-person crew on day or night shifts. Providers must also balance these shifts and leadership positions with the rigor of a college education. In addition, EEMS faces the additional stress of responding within one's own community.

At the time of the study there 75 active providers in the agency. For the school year in which this course was offered, Emory EMS ran a total 1035 calls and had a total of 25,429 volunteer hours collectively (*Emory EMS*, 2023). The average response time was 4 minutes and 20 seconds and 25% of the agency's calls involved Emory Students (*Emory EMS*, 2023). 30% of EEMS calls occurred on campus, 35% occurred at Wesley Woods (a nearby senior living facility), and 35% occurred off campus (see figure 5) (*Emory EMS*, 2023). The agency's patient population is 38% geriatric, 28% young adult, 29% adult, and 4% pediatric (see figure 6) (*Emory EMS*, 2023).

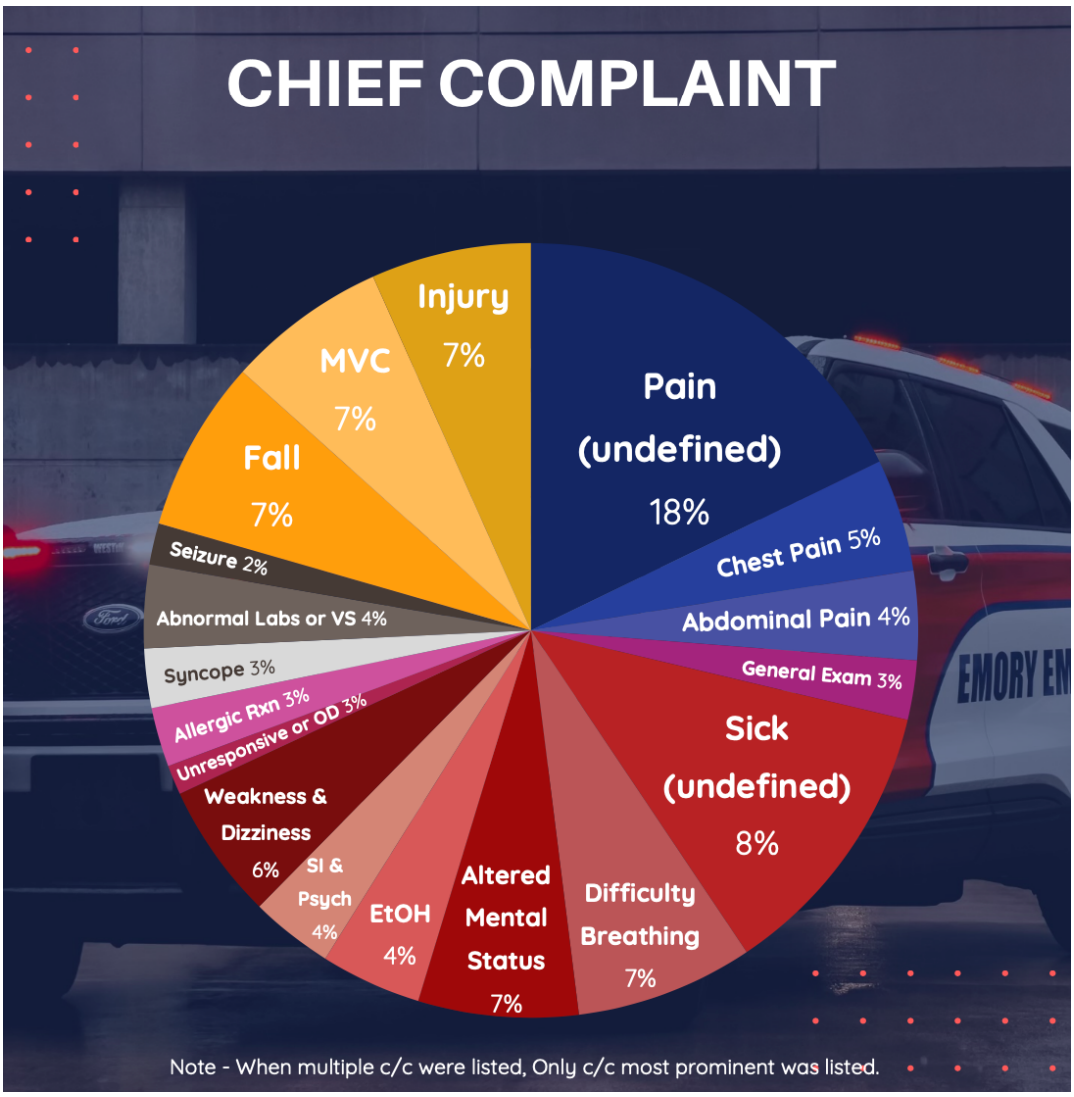

Figure 4: Emory EMS Patient Chief Complaint Distribution

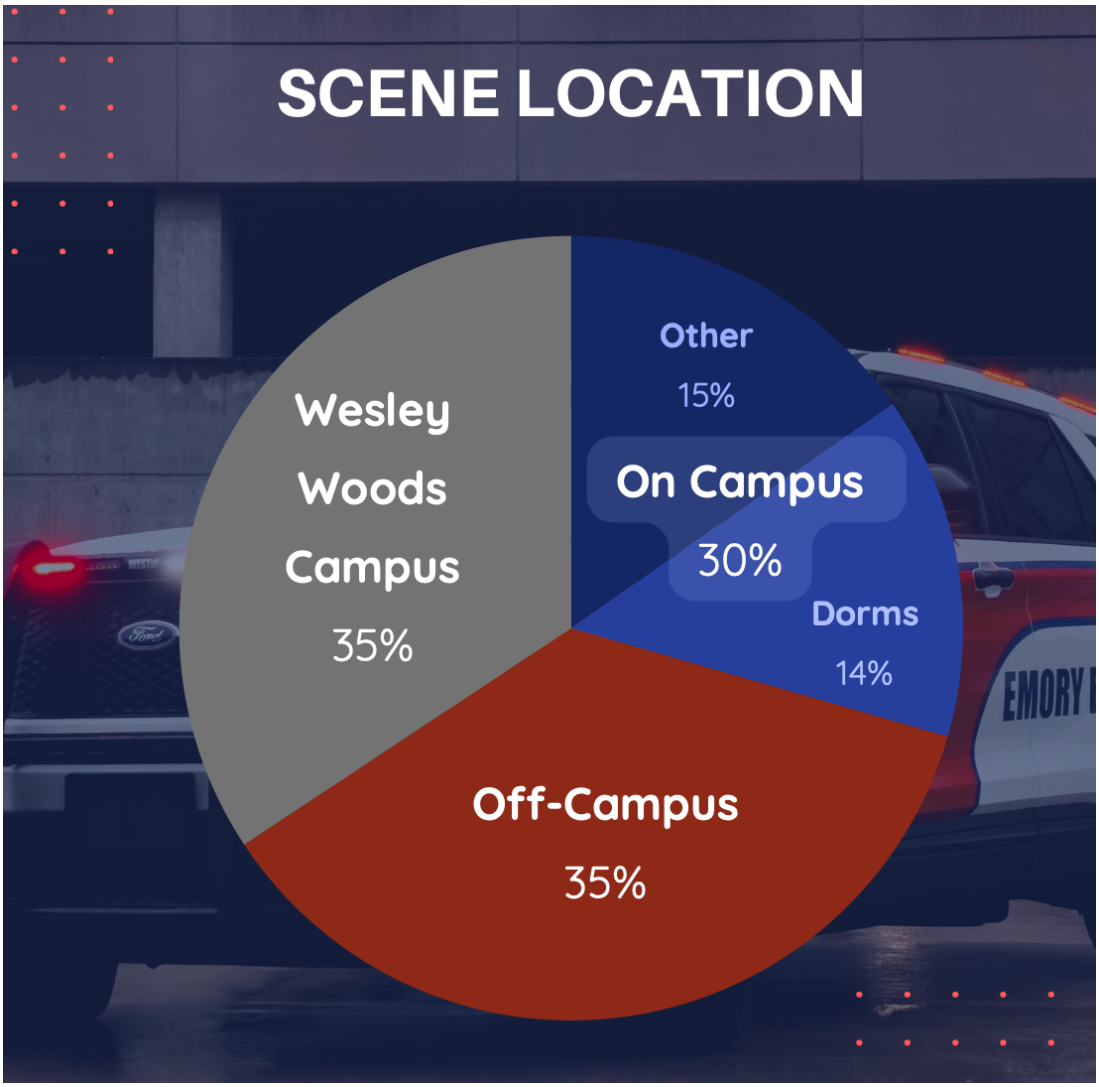

Figure 5: Emory EMS Scene Location Distribution

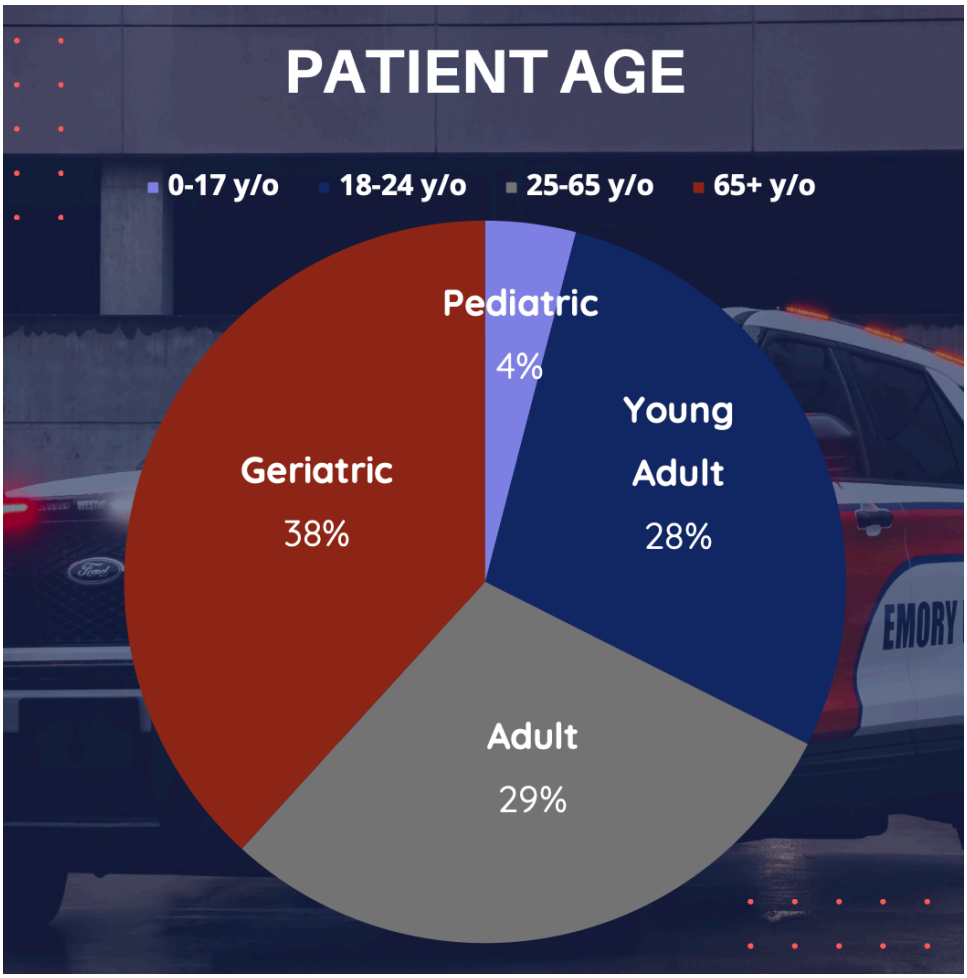

Figure 6: Emory EMS Patient Age Distribution

Cognitively Based Compassion Training Course Delivery:

CBCT is based on Indo-Tibetan Buddhist *lojong*, or mind training, practices and was designed and secularized by Lobsang Tenzin Negi, Ph.D., a senior instructor in the Department of Religion, and co-founder and executive director of the Center for Contemplative Sciences and Compassion-Based Ethics at Emory University.

CBCT is traditionally taught once a week over the course of 8 weeks. This protocol tested a novel 4-session abridged online version that was thought to be more feasible for these providers. CBCT courses were taught by two experienced instructors that received extensive training. CBCT instructor training consists of a 1-week retreat and workshop, 8-week seminar, and 10-week supervised teaching session. Participants met once a week on Zoom for 75 minutes. The course was intended to span 4 weeks but was extended to 5 since participants were unable to make one session due to an existed EEMS agency wide event.

Randomization and Blinding:

EEMS EMTs were randomized to receive CBCT alongside service or continue standard service (wait-list comparison group). EMTs were randomized using the RANBETWEEN function in Excel, so that roughly equal numbers of providers were in each group. Eligible participants randomized to CBCT were then contacted, and individuals were taken off the waitlist in random order and invited to CBCT if one by one if spots opened. Study participants were blind to group assignments at Timepoint 1. Research personnel were also blind during all data collection and analysis. CBCT group had 8 participants and waitlist group had 17 participants. Recordings are stored within Phonic ai (https://www.phonic.ai/) platform, which syncs with Qualtrics and produces a transcript for research analysis. Transcripts will be downloaded and stored on

password protected research server accessible only to the study team. Audio recordings on the Phonic ai (https://www.phonic.ai/) platform will be deleted from the platform within 6 months of the completion of data analysis. All answers and responses to survey and audio prompts will be linked by a study code that is generated by the participant: first letter of birth city, first letter of birth state, and two-digit day of birth. For example, HC08.

Quantitative Measures:

A. Self Report Survey Measures

Quantitative self-report measures were completed by participants at both Time 1 and Time 2 on Qualtrics. The following survey measures were used:

- **Meditation Background (Pre)**: 5-item questionnaire that examines participants background in meditative practices and views on it.
- **Interest in CBCT Survey (Pre):** 6-item scale will assess interest in CBCT using a Likert scale.
- **Compassion Malleability Beliefs (Pre/Post):** 9-item scale that measures one's belief about the malleability compassion on a Likert scale ranging from 1 to 7. Higher scores indicate greater belief that compassion is a malleable skill that one can develop (Mascaro et al., 2022).
- **Professional Quality of Life version 5 (ProQOL) (Pre/Post):** a 30-item inventory that measures the negative and positive effects of helping others who experience suffering. It has been translated into 28 languages and addresses compassion satisfaction, burnout, and compassion fatigue (Stamm, 2010).
- **The Perceived Stress Scale – 4(PSS-4) (Pre/Post):** is a four-item scale measuring the degree to which situations in one's life are considered stressful. The PSS-4 also includes questions that ask about feelings and thoughts that respondents experienced during the last month. In each case, respondents are asked how often they felt a certain way. PSS-4 scores are calculated by summing across four items, which are measured on a 0-4 point scale. The possible range of scores is 0 to 16, and higher scores are correlated with higher perceived levels of stress. (Cohen, 1988; Warttig et al., 2013)

- **Intervention Credibility and Expectancy Questionnaire** (Post, CBCT only): 15-item questionnaire that asked about the perceived benefit, applicability, and feasibility of CBCT.

Meditation background and interest in CBCT measures were completed by all participants at Time 1. Compassion malleability, ProQOL, and PSS-4 were completed by all participants at both Time 1 and Time 2. The intervention credibility and expectancy questionnaire was only completed at Time 2 by the CBCT group.

B. Statistical Analysis

Quantitative responses were analyzed using Statistical Package for the Social Sciences (SPSS) software (version 29.0 for Mac, SPSS, Inc., Chicago, IL, United States) and Statistical Analysis System (SAS). Time 1 and Time 2 data were downloaded from Qualtrics into SPSS in separate sheets. For each time point, sum scores for each scale and subscale were calculated. Time 1 and Time 2 data was then compiled into a single dataset. Data was converted from long to wide format. Normality was evaluated using Shapiro-Wilk test. Descriptive statistics were evaluated in SPSS. Paired and independent t-tests were done to assess the differences between time points for each group. Analysis of variance (ANOVA) using PROC MIXED was done in SAS to evaluate group by time interactions. PROC MIXED was selected for its ability to use all available data to and model correlation structure between measurements (Hyer & Waller, 2014). PROC MIXED was also shown to be less biases toward significance to other analysis techniques for pre- and post-assessments (Hyer & Waller, 2014).

Qualitative Measures:

A. Semi-structured interviews

All study participants were invited to participate in semi-structured interviews about their experiences in EMS. Participants were interviewed on Zoom during a time convenient to them. Interviews lasted approximately 15-20 minutes. Interviews were conducted by a trained research facilitator by following a semi-structured interview guide. Interviews were done prior to randomization to evaluate the EMS environment and factors contributing to stress and/or resilience. Participants were asked about their motivations to work in EMS, sources of stress and coping mechanisms, and their thoughts on the EMS system and how it deals with mental health. Each interview was audio-recorded and transcribed verbatim. Transcripts were also anonymized and cleaned. A codebook was developed of overlapping and emergent themes. All interview transcripts were coded in MAXQDA and queried by two independent coders.

B. Recorded Prompts

All participants were asked to answer questions regarding their experiences with patients and other providers at timepoint 1. Questions asked are as follows:

1. Can you think back to your favorite call or patient? What was it about the call or the patient that sticks in your memory?
2. Can you describe a call that was particularly stressful? How did you feel after?
3. Can you think back to an interaction with a particular patient that you had trouble with? Can you describe what happened and how that affected the interaction and call?
4. Can you think back to a provider that you had trouble with? What was it that made this provider or situation difficult? How did you handle this?
5. Have you ever found yourself thinking about a call after a shift? How did you deal with that?

Participants were asked to record their answers on Qualtrics. Recordings were stored within Phonic ai (https://www.phonic.ai/) platform, which syncs with Qualtrics and produces a transcript for research analysis. Transcripts were downloaded and stored on a password protected research server accessible only to the study team. Audio recordings on the Phonic ai

(https://www.phonic.ai/) platform were deleted from the platform within 6 months of the completion of data analysis. All answers and responses to survey and audio prompts were linked by a study code that is generated by the participant just as was done for the survey data. Transcripts were cleaned. An inductive codebook was developed to thematically code the transcripts. Transcripts were coded by two independent coders and then merged by a third independent coder.

CHAPTER FIVE:

RESULTS AND FINDINGS

Demographics:

Participants overall ranged from ages 18-22. Most participants were 21 (52%). 64% of participants identified as women, 32% identified as men, and 4% identified as non-binary. Experience in the healthcare field ranged from less than a year to 4 years. The majority of participants (36%) worked in healthcare for 2 years. 32% of participants identified as White, 45% identified as Black or African American, 60% identified as Asian, and 4% identified as other. 20% endorsed that they were from a minority background. Full demographics by group can be seen in Table 5.

Participants were also asked about their meditation characteristics. In the full sample 28% reported currently practicing meditation. The most common practice utilized was Christian practice (12%), with others including yoga (12%), exercise (4%), art (4%), meditation (4%), and journaling (4%). Out of those currently practicing meditation, 4% of participants reported practice a couple times per month, 16% reported practice a couple times per week, and 8% reported almost every day. Participants were also asked about their faith/culture's view on meditation. 4% reported a slightly negative view, 24% reporter neither positive nor negative, 16% reported slightly positive, 28% reported moderately positive, and 24% reported very positive. Full meditation characteristics demographics can be seen in Table 6.

All groups were normally distributed according to the Shapiro-Wilk test, except burnout at time point 2. Independent samples t-tests examined differences in means between the groups. At time 1 there was no significant difference in means between the waitlist group and

CBCT group, indicated that randomizations was successful. The one significant difference in means was seen for compassion malleability at Time 2.

Quantitative Results:

A. Interest in CBCT Survey

At baseline, all participants were asked about their level of interest in learning CBCT overall as well for specific parameters, such as more their work with patients and improving their mental health. 80% of participants agreed that they are interested in learning CBCT to improve their work with patients. 76% of agreed that they are interested to improve their mental health. 60% of agreed that they are interested in learning to improve their physical health. 76% agree that they are interested in learning to improve their personal relationships. 68% agree that they are interested in learning to help manage their stress. 76% agree that they are overall very interested in learning CBCT (see figure 7).

Sociodemographic Characteristics of Collegiate EMTs

Baseline characteristic	Full Sample	CBCT	Control
Gender			
Woman	16(64%)	4(50%)	12(70.6%)
Man	8(32%)	3(37.55)	5(29.4%)
Non-binary	1(4%)	1(12.55)	0(0%)
Sex			
Male	8(32%)	3(37.5%)	5(29.4%)
Female	17(68%)	5(62.5%)	12(70.65)
Age			
18	1(4%)	1(12.5%)	0(%)
19	1(4%)	0(0%)	1(5.9)
20	5(20%)	1(12.5%)	4(23.5%)
21	13(52%)	3(37.5%)	10(58.8%)
22	5(20%)	3(37.5%)	2(11.8%)
Years in Healthcare			
Less than a year	1(4%)	0(0%)	1(5.9%)
1	7(28%)	2(25%)	5(29.4%)
1.5	3(12%)	1(12.5%)	2(11.8%)
2	9(36%)	4(50%)	5(29.4%)
3	4(16%)	1(12.5%)	3(17.6%)
4	1(4%)	0(0%)	1(5.9%)

Table 5: Sociodemographic Characteristics of Collegiate EMTs

Race			
White	8(32%)	3(37.5%)	5(29.4%)
Black or African American	1(4%)	0(0%)	1(5.9%)
Asian	15(60%)	5(62.5%)	10(58.8%)
Other	1(4%)	0(0%)	1(5.9%)
Hispanic or Latino			
Yes	1 (4%)	1(12.5%)	0(0%)
No	24(96%)	7(87.5%)	17(100%)
Minority Background			
Yes	5(20%)	1(12.5%)	4(23.5%)
No	19(76%)	7(87.5%)	12 (70.6%)
Unknown	1(4%)	0(0%)	1(5.9%)
Education			
High School	5(20%)	1(12.5%)	4(23.5%)
Some College	16(64%)	5(62.5%)	11(64.7%)
Associates	1(4%)	0(0%)	1(5.9%)
Bachelors	3(12%)	2(25%)	1(5.9%)
Financial Hardship			
Never	14(56%)	3(37.5%)	11(64.7%)
Rarely	6(24%)	3(37.5%)	3(17.6%)
Sometimes	5(20%)	2(25%)	3(17.6%)

Table 5 Continued: Sociodemographic Characteristics of Collegiate EMTs

Existing Meditation Characteristics of Collegiate EMTs

Baseline characteristic	Full Sample	CBCT	Control
Current Meditation			
Yes	7(28%)	4(50%)	3(17.6%)
No	18(72%)	4(50%)	14(82.4%)
Current meditation types			
Christian practice	3(12%)	0(0%)	3(17.7%)
Meditation	1(4%)	1(12.5%)	0(0%)
Yoga	3(12%)	3(87.5%)	0(0%)
Journaling	1(4%)	1(12.5%)	0(0%)
Exercise	1(4%)	1(12.5%)	0(0%)
Art	1(4%)	1(12.5%)	0(0%)
Meditation Frequency			
Couple times per month	1(4%)	0(0%)	1(5.9%)
Couple times per week	4(16%)	3(37.5%)	1(5.9%)
Almost every day	2(8%)	1(12.5%)	1(5.9%)
Faith/Culture View on meditation			
Slightly negative	1(4%)	0(0%)	1(5.9%)
Neither positive nor negative	6(24%)	1(12.5%)	5(29.4%)
Slightly positive	4(16%)	1(12.5%)	3(17.6%)
Moderately positive	7(28%)	3(37.5%)	4(23.5%)
Very positive	6(24%)	3(37.5%)	3(17.6)

Table 6: Existing Meditation Characteristics of Collegiate EMTs

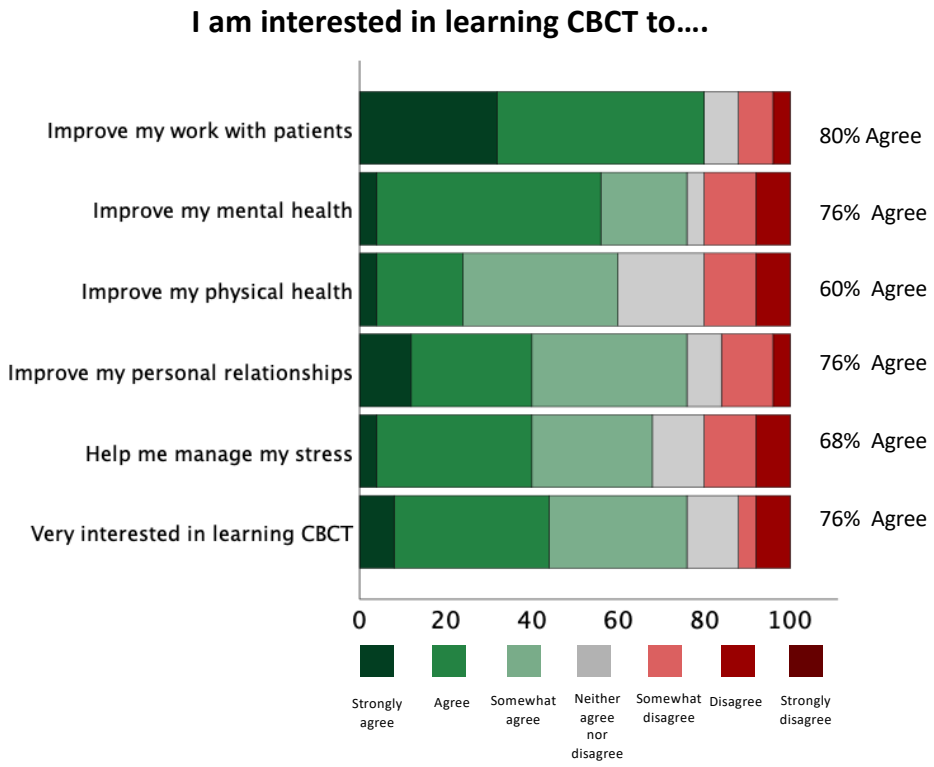

Figure 7: Interest in CBCT

B. Compassion Malleability Beliefs

Both the CBCT and wait-list group completed the compassion malleability survey at both time points. Compassion malleability in the treatment group increased from 40.1 at time 1 to 45.1 at time 2. A paired sample t-test showed a t value of n2.58 and a p-value of 0.04. The wait-list group had a decrease in compassion malleability from 42.1 at time 1 to 38.7 at time 2. Likewise, a paired sample t-test showed a t value of 2.44 and a p-value of .03. ANOVA from PROC MIXED showed a F statistic of 15.13 and a p value of <.001 for group by time interactions. Data can be seen in Table 7.

C. Professional Quality of Life version 5 (ProQOL)

Both the CBCT and wait-list group completed ProQOL at both time points. ProQOL compassion satisfaction in the treatment group increased from 39.5 to 40.8. Paired sample t-test showed a t value of -0.93 and a p-value of .39. The waitlist group showed a decrease in compassion satisfaction from 39.6 to 38.9 with a paired sample t-test t value of 0.53 and a p-value of .61. ANOVA from PROC MIXED showed a F statistic of 1.42 and a p value of .24 for group by time interactions. Data can be seen in Table 7.

ProQOL burnout in the treatment group decreased from 24.2 to 20.8. Paired sample t-test showed a t value of 2.65 and a p-value of .05. The waitlist group showed a slight decrease in burnout as well from 23.0 to 22.7 with a paired sample t-test t value of 0.30 and a p-value of .77. ANOVA from PROC MIXED showed a F statistic of 3.62 and a p value of .07 for group by time interactions. Data can be seen in Table 7.

ProQOL secondary traumatic stress in the treatment group decreased from 23.5 to 20.3. Paired sample t-test showed a t value of 1.86 and a p-value of .12. The waitlist group showed a decrease in secondary traumatic stress as well from 23.5 to 21.9 with a paired sample t-test t value of 1.42 and a p-value of .19. ANOVA from PROC MIXED showed a F statistic of 1.03 and a p value of .32 for group by time interactions. Data can be seen in Table 7.

D. Perceived Stress Scale-4 (PSS-4)

Perceived stress in the treatment group decreased from 7.3 to 5.0. Paired sample t-test showed a t value of 1.94 and a p-value of .11. The waitlist group showed a decrease in secondary traumatic stress as well from 7.7 to 5.9 with a paired sample t-test t value of 3.14 and a p-value of .01. ANOVA from PROC MIXED showed a F statistic of .02 and a p value of .88 for group by time interactions. Data can be seen in Table 7.

	Treatment Group				Wait-List Group				Interaction	
Outcome Variable	**Time 1**	**Time 2**	**t**	**p**	**Time 1**	**Time 2**	**t**	**p**	**F**	**p**
ProQOL compassion satisfaction	39.5	40.8	-0.93	.39	39.6	38.9	0.53	.61	1.42	.24
ProQOL burnout	**24.2**	**20.8**	**2.65**	**.05***	23.0	22.7	0.30	.77	3.62	.07
ProQOL secondary trauma stress	23.5	20.3	1.86	.12	23.5	21.9	1.42	.19	1.03	.32
Compassion malleability	**40.1**	**45.1**	**2.58**	**.04***	**42.1**	**38.7**	**2.44**	**.03***	**15.13**	**<.001****
PSS Stress	7.3	5.0	1.94	.11	**7.7**	**5.9**	**3.14**	**.01***	0.02	.88

*p < .05, **p < .001

Table 7: Self Report Survey Measures Effect of Group and Time

E. Intervention Credibility and Expectancy Questionnaire

At timepoint 2 participants that completed CBCT were asked about the feasibility, reliability, and credibility of the intervention offered. Participants were asked a series of questions on a Likert scale regarding what aspects of their lives they feel improved due to CBCT training, such as a result of CBCT do you feel more encourage to be compassionate with yourself or do you feel you learned more about your team members. 100% of participants reported that they felt more encouraged to be compassionate with themselves. 100% also felt that as a result of CBCT they were encouraged to be compassionate with their teams. 86% felt they learned more about their team members and 57.2% reported that the felt more connected to their team members as a result of CBCT training (see figure 8). Participants were also asked specific questions regarding credibility and expectancy, such as do you believe CBCT reduced burnout and other negative feelings, would you recommend to a friend, etc. 85.7% feel that CBCT was able to reduce burnout and other negative feelings. 85.8% would recommend to a friend. 85.8% feel it improved wellbeing generally and 71.5% feel more connected to others and less burned out. 85.8% feel the program is logical (see figure 9). Since this course was delivered in a novel online abridged format, participants were also asked how they felt about the delivery. 28.57% of participants reported 3 on a 0-10 Likert scale with 0 preferring in person and 10 preferring virtual. 14.29% reported 4 on the scale. 28.57% reported 5 on the scale and 28.57% reported 8 on the scale (see figure 10).

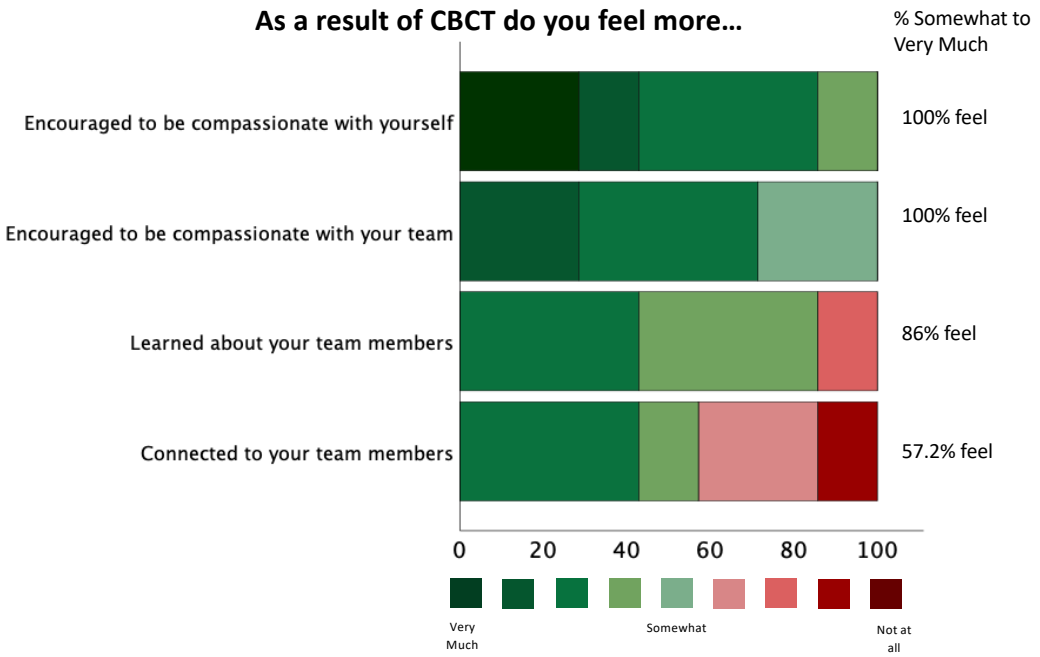

Figure 8: Participant view on CBCT Implementation Post-Delivery

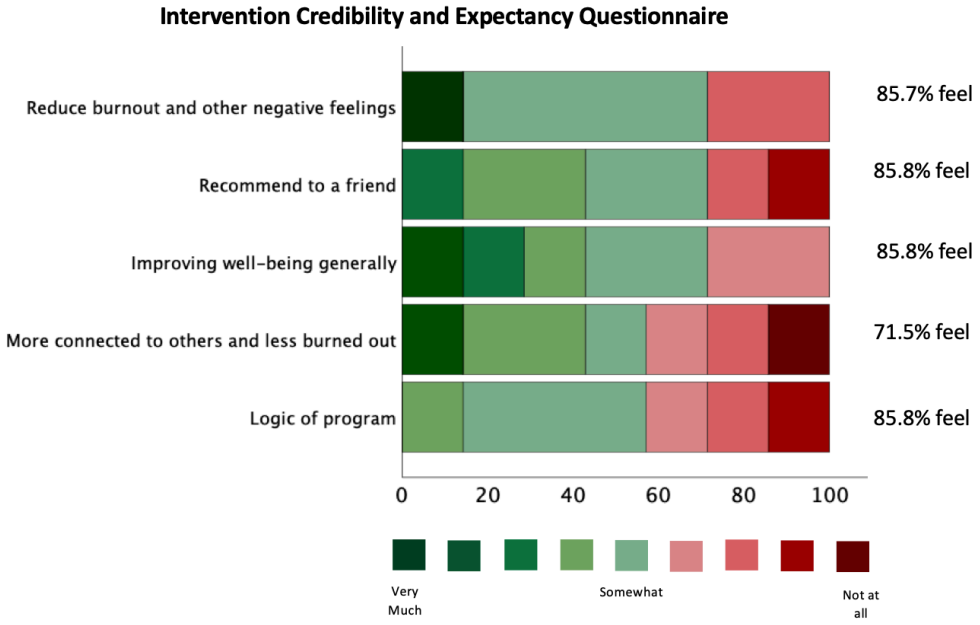

Figure 9: CBCT Intervention Credibility and Expectancy

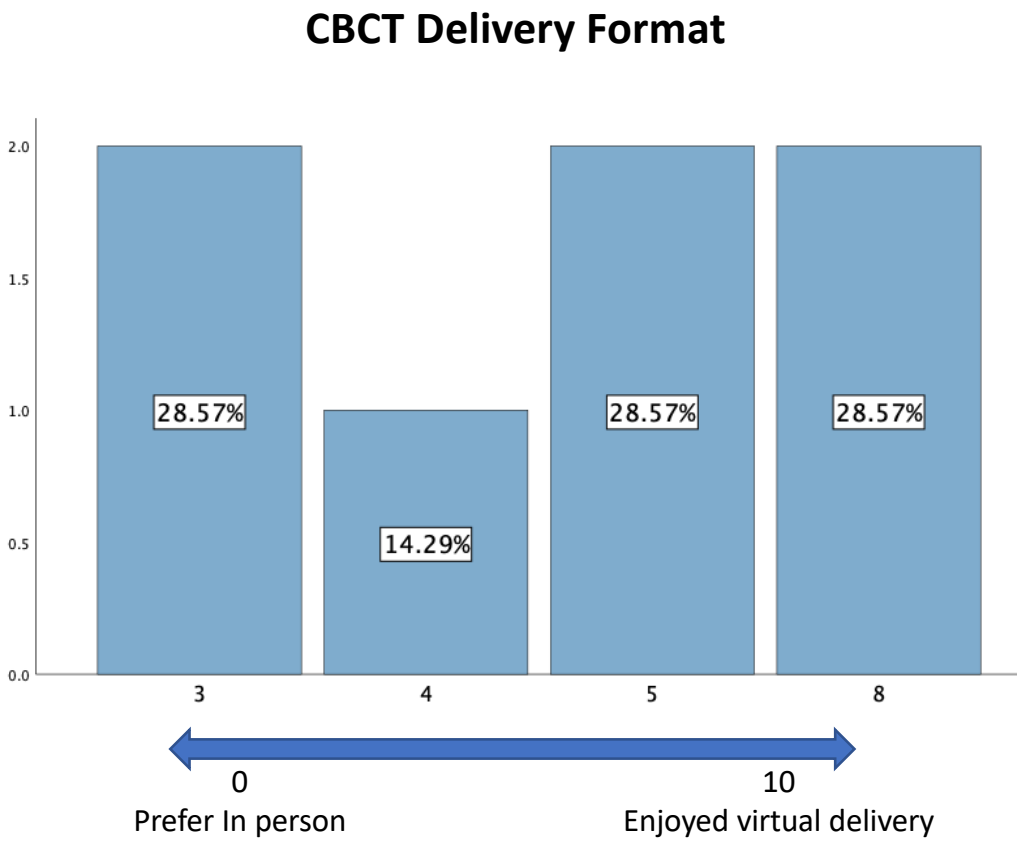

Figure 10: CBCT Delivery Format

Qualitative Results:

A. Semi-structured interviews

Semi-structured interviews prior to randomization elucidated the prehospital environment at a collegiate EMS agency. In particular, these interviews demonstrated potential stressors and points of resilience in CBEMS providers. Select themes with representative codes that were mentioned at least 2 or more times and/or were brought up by 2 or more participants are highlighted in table 8. Providers noted pre-professional interests and helping others as major reasons for joining EMS. One participant noted:

> *"People have gone through school and have narrowed their scope. You can do so much for people because most emergencies happen pre-hospital, you can change their lives".*

4/5 participants mentioned pre-professional interests as their reasoning for joining EMS. Diverse exposures and connecting with patients were mentioned as the favorite aspects of EMS. 4/5 participants mentioned connecting with patients as their favorite aspect. One participant notes:

> *"I get to work with such a unique population of patients. I think it's a lot different being able to interact with college students, also being a college student and understanding the struggles that they go through and understanding why they might have these health problems that they're coming to us for".*

Participants often brought up this distinct component of being able connect to their patients to a greater degree due to the peer-to-peer nature. Systemic issues, not following continuity of patients, and lack of control/helplessness were common least favorite aspects of EMS. One participant really highlights how systemic issues in the system are:

> *"Kind of attempting to work in a system that's just so broken. Um, and you really feel that every day. I think you get exposed to all these different patients, all this stuff, and that is great".*

Another participant notes that a stressor that is inherent in EMS is not following the continuity of patients:

> *"So, we do get to manage the patient until a transporting agency gets there. Sometimes nice to have that reassurance, but sometimes I want to come home and make sure that the patient is ok, but at the same time there are limited things that you can do in the field and tell them".*

Participants were also asked about how they would describe the EEMS community. Friendship (3/5 participants), similarity/relatability (4/5 participants), and motivated (2/5 participants) were common responses. The following quotes demonstrate their beliefs on friendship and similarity/relatability, respectively:

> *"I think I've learned a lot from them too, because being interested in medicine and being pre-med, I don't have that many, I don't know a ton of people who are on the same track as I am, but within Emory EMS, I feel like I have met a lot of people who have similar wants and interests and such".*

> *"We are very, uh, cohesive community. Um, say the least. I know that I spend a lot of time with certain members of EEMS outside of shift times. A lot of them are now my closest friends, being that we work shifts together so often. Cohesion is, is a good word to describe the EEMS community".*

Participants also appear to be deeply motivated and observe this sentiment among their peers across the agency. This can be seen in the follow quote:

> *"It's a group of people who I think are really passionate about working medicine because this is a volunteer agency too, so if you really didn't wanna do it, like there's no like pay incentive either".*

Participants were also asked about their thoughts on EEMS and mental health and stress. Participants were intentionally vaguely asked about this topic to see whether they brought up concerns regarding their own wellbeing versus their patients. Common themes for this question were collegiate EMS advantages, changes needed for patient mental health training, difficulty treating peers, and support for self-wellbeing. Several participants brought up advantages CBEMS providers that distinguish them from professional providers, such as the following:

> *"Being a college agency and dealing with that population, we have a lot of calls like that and I think EEMS does a very good job of handling it. It's a unique population that we work with and very special that we get to be college students. Talking to other college students who understand like how overwhelming it can be at times. Being able to share that experience a lot of times is more helpful than say that burnt out paramedic coming in to talk to".*

4/5 participants also mentioned that changes are needed to train providers to better handle mental health calls and patient interactions.

> *"I think it can always get better and I think, um, being students, often treating students is difficult. That kind of brings up another level of, I think we need more training and support. Um, yeah, would love to be better at it".*

Difficulty treating peers also highlights a key stressor for CBEMS organizations.

> *"I think being students, often treating students is difficult. It's difficult when you deal with a student and then you see them on campus the next day. We're supposed to act like you don't really acknowledge it. The most difficult part of separating those two is when we have a mental health call. Like the student suicide that I had, Emory didn't tell the student body for a few days. I came to campus the next day knowing that this thing had just happened on campus but wasn't allowed to talk about it cause of HIPAA. I could talk about it with fellow EMS, but otherwise can't, and everything's going on as normal. It's this strange kind of like, how am I supposed to switch between the two".*

All participants (5/5), with a substantial number of 13 counts, mentioned support for self-wellbeing

> *"Sometimes I do feel like there's not the best support in terms of difficult calls. It's gotten better this past year, when I first joined, there wasn't that much conversation when difficult calls came up and support outside of working. I think a little bit of it is the culture. There's a lot of students just who are pre-med in general, who I just don't think are as affected by seeing some things that would be difficult for others".*

Given the dual nature of these providers as college students and EMTs, participants were asked about how they balance their obligations. Major themes for this question were coping mechanisms, transition between school and work, and balance with school. 4/5 participants described coping mechanisms.

> *"If I have a particularly hard call, I try and talk to someone. Either call my mom or talk to someone in, in EMS. I also go to therapy regularly, and so if there is something bothering me from a shift, I have that space built in to, to talk it out. One big thing though has been I used to plan things for after a shift. Like I'd get off at 7:00 PM I'd come home, rush, change and go to dinner or something. I don't do that anymore. I like to make sure to just rest that night and stuff cause it's just too hard to go from one mode to the next and never really decompress or process".*

4/5 also noted their feelings on the transition between school and work.

> *"Sometimes it can be a lot, like after a shift, obviously everyone's very tired and everyone's a little drained. Sometimes trying to get back into my normal routine and getting my work done. Like I've had some late nights after shift, which I have not enjoyed. But it can be overwhelming at times. I think. It's not too hard to balance. I just must work ahead. But I think for some people it's, it's more difficult than others".*

Participants were also asked how EEMS could improve overall and what changes they would like to see. Several noted training changes, such as the following participant:

> *"we're able to practice and I'll be ready for those times when we are put into the field".*

Others also noted support changes such giving more support to students, possible paying students, and greater acknowledge, such as the following:

> *"I think just giving more support to students and possibly paying just because we ask a lot of the people who volunteer for EMS, like whether you are still, you're in the class and you're training or you're in field training or whatever it is, we ask for a huge commitment, and I think more needs to be given back to the student volunteers. I would also like to see more acknowledgement of the difficulties of some of the calls and more support there".*

Transcripts were also coded for personality characteristics. The most commonly observed were high achieving, empathetic, and motivated. 3/5 participants used language relating to being high-achieving, such as the following participant:

> *"I'm also in a lab. I'm on leadership board for two clubs. I have a lot of credits going on and you know, I still try to have time for myself a little bit. I mean, during the weeks it can get overwhelming, but I just work ahead. But, um, I think for some people it's, it's more difficult than others".*

4/5 used empathetic language, highlighting the character of providers at this agency.

> *"Understanding the struggles that they go through, and why they might have these health problems that they're coming to us for...beneficial and to the patient to have that kind of empathy and that connection with them. A lot of emergencies that happen are pre-hospital, so you can do a lot for a patient, um, by seeing their environment. And a doctor might, when they come into the hospital, they'll see how the patient presents, but not what their lifestyle is and what are the things that can contribute to that, which you can see coming into their home or their environment".*

Question	Theme	# of times mentioned	Participant Count	Representative Codes
Why EMS?	Helping patients and community	2	2	"People have gone through school and have narrowed their scope. You can do so much for people because most emergencies happen pre-hospital, you can change their lives."
	Pre-professional interest	5	4	"I initially had an interest in emergency medicine and right now I continue to do it because I enjoy the field work."
Favorite Aspects	Diverse Exposure	2	2	"I think my favorite part is the exposure that you get to different types of patients, environments, situations."
	Connect with patients	6	4	"I get to work with such a unique population of patients. I think it's a lot different being able to interact with college students, also being a college student and understanding the struggles that they go through and understanding why they might have these health problems that they're coming to us for."
Least favorite Aspects	Systemic issues	3	1	"Kind of attempting to work in a system that's just so broken. Um, and you really feel that every day. I think you get exposed to all these different patients, all this stuff, and that is great."
	Don't follow continuity of patient	2	2	"So, we do get to manage the patient until a transporting agency gets there. Sometimes nice to have that reassurance, but sometimes I want to come home and make sure that the patient is ok, but at the same time there are limited things that you can do in the field and tell them."
	Lack of control/helpless	2	2	"It can be quite frustrating when you're working with someone, and you know that that's not necessarily going to help the situation. But in that moment, it's gonna keep them safe. And so that's the most important thing. Um, but you know, there's a much bigger picture and problem that you're not gonna be able to help with. Um, part of that has also just been letting go a little bit of like the control, you know, there's a lot that you can't do."
EEMS community	Friendship	3	3	"We are very, uh, cohesive community. Um, say the least. I know that I spend a lot of time with certain members of EEMS outside of shift times. A lot of them are now my closest friends, being that we work shifts together so often. Cohesion is, is a good word to describe the EEMS community."
	Similarity/relatability	5	4	"I think I've learned a lot from them too, because being interested in medicine and being pre-med, I don't have that many, I don't know a ton of people who are on the same track as I am, but within Emory EMS, I feel like I have met a lot of people who have similar wants and interests and such."
	Motivated	3	2	"It's a group of people who I think are really passionate about working medicine because this is a volunteer agency too, so if you really didn't wanna do it, like there's no like pay incentive either."
EEMS and mental health and stress	Collegiate EMS advantages	2	2	"Being a college agency and dealing with that population, we have a lot of calls like that and I think EEMS does a very good job of handling it. It's a unique population that we work with and very special that we get to be college students. Talking to other college students who understand like how overwhelming it can be at times. Being able to share that experience a lot of times is more helpful than say that burnt out paramedic coming in to talk to."
	Changes needed for patient mental health training	5	4	"I think it can always get better and I think, um, being students, often treating students is difficult. That kind of brings up another level of, I think we need more training and support. Um, yeah, would love to be better at it."
	Difficulty treating peers	4	1	"I think being students, often treating students is difficult. It's difficult when you deal with a student and then you see them on campus the next day. We're supposed to act like you don't really acknowledge it. The most difficult part of separating those two is when we have a mental health call. Like the student suicide that I had, Emory didn't tell the student body for a few days. I came to campus the next day knowing that this thing had just happened on campus but wasn't allowed to talk about it cause of HIPAA. I could talk about it with fellow EMS, but otherwise can't, and everything's going on as normal. It's this strange kind of like, how am I supposed to switch between the two."
	Support for self-wellbeing	13	5	"Sometimes I do feel like there's not the best support in terms of difficult calls. It's gotten better this past year, when I first joined, there wasn't that much conversation when difficult calls came up and support outside of working. I think a little bit of it is the culture. There's a lot of students just who are pre-med in general, who I just don't think are as affected by seeing some things that would be difficult for others."
Balance	Coping mechanisms	8	4	"If I have a particularly hard call, I try and talk to someone. Either call my mom or talk to someone in, in EMS. I also go to therapy regularly, and so if there is something bothering me from a shift, I have that space built in to, to talk it out. One big thing though has been I used to plan things for after a shift. Like I'd get off at 7:00 PM I'd come home, rush, change and go to dinner or something. I don't do that anymore. I like to make sure to just rest that night and stuff cause it's just too hard to go from one mode to the next and never really decompress or process."
	Transition between school and work	8	4	"Sometimes it can be a lot, like after a shift, obviously everyone's very tired and everyone's a little drained. Sometimes trying to get back into my normal routine and getting my work done. Like I've had some late nights after shift, which I have not enjoyed. But it can be overwhelming at times. I think. It's not too hard to balance. I just must work ahead. But I think for some people it's, it's more difficult than others."
	Balance with school	5	3	"I balance it. I've been doing it this year more, and I've also been able to really pull back on schoolwork, but it is not easy for the people who are doing it. And they're sophomores or something and they're kind of in the peak of their academic like load, and juniors. I don't know how some people do it. It's a lot to handle because you really don't know in a day if you're gonna be out all-day handling calls or if you're not gonna have much and you'll have time to do work."
Improvement	Training changes	2	2	"we're able to practice and I'll be ready for those times when we are put into the field".
	Support changes	6	3	"I think just giving more support to students and possibly paying just because we ask a lot of the people who volunteer for EMS, like whether you are still, you're in the class and you're training or you're in field training or whatever it is, we ask for a huge commitment, and I think more needs to be given back to the student volunteers. I would also like to see more acknowledgement of the difficulties of some of the calls and more support there."
Personality Characteristics	High achieving	4	3	"I'm also in a lab. I'm on leadership board for two clubs. I have a lot of credits going on and you know, I still try to have time for myself a little bit. I mean, during the weeks it can get overwhelming, but I just work ahead. But, um, I think for some people it's, it's more difficult than others."
	Empathetic	8	4	"Understanding the struggles that they go through, and why they might have these health problems that they're coming to us for...beneficial and to the patient to have that kind of empathy and that connection with them. A lot of emergencies that happen are pre-hospital, so you can do a lot for a patient, um, by seeing their environment. And a doctor might, when they come into the hospital, they'll see how the patient presents, but not what their lifestyle is and what are the things that can contribute to that, which you can see coming into their home or their environment."
	Motivated	4	3	"I think a big part of it is that the students that I've gotten to work with are just really motivated and have a lot of energy to, uh, be a part of something and do something. And that's motivating to me."

Table 8: Pre-randomization Semi-Structured Interviews (n=5)

B. Short Recorded Audio Prompts

Short audio prompts provided additional insight into the experiences of collegiate EMTs and areas where CBCT training may have particular benefit. 13 participants completed Participants were specifically asked about their interactions with patients and other providers that they particularly enjoyed or had challenges with to examine their mindset. Prominent themes included emotional trauma/stressors, coping mechanisms, introspection, motivation to improve, barriers to care, difficulties with inter-agency providers, difficulties with intra-agency providers, limits in scope/ability to help, high stress scenarios, mistake-making, helping others, deeper patient interactions, peer to peer patient interactions. Several points of emotional trauma were noted by participants. One participant notes their experience dealing with an acute call.

"One call that I had particular difficulty processing came out as a cardiac arrest for an Emory student. The student was dead on arrival. This call was particularly difficult because the patient's mother had called the ambulance, and it was very hard to watch the family realize that their son had died. And then also know that we were the ones who had to tell them this. Fortunately, my supervisor was on scene but after that call um I remember we had an extended debriefing with not only the supervisor on shift but also the director of EEMS and with the entire crew that was involved. Um and so I mean a call that's like this obviously has you thinking about things after the shift and it kind of shocks you. This call it wasn't my first DOA But it was my first DOA where I had to see the family um go through the initial stages of shock and grieving."

Several different coping mechanisms were also noted by participants. These mentioned 7 times. Common mechanisms were taking time to themselves, distracted themselves, talking to their peers, and more. Participants often noted that it was hard to find avenues to discuss their calls and patients due to confidentially concerns. This theme is reflected in the following quote from one participant.

> *"I have found myself thinking about a call after shift, um, specifically, uh, really stressful call. Um, that was kind of sad sometimes when I'm, like, in the vicinity. Um, where that call took place, I think about it, especially. I try to deal with it by focusing on other things, um, and not really hyper fixated on the call, especially, um, you know, sad calls. I'll try to, like, play music when I drive past, um, where I'm in that area or I'll, you know, do other things to kind of get my mind off of it and turn out to, like, hyper fixate on that."*

Participants also had several instances of introspection where they considered their actions in a deeper manner. There were 10 instances of this theme. This theme can be reflected in this quote.

> *"It had to do with a sexual assault. I think it really became real to me um how women go through this and the kind of mistreatment that they receive when they um come to others seeking for help. When this happens. I think a lot of people can be insensitive um and certain populations can be treating the patient's um with less compassion than I hope that I would want to have if that if I were in that situation, I really I dwelled on a lot, but it taught me many things. Like I had a lot of guidance in that call, and I was really able to observe how we should treat those patients, these patients with compassion and with um gentle, gentle instruction and guidance. So, I think that was a good learning experience for me."*

Participants also had strong motivations to improve in their practice and noted that they felt EEMS was a community based on learning. This theme is reflected in the following quote:

> *"If I ever get confused about a call, I always do more research afterwards and try to find out what I did that I could have done better and yeah, I'm always just looking for ways to be a better provider"*

Barriers to care was also a significant theme and was mentioned 10 times by participants. Participants here recounted specific systematic barriers to care, such as issues with resources or scene dynamic issues. Some, like the following the quote, explained how at times difficult patients were in fact barriers to care and changed the way they approached a call.

> *"There was a particular patient who had been lying on the floor after a while for a while because she had fallen out of her bed. It wasn't anything serious, um, that she had been*

laying for a while. And so when we arrived on scene, she was very impatient and wanted to be lifted and put back as soon as possible. Unfortunately, um, she was somewhat aggressive about it, and that kind of sours the mood of a call, um, as well as decrease the quality of service".

Difficulties with providers in their own agency as well as other agencies were also prominent themes. There were more instances of intra-agency difficulties (11 times mentioned) vs inter-agency providers (5 times mentioned). These difficulties seemed to arise most commonly when there was a difference in opinion regarding patient care or that the participant did not think their fellow provider was acting in the most compassionate manner. This quote reflects how participants felt regarding inter-agency disputes:

" A provider that I had trouble with was a member of county fire. And this was a fairly routine call freshman dorm. A freshman was intoxicated and was being transported to the hospital and one of her friends was very distraught. She was also likely intoxicated with alcohol. Um but she kept voicing her concern for her friend, saying that she really wanted to travel to the hospital with her because she was scared for her friend. Um AMR the transporting agency did not want to take the patient's friend along with them. Whether this is a protocol thing or the crew's choice doesn't really matter. But the patient's friend kept getting more and more distraught and eventually the firefighter who was helping load the patient on a stretcher into the ambulance just snapped at the patient's friend around and said well if you cared about so much you shouldn't have drunk so much. Um this was obviously a bad interaction but because we're not in the same agency, I couldn't exactly do anything about this situation. So, I kind of steered the patient's friend away from the AMR crew and the fire crew. Um And then my supervisor who was on the scene essentially just told the fireman that like he had finished his job and that he could leave in a polite way and then he reassured the patient's friend that um she had done the right thing by calling EMS and that it was understandable that she was very concerned for her friend"

The following quote reflects how participants conceptualized intra-agency difficulties:

"I think the thing that's most difficult is when there's another provider that is like very confident in their own abilities that maybe their confidence exceeds their skill. Um and so I had this one time where I was working with a provider and I did not hear where we were going, I didn't hear like our call location. Um but they did and they took us the

completely wrong way and they had already like kind of said something earlier that made me think this person is not gonna be a very good partner and they you know their clinical knowledge had been limited on another call, where I sort of had to like feel like I was stepping in to make sure that they didn't make a mistake and so on top of that now we're trying to go to this call and this person has no idea where we're going and just completely take us to the wrong location and then I get a call from command, it's like hey where the hell are you? Um And it was really it was really stressful to be stuck on it in this case, it was like you know parking garage but like in a way that we couldn't get out. I think it might have been clear to him that I was a little bit frustrated but I just tried to you know work with you know getting you know what were the next steps, how can we get out, what were you know, how can I communicate to command that we were you know able to respond effectively and like what does this look like about me."

High stress scenarios was a highly mentioned theme with 12 mentions. Here providers recounted stories of patients or calls that they felt overwhelmed or particularly stressed during. This can be seen in this quote that recounts an acute respiratory distress call.

"One that was recent and very stressful was it was a respiratory distress call. And when we got there, she was very like you could tell that she was in distress like she was crying and she couldn't speak because she felt like swollen and we were very worried because we'd heard it was anaphylaxis. So when we got there what was stressful about it was I felt like we really jumped the gun and I like saw her and I was like oh my gosh like we have to act now. So I wanted to like you know get albuterol or whatever and as I like took it out you know command came and then they were like oh did you listen to lung sounds before you administer it and I realized that I forgot to do kind of like the most basic steps of my assessment in that like listening to long sounds. And then by then like AMR got there and they could also tell that I guess I was a bit stressed. It was like one of my first calls as clear provider too and they could tell I was stressed. So then afterwards I was like you know then they like really like um like I helped out with AMR. As they like gave the IV or whatever and with the other meds that they needed. But it was just very stressful because I got there and I feel like all my all my training, my A. B. Cs and everything flew out the window as I wanted to give definitive care because I could tell that she was in stress and I wanted to like help her and like make it better. But I guess I felt like it was done because I forgot like all my basics in trying to help her, and that wasn't any help at all."

A full list of thematic codes and representative quotes can be seen in Table 9.

Table 9: Short Audio Prompts Thematic Code (n=13)

Theme	# of times mentioned	Representative Code
emotional trauma/stressor	4	"One call that I had particular difficulty processing came out as a cardiac arrest for an Emory student. The student was dead on arrival. This call was particularly difficult because the patient's mother had called the ambulance, and it was very hard to watch the family realize that their son had died. And then also know that we were the ones who had to tell them this. Fortunately, my supervisor was on scene but after that call um I remember we had an extended debriefing with not only the supervisor on shift but also the director of EEMS and with the entire crew that was involved. Um and so I mean a call that's like this obviously has you thinking about things after the shift and it kind of shocks you. This call it wasn't my first DOA But it was my first DOA where I had to see the family um go through the initial stages of shock and grieving."
coping mechanisms	7	"I have found myself thinking about a call after shift, um, specifically, uh, really stressful call. Um, that was kind of sad sometimes when I'm, like, in the vicinity. Um, where that call took place, I think about it, especially. I try to deal with it by focusing on other things, um, and not really hyper fixated on the call, especially, um, you know, sad calls. I'll try to, like, play music when I drive past, um, where I'm in that area or I'll, you know, do other things to kind of get my mind off of it and turn out to, like, hyper fixate on that."
introspection	10	"It had to do with a sexual assault. I think it really became real to me um how women go through this and the kind of mistreatment that they receive when they um come to others seeking for help. When this happens. I think a lot of people can be insensitive um and certain populations can be treating the patient's um with less compassion than I hope that I would want to have if that if I were in that situation, I really I dwelled on a lot, but it taught me many things. Like I had a lot of guidance in that call, and I was really able to observe how we should treat those patients, these patients with compassion and with um gentle, gentle instruction and guidance. So, I think that was a good learning experience for me."
motivation to improve	5	"If I ever get confused about a call, I always do more research afterwards and try to find out what I did that I could have done better and yeah, I'm always just looking for ways to be a better provider"
barriers to care	10	"There was a particular patient who had been lying on the floor after a while for a while because she had fallen out of her bed. It wasn't anything serious, um, that she had been laying for a while. And so when we arrived on scene, she was very impatient and wanted to be lifted and put back as soon as possible. Unfortunately, um, she was somewhat aggressive about it, and that kind of sours the mood of a call, um, as well as decrease the quality of service".
Difficulties with inter-agency providers	5	" A provider that I had trouble with was a member of county fire. And this was a fairly routine call freshman dorm. A freshman was intoxicated and was being transported to the hospital and one of her friends was very distraught. She was also likely intoxicated with alcohol. Um but she kept voicing her concern for her friend, saying that she really wanted to travel to the hospital with her because she was scared for her friend. Um AMR the transporting agency did not want to take the patient's friend along with them. Whether this is a protocol thing or the crew's choice doesn't really matter. But the patient's friend kept getting more and more distraught and eventually the firefighter who was helping load the patient on a stretcher into the ambulance just snapped at the patient's friend around and said well if you cared about so much you shouldn't have drunk so much. Um this was obviously a bad interaction but because we're not in the same agency, I couldn't exactly do anything about this situation. So, I kind of steered the patient's friend away from the AMR crew and the fire crew. Um And then my supervisor who was on the scene essentially just told the fireman that like he had finished his job and that he could leave in a polite way and

		then he reassured the patient's friend that um she had done the right thing by calling EMS and that it was understandable that she was very concerned for her friend"
Difficulties with intra-agency providers	11	"I think the thing that's most difficult is when there's another provider that is like very confident in their own abilities that maybe their confidence exceeds their skill. Um and so I had this one time where I was working with a provider and I did not hear where we were going, I didn't hear like our call location. Um but they did and they took us the completely wrong way and they had already like kind of said something earlier that made me think this person is not gonna be a very good partner and they you know their clinical knowledge had been limited on another call, where I sort of had to like feel like I was stepping in to make sure that they didn't make a mistake and so on top of that now we're trying to go to this call and this person has no idea where we're going and just completely take us to the wrong location and then I get a call from command, it's like hey where the hell are you? Um And it was really it was really stressful to be stuck on it in this case, it was like you know parking garage but like in a way that we couldn't get out. I think it might have been clear to him that I was a little bit frustrated but I just tried to you know work with you know getting you know what were the next steps, how can we get out, what were you know, how can I communicate to command that we were you know able to respond effectively and like what does this look like about me."
Limits in scope/ability to help	4	"One call that was pretty stressful was a cardiac arrest at the dialysis center. Um I, it was pretty stressful because I felt like I couldn't do much. Um, everybody was already working on the patient and I was on the sidelines watching as everything was going down. Um at one point, blood started to come out of his NPA and I felt kind of helpless because the section unit was already being used in the IGel that was placed. Um So I felt kind of helpless in that moment, but after the call, um, you know, care was transferred to a very good set of paramedics and I did feel kind of useful afterwards thinking back on it just because although I couldn't do everything, I mean, I was an advanced EMT and most of the procedures being performed were at the A level. So, but I did feel very involved in the call. So, um overall, I felt really helpful in this situation where I might not be able to do as much as I wanted to."
High stress scenarios	12	"One that was recent and very stressful was it was a respiratory distress call. And when we got there, she was very like you could tell that she was in distress like she was crying and she couldn't speak because she felt like swollen and we were very worried because we'd heard it was anaphylaxis. So when we got there what was stressful about it was I felt like we really jumped the gun and I like saw her and I was like oh my gosh like we have to act now. So I wanted to like you know get albuterol or whatever and as I like took it out you know command came and then they were like oh did you listen to lung sounds before you administer it and I realized that I forgot to do kind of like the most basic steps of my assessment in that like listening to long sounds. And then by then like AMR got there and they could also tell that I guess I was a bit stressed. It was like one of my first calls as clear provider too and they could tell I was stressed. So then afterwards I was like you know then they like really like um like I helped out with AMR. As they like gave the IV or whatever and with the other meds that they needed. But it was just very stressful because I got there and I feel like all my all my training, my A. B. Cs and everything flew out the window as I wanted to give definitive care because I could tell that she was in stress and I wanted to like help her and like make it better. But I guess I felt like it was done because I forgot like all my basics in trying to help her, and that wasn't any help at all."
Mistake making	6	"I get a blood pressure that's like 120 over something and it's like I'm like that is so weird like this guy does not fit that vital. Um and so I have my partner take it and they get like a very similar number independently for me. Um and so you know we do the rest of our management and then AMR comes and this is already kind of like a sassy AMR crew. and AMR shows up, they asked us for a report, I give them a report and then their life pack has a blood pressure that's completely different and much more in line with the patient's presentation, like a systolic of like 70 or something and I just remember thinking like wow how could I mess up such a simple thing, especially in such a critical patient. Um and I you know I was very bothered by it and I really, I think I made that clear to the person that I was working with too, it was just kind of a hard one because it was also like the end of a very long shift and it just kind of shows like it just, it really got to me that I wasn't able to be an effective provider or as effective as I could have been."

Helping others	5	"I think my favorite call with EEMS so far was like a chest pain call that I had. It was with a library worker, I think, and he was in his late fifties and he was just really, really stressed because it was his first time having chest pain and he just looked really like upset and the people around him were scared and he was scared. You could really tell. And I thought that like, me and my partner did a really good job, like helping him calm down and giving him medications and getting an I.V and everything. And you can tell that he, like, felt like more relieved that we knew what we were doing and that we were able to calm him down and like his chest pain went away after a while after we gave him the medication, he was able to breathe better because we coached him with his breathing. And honestly, I felt really good after that call because I felt like I really helped someone for the first time."
Deeper patient interactions	6	"it was clear that she just kind of needed someone to be there for her. And I remember like at one point she like reached out and she just grabbed my hand and like held my hand and that was really adorable because it just kind of it was a really nonclinical way that I could like you know, be there for her. And I just remember feeling so like good that I was able to like answer her questions and like be the person that she could like look up to and know she was safe with."
Peer to peer patient interactions	2	"Um my favorite kind of call or like patient that I've had was usually at concerts, um, just because often students, or just general cases where students are feeling scared because I feel like I can relate to them, and I think it's nice to help someone or a student who um doesn't know what to do or just be like a familiar face. So any call with like they're drunk or suicidal ideation. Um, anything like that."

CHAPTER SIX:

DISCUSSION AND CONCLUSION

This mixed methods, interdisciplinary study thoroughly investigated the stressors and points of resilience present in CBEMS organizations, efficacy of CBCT in promoting psychosocial wellbeing, as well as the feasibility, acceptability, credibility, and expectancy of the intervention. Beyond simply evaluating an intervention, this thesis situated CBCT among other compassion training protocols and Tibetan Buddhist frameworks.

Participants randomized to CBCT reported significant increases in their belief on compassion malleability. This is consistent with other studies that found CBCT increased compassion malleability in hospital chaplains (Mascaro et al., 2013). As described earlier, EMTs face significant stressors with 4 out 5 EMTs reporting being overwhelmed/deeply disturbed from an incident and 48.3% of EMTs experiencing some form of burnout (Regehr et al., 2002; Zhou et al., 2022.). College students similarly also experience unique stressors with 1 in 3 college students reporting being so stressed it was difficult to function and 44% reporting some form of depression (Friedman et al., 2020). Thus, compassion meditation training may be a powerful enhancement for the wellbeing of CBEMS providers, given their dual status.

This increase in compassion malleability may also arise from several aspects of CBCT. One clear one noted by Mascaro et al. is that CBCT instruction includes content on the definition and nature of compassion (Mascaro et al., 2013). CBCT explicitly teaches that participants may increase their compassion by practicing the kind of meditation taught (Mascaro et al., 2013). This group also connected this to the *lojong* tradition in Indo-Tibetan Buddhism that CBCT developed from. *Lojong* means “thought transformation” or “mind

training" and is a systematic way of reversing thoughts, emotions, and behaviors that are maladaptive and altering them to thoughts, emotions, and behaviors that are beneficial to oneself and others (Silva & Dodson-Lavelle, 2011). Geshe Thupten Jinpa explains in his book entitled Mind Training that discusses lojong traditions that, "the salient idea of transformation, whereby a process of training, habituation, cultivation, and cleansing induces a profound transformation—a kind of metanoesis—from the ordinary deluded state, whose modus operandi is self-centeredness, to a fundamentally changed perspective of enlightened other-centeredness"(Jinpa, 2014). This is change in mindset is the difference between CBCT and other non-analytical mindfulness programs that may instead focus on lovingkindness (*metta*) meditation (Silva & Dodson-Lavelle, 2011). CBCT incorporates concepts such as independence and gratitude to garner connectedness and equality that can develop into a strong sentiment of love and compassion for other (Silva & Dodson-Lavelle, 2011).

Furthermore, the compassion malleability scale used in this work was developed by Mascaro et al. using an existing scale that looked at the malleability of empathy (Mascaro et al., 2013). Research by other groups on the malleability of empathy found that the malleability of empathy predicted empathy or empathic behavior, especially in conditions when one's empathy is challenged (Schumann et al., 2014). Original studies that examined this empathic malleability scale found that those with a more malleable belief worked harder to improve their empathic accuracy as determined by the Reading the Mind in the Eyes task (Schumann et al., 2014). This indicates that their belief on empathy influences their motivation to grow. This likewise connects to the greater theoretical framework that connects grown mindsets with positive psychological outcomes, rather than fixed mindsets (Yeager & Dweck, 2020)(Dweck &

Leggett, 1988). Studies also looking at other compassion training interventions found similarly that motivation, commitment, and action were essential for effectiveness (Steindl et al., 2018).

The observed strong trend indicating decreased burnout in participants randomized to CBCT also indicates that CBCT may be effective in improving the psychosocial state of CBEMS providers. This would be even more important for the group of interest since these providers are only at the forefront of their careers.

This idea was also seen in semi-structured interviews done pre-randomization. Providers noted pre-professional interests and helping others as major reasons for joining EMS. This distinguishes these providers from professional EMS providers who are career EMTs. Many participants noted further interest in medical or physician assistant school in the future. Thus, resources to help this population support its wellbeing can have a serious impact. Participants noted diverse exposures and connecting with patients as their favorite aspects of EMS. Several participants here also noted that they can uniquely connect with their patients due to their mutual identities as college students. This highlights a key aspect of CBEMS organizations that may be both a potential stressor as well as a point of resilience. Connecting with these patients presents as a favorite aspect for these providers, meaning it may be fulfilling for them and providing satisfaction. One participant noted,

> *"Being a college agency and dealing with that population, we have a lot of calls like that and I think EEMS does a very good job of handling it. It's a unique population that we work with and very special that we get to be college students. Talking to other college students who understand like how overwhelming it can be at times. Being able to share that experience a lot of times is more helpful than say that burnt out paramedic coming in to talk to."*

These providers seem to recognize the burnout other professional EMTs may face and have a motivation to be different than that. Yet, when asked about how EEMS handles mental health and stress, several participants also noted the difficulties of treating peers. One participant this truly powerful story:

> *"I think being students, often treating students is difficult. It's difficult when you deal with a student and then you see them on campus the next day. We're supposed to act like you don't really acknowledge it. The most difficult part of separating those two is when we have a mental health call. Like the student suicide that I had, Emory didn't tell the student body for a few days. I came to campus the next day knowing that this thing had just happened on campus but wasn't allowed to talk about it cause of HIPAA. I could talk about it with fellow EMS, but otherwise can't, and everything's going on as normal. It's this strange kind of like, how am I supposed to switch between the two."*

This elegiacally demonstrates the significant emotional burden CBEMS providers are faced with. Working in the same environment as their own day to lives appears to create a kind of duality that they always find themselves between. Participants also noted the dual nature as stressors for balancing work with school and also dealing with transition between each role.

Friendship, similarity/relatability, and motivated nature are common themes participants used to describe EEMS. Participants note that they are not only coworkers, but friends, and often spends lots of time together outside of EMS. They also shared that they enjoy working in an agency filled with other passionate people and can learn from each other. One participant importantly noted that these providers are deeply motivated about their work given that it is a volunteer agency. They have no pay incentive to work these hours and face the difficulties of it yet choose to. Thus, this community may be a point of resilience. At the same time, it may be a stressor since these providers have high expectations and may suffer the

strains of over perfection. High achieving, empathetic, and motivated were common personality characteristics exhibited by these participants and may result in the same effect.

Some least favorite aspects these providers noted about the EMS system were systemic issues, not following continuity, and lack of control. These aspects tended to be inherent in the EMS profession. One participant explains this sentiment:

> *"So, we do get to manage the patient until a transporting agency gets there. Sometimes nice to have that reassurance, but sometimes I want to come home and make sure that the patient is ok, but at the same time there are limited things that you can do in the field and tell them."*

This uncertainty may be a substantial stressor for this population. While this aspect of the profession cannot be changed imminently, providers could be equipped with resources to change the way they frame their thoughts surrounding the experience.

Likewise, we saw instances of psychological distress-like behavior in these providers in the short-recorded audio prompts. These transcripts illuminated some potential beginnings of burnout, reduced interest in work, compassion fatigue, stress, and more that could become larger issues overtime if not acted on. We saw providers talk about calls that are emotionally traumatic and charged, such as responding to the death of a student and having to inform the patient's parents that their child has passed. We see providers hyper fixating on calls and getting "flashbacks" of calls while the drive past a place they had a previous call. We also see providers recognizing that it is difficult to care for some patients when they are particularly difficult. The following quote really highlighted this:

> *"There was a particular patient who had been lying on the floor after a while for a while because she had fallen out of her bed. It wasn't anything serious, um, that she had been*

> *laying for a while. And so when we arrived on scene, she was very impatient and wanted to be lifted and put back as soon as possible. Unfortunately, um, she was somewhat aggressive about it, and that kind of sours the mood of a call, um, as well as decrease the quality of service".*

This demonstrates how providers recognize that more difficult calls can result in reduced compassion and thus reduced quality of service. This in particular is an aspect that could be built upon with CBCT training. More behaviors associated with chronic stress and burnout that have been shown in other studies on typical jurisdictional EMTs were seen when participants were asked regarding their difficulties with other providers. This question was intentionally asked to see when providers felt their partners and fellow providers fell short, recognizing they were more likely to say these things about others than themselves. This also illuminated the factors that providers held as most important when caring for patients and the profession. They noted behaviors such as overconfidence and being rude to patients. We also see providers explaining how the high stress scenarios they find themselves affect their wellbeing. Participants noted on several occasions that many times they found themselves so overwhelmed that it impacted their patient care. This again highlights an aspect that could be potentially targeted with CBCT training. Overall, the format and nature of these recorded audio prompts was particularly powerful. Participants seemed to elaborate more on their responses and tell their stories in a unique way that may not have been as possible in an interview format. Findings from this method could also better explain some of the other results. In particular, it may also explain the reduction in compassion malleability seen in the control group and other similar factors as these themes highlight how the CBEMS environment is possibly affecting their wellbeing.

Given that this was a pilot study we also wanted to investigate participant mindset on the intervention. Specifically, participants were asked regarding feasibility, acceptability, credibility, and expectancy. Interestingly, participants showed greatest interest in CBCT for helping their patients. This level was even higher than their interest in it for themselves. This really points to the character of the CBEMS providers. Participants overall had high interest in learning CBCT, indicating there may be a need for it. Participants also felt that CBCT reduced burnout and other negative feelings, improved well-being generally, was logical, and would recommend to a friend. This indicates that participants thought CBCT was beneficial for their circumstances. 100% of participants also reported that as a result of CBCT they felt more encouraged to be compassionate with themselves and their team members. This indicates that participants thought CBCT was beneficial and feasible. Since this course was also delivered in a novel virtual format, participants were also asked about their thoughts on it. Participants had varying opinions on the delivery format, indicating that the preferred format may be more on an individual basis. This might mean that offering both options may be needed to meet everyone's needs.

Overall, this work sheds light on the profound impact CBCT can have in addressing the unique stressors faced by CBEMS providers. It also characterizes the unique ethnographic aspects of CBEMS organizations. This research underscores the need for tailored, novel interdisciplinary interventions to support the psychosocial wellbeing of this population. These findings also highlight the positive feedback regarding the feasibility, acceptability, and credibility of CBCT. This study did have its limitations, however. One significant limitation was the small sample size and difference in size between the control and waitlist groups. Groups

were randomized and then participants were taken off the waitlist if individuals from the CBCT group were unable to attend. This may have created a discrepancy in the interest levels, workload, and stressors. Thus, moving forward, further research and implementation efforts are warranted to fully integrate CBCT and similar interventions into CBEMS organizations, thereby providing vital support to these dedicated individuals as they navigate the challenges of balancing their multifaceted roles as college students and emergency responders.

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