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## Chapter

# Facing Adversity during Graduate Medical Training: The Concept of ‘Coping Intelligence’

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## Abstract

Effective coping strategies are of great importance for trainees actively navigating the challenges and stresses of graduate medical education (GME). Although there is increasing emphasis on the concept of emotional intelligence (EI) in medical curricula, the range of behavioral skills learned in typical EI training may not be sufficient when dealing with extreme stress – something that healthcare students in general, and GME trainees as a subset, continue to struggle with. Under the conditions of extreme stress, multiple competing priorities and high cognitive load, even those with excellent command of EI skills may not be able to universally maintain sufficient emotional control. This, in turn, exposes a significant opportunity for further understanding and development in this dynamically evolving area of investigation. Increasing amount of research suggests that a unique skill set exists, known as ‘coping intelligence’ (CI), that may help fill the gap under the conditions of extreme stress and significantly elevated cognitive load. This chapter will discuss CI as a unique and novel concept, further exploring the possibility of introducing this new construct into the realm of GME.

**Keywords:** cognitive load, coping intelligence, emotional intelligence, graduate medical education, stress management

## 1. Introduction

The individual ability to cope with the acute stresses and demands within both professional and personal domains is an important and often overlooked construct, especially in the context of organizational functioning and the ability to appropriately process and respond to external stimuli [1–5]. In the era of near-universal embrace of the concept of ‘emotional intelligence’ (EI) and related topics [6], it is becoming increasingly apparent that the experience of repeated ‘micro-stresses’ and the associated emotional trauma may contribute to the development of burnout and other behavioral health sequelae [7–11]. When compounded by acute elevations in stress levels and cognitive load, as often experienced by graduate medical education (GME) trainees, a set of environmental conditions may create a fertile substrate for both momentary (and at times sustained) loss of emotional control [12–15].



### **3. Coping intelligence: a logical extension of emotional intelligence?**

Concepts such as 'Emotional Intelligence' (EI) have been introduced into the area of GME some time ago, and although significant progress has been made in promoting and implementing the much needed change across various medical education settings, there remains an unaddressed behavioral niche that does not seem to fit the 'standard descriptors' and 'routine situations' encountered under high-stress, 'zero-sum game' clinical scenarios or 'no-win' situations [6, 10]. Consequently, the much dreaded phenomenon of physician and trainee burnout (using the definition from Korunka et al. [21].) continues unabated, despite the above efforts to enhance individual ability to cope with the combined macrotrauma of major clinical and life events, combined with the repeated microtrauma of multiple stressful events across different domains of life.

Within this overall context, it is becoming increasingly evident that EI simply stops being effective above a certain – likely highly individualized – threshold of stress and cognitive loading. At that point, no matter how well someone can handle themselves within a 'normal set of circumstances,' loss of emotional control becomes much more likely. As emotional control is lost, one's coping approaches transition from more mature defense mechanisms to increasingly immature defenses (**Table 1**), and he or she is more likely to commit judgment errors and/or become engaged in maladaptive behavior patterns. If the above is indeed the case, how can the awareness of (and training in) CI help one avoid the potentially disastrous emotional 'loss of balance'? Of additional importance to patient safety and patient well-being is the question that we must ask in this context, "what is the effect of the provider's or trainee's emotional state on bedside care?"

### **4. Current understanding of coping approaches**

Literature focusing on individual coping with life difficulties provides limited answers and/or practical solutions [20]. Under the general umbrella term "coping," there are two subdomains – applied problem solving [22, 23] and coping with stress [24]. Early work published by Lazarus and Folkman categorizes coping as either problem-oriented or emotion-oriented [24]. At a more granular level, problem-focused coping is centered on managing and/or regulating a stressful scenario (e.g., when "something can be done") [20]. On the other hand, emotion-focused coping is used to modulate emotional response to a stressor (e.g., when "nothing can be done") [20]. Important within the broader context of CI is the role of problem solving competence through attitudes and belief systems [24, 25]. More recently, combined approaches began to emerge, based on the assumption that the perceived problem-solving effectiveness can be regarded as the degree to which one's actions promote or impede progress toward a resolution of the problem at hand [23].

Essentially, in academic systems, overall levels of stress are generally higher when compared with other areas within the fabric of our society [26–28]. Both professional and social complexities associated with a typical academic position, regardless of whether one's role is a trainee or a teacher, can be overwhelming and may lead to burnout [10, 11, 29, 30]. Additional socioeconomic and diversity-related considerations may also be important in this context [31, 32], and various forms of academic networking appear to be helpful as an approach to ameliorate the demands and overall stress of an academic career [33, 34]. Engagement within a social network may bring some advantages in terms of both greater resiliency and better coping skills [35–37].

Mature		Intermediate		Immature	
Mechanism	Comment	Mechanism	Comment	Mechanism	Comment
Affiliation	When under stress, one shares their problem(s) with others and asks for help	Displacement	Changing the target of an emotion, while the feelings remain the same	Acting out	Performing an extreme behavior in order to express thoughts or feelings the person feels incapable of otherwise expressing
Altruism	An act of goodwill toward another individual	Intellectualization	The use of reasoning to block confrontation with an unconscious conflict (e.g., “thinking” is used to avoid “feeling”)	Compartmentalization	A form of dissociation, wherein parts of oneself are separated from awareness of other parts and behaving as if on had a separate set of values
Anticipation	Reducing the stress of a difficult challenge by anticipating and preparing for dealing with that challenge	Rationalization	Justification of attitudes, beliefs, or behaviors	Denial	Refusal to accept reality or fact, acting as if a painful event, thought or feeling did not exist while being apparent to others
Compensation	A way of coping with challenges in one area by overachieving in another area	Repression	Unconsciously removing an idea or feeling from consciousness	Dissociation	Separation or postponement of a feeling that normally would accompany a situation or thought
Self-assertion	Dealing with stress by expressing one’s thoughts and feelings in a way that is not aggressive, coercive, or manipulative	Undoing	Attempting to “cancel out” or remove an unhealthy, destructive or otherwise threatening thought or action by engaging in contrary behavior	Projection	Attribution of wishes, desires, thoughts, or emotions to someone else
Self-observation	Dealing with challenging or stressful situations by reflecting on one’s own thoughts, feelings, motivations, and behaviors, followed by an appropriate, rational response			Reaction formation	Acting the opposite of what one thinks or feels. Assuming attitudes and behaviors that one consciously rejects

Mature		Intermediate		Immature	
Mechanism	Comment	Mechanism	Comment	Mechanism	Comment
Sublimation	Channeling of an unacceptable impulse in a socially acceptable direction			Regression	Returning to an earlier stage of development
Suppression	Consciously removing an idea or feeling from consciousness				

**Table 1.**

*List of various defense mechanisms along a continuum (from mature to immature). Broadly defined, mature defense mechanisms are characterized by a healthy and conscious relationship with reality (e.g., reality is accepted even when it is not appreciated). Immature defenses, on the other hand, are psychological processes that facilitate the suppression of emotional awareness (e.g., unacceptable or painful reality is not accepted).*

Medical students, residents, and medical faculty are generally considered to be highly talented and competitive. According to Fabio and Buzzai, “The most common traits associated with giftedness are: high sensitivity, higher speed of thinking, introversion, high emotional development, elevated creativity, independence, perfectionism and *interpersonal and intrapersonal conflicts* [38].” Physicians, generally, may not be introverted, but much of the description above can apply to them. It is important to note that the literature has indicated that EI, coping style and creativity coexist within a complex relationship, and can affect the health of an individual [38–42].

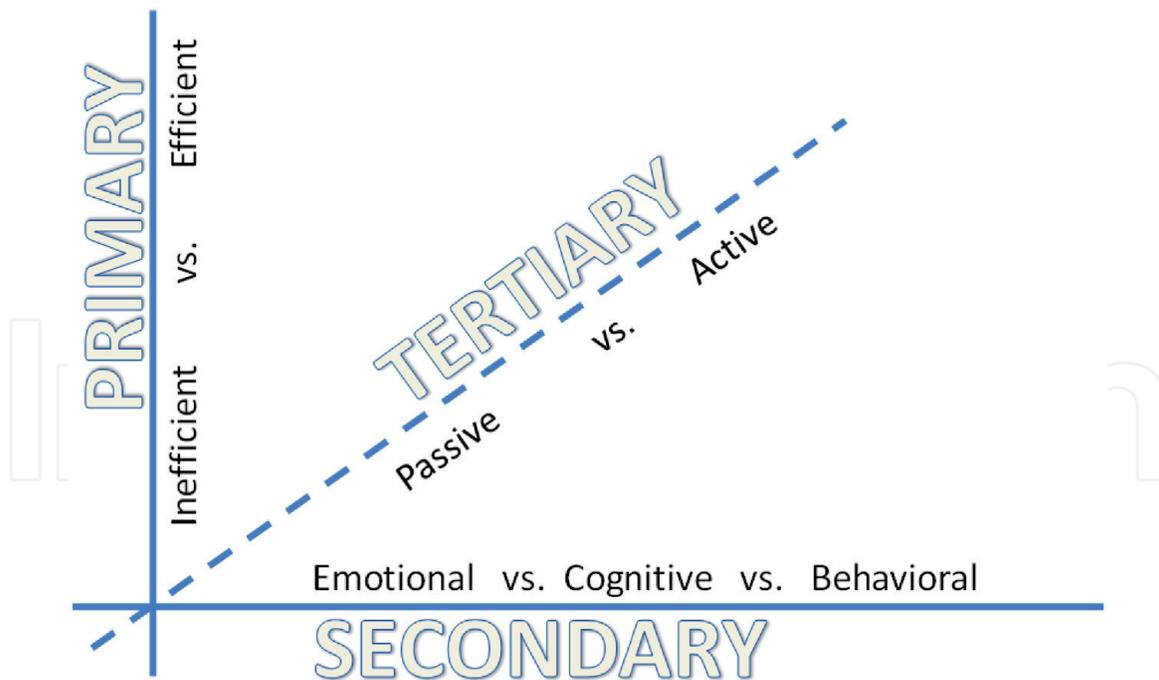
Fabio et al., show that among key characteristics of individuals who are able to deal with problems and challenges more effectively is the ability to think in a flexible manner, which in turn seems to facilitate innovative solutions to complex tasks, often approached from different viewpoints or angles and featuring more granular details and conceptualizations [38]. However, this does not mean that the more talented have greater EI and are more resilient. Fabio et al. show that highly talented individuals may have the propensity to utilize avoidance coping instead of more direct coping approaches or strategies [38]. In other words, CI becomes very important as an adjunct to EI. Coping intelligence has been defined as “efficient individual ways of managing life stress,” and can be further defined as, “a broad repertoire of life skills required to solve successfully everyday stress and life adversities in order to achieve desired goals and maintain physical, mental, and social well-being [20].”

A positive coping model emerged recently, championed by Libin [19, 20]. This multi-dimensional positive coping model (MDPCM) provides a framework for an objectivized assessment, Coping IQ [19, 43]. In this model, CI is defined by the quality, functionality, repertoire, and efficiency of cognitive, emotional, and behavioral strategies that individuals resort to when approaching stressful or otherwise difficult circumstances [20]. In brief, the new model categorizes efficient and inefficient coping strategies based on “their functionality or the organization of coping efforts,” and not on their modality [20]. Consequently, the MDPCM is characterized by: [a] The primary cross-cutting parameter: organization of the efforts (either efficient or inefficient); [b] The secondary cross-cutting parameter: modality of manifestation (either emotional, cognitive or behavioral); and [c] The cross-cutting tertiary parameter: intensity of efforts (e.g., passive versus active) (**Figure 2**) [20].

Subsequent research showed that: (a) efficient cognitive coping is characterized by cognitive activity that is focused on the resolution of the difficult situation; (b) efficient emotional coping consists of emotional efforts concentrated on the solution to the problem at hand; and (c) efficient behavioral coping is based on behavioral efforts applied toward resolving the difficulties encountered [20]. On the other end of the spectrum, inefficient cognitive coping is defined as: (a) cognitive activity deviating from the difficult situation; (b) inefficient emotional coping that is tied to emotional efforts divergent from resolving the problem at hand; and (c) inefficient behavioral coping consisting of behaviors that deviate from problem-solving [20].

## 5. Identifying efficient and inefficient coping strategies in trainees

Due to the high levels of stress experienced by GME trainees, it is paramount to identify issues with CI early and develop potential strategies for improvement. Leaders working in Business and Marketing have identified 2 major coping strategies in most individuals: (a) active coping, an efficient strategy, and (b) avoidance coping, an inefficient strategy [44]. As can be seen in **Figure 2**, active versus passive coping is among the key components of the multi-dimensional positive coping model championed by Libin [19, 20].



**Figure 2.**  
*The three cross-cutting parameters within the multi-dimensional positive coping model championed by Libin [19, 20].*

In active coping, individuals identify problems or sources of stress, actively work to remove them, and promote positive outcomes [44, 45]. In avoidance coping, or evasive coping behavior, individuals develop mechanisms for avoiding stress and conflict passively, leading to more negative outcomes—lower job satisfaction, lower job performance, higher burnout, and deleterious consequences on health [44, 46]. Avoidance coping has been proven to increase emotional exhaustion, contribute to a decreased sense of personal pride in one's work, and lead to the development of self-endangering work/professional behaviors [44, 47].

Of importance within our current discussion's context, low EI correlates with worry states, greater degrees of psychological stress, and use of avoidance coping strategies [48]. Competence in EI often leads to effective coping strategies in times of stress, with problem-focused coping in particular leading to alleviation of psychological distress [48]. An important measure of a certain individual's ability to properly cope with stress and adversity is resilience [49]. If a trainee exhibits resilience, this is often a good indicator of his or her stress coping ability [48]. Many mind-body training programs for stress reduction focus on mindfulness and resilience training to mitigate stress, anger, anxiety, and depression.

## 6. How should coping intelligence be incorporated into existing emotional intelligence training?

The process of integrating CI into existing EI training paradigms can be challenging. First, trainees should be introduced to, and become proficient in, EI itself. This provides a solid foundation for the subsequent discussion and incorporation of CI as a meta-layer that functions as a 'safety valve' on top of EI (**Figure 3**). It is important to note that EI is a powerful moderator of coping strategies and perceived service outcomes, especially in situations where service failure (e.g., inability to deliver services as promised) is present [50]. This is indeed a common scenario within the functional realm of a graduate medical education (GME) trainee.



**Figure 3.** Simplified diagram showing the ability to transition from “routine” emotional intelligence (EI) skillset to a “more specialized” coping intelligence skillset can be viewed in the context of escalating levels and complexities of stress.

Second, those who made sufficient progress in their EI training (as evidenced through significant improvement on repeat standardized EI assessment tools) should be gradually introduced to the concept of CI. Experience-based group discussions are well suited toward increasing one’s awareness that the ability to handle emotions under ‘normal circumstances’ has its limits, and that despite one’s best efforts there are instances where ‘extreme pressure’ may result in loss of emotional control (**Figure 3**).

Current hospital policies and procedures that help providers/trainees deal with ‘extreme pressure’ in medicine tend to be retrospective in orientation, although there are programs that incorporate prospective measures to improve coping. An example of this is obstetrical hemorrhage. The stress of managing obstetrical hemorrhage can take clinicians and staff from problem-based coping to emotion-based coping in a matter of minutes, compounding errors and potentially leading to devastating outcomes for patients and providers [51]. In the typical scenario, these cases are extensively discussed after the fact using mechanisms such as intense analysis and morbidity and mortality (M&M) conferences [52–54]. These are protected conferences that are meant to highlight quality and safety considerations while also acting as experience-based educational group discussions. Focus on process can build problem-oriented coping skills for future traumatic events.

Many residency training programs have taken a proactive approach to enhance problem-based coping and minimize emotion-based coping. In obstetrics, this is achieved through post-partum hemorrhage drills and group training that can reduce post-partum hemorrhage [55–57]. Adherence to guideline-based care and check-lists can also enhance problem-based coping [58, 59]. This, in turn, facilitates improved coping at the individual level. Although rigorous training (drills) and adherence to checklists can help enhance problem-based coping, there will always be situations that can appear hopeless to the provider/trainee. Preparing trainees to cope more effectively with highly stressful and potentially chaotic situations, such as the management of maternal hemorrhage, will be an important aspect of addressing the need for better overall management of the ‘emotional burden’ associated with low-frequency, high-impact clinical events [60, 61].

GME programs can turn to other strategies to mitigate stress and anxiety. Dedicated support programs were originally initiated to reduce symptoms of burn-out: depersonalization, emotional exhaustion, and diminished sense of personal accomplishment. At the same time, tools that can reduce stress and anxiety may also help enhance efficient coping. Mindfulness training programs have been demonstrated to be feasible – even among the most demanding residency programs [62]. For example, implementing a mindfulness-based cognitive training program for surgical residents showed improvement in perceived stress and interestingly may

have resulted in improved technical skills [63]. In another example, when a broad-based curriculum including mindfulness training was applied to intensive care unit (ICU) providers, there were fewer patient safety events [64].

GME programs can promote efficient coping by enhancing problem-based coping and mitigating the effects of inefficient emotional coping through programs that can reduce stress and anxiety. Running drills for high-stress situations, developing and adhering to guidelines/quality bundles and checklists are all practical methods for improving providers' and trainees' problem-based coping [65–67]. The overall goal should be to provide tools to reduce the immature coping mechanisms that can occur in high-stress situations (**Table 1**). Mindfulness programs have been effectively instituted and can help mitigate the over-reliance on emotion-based coping. Taking a prospective approach to coping is likely to have a greater effect than retrospective, peer-protected group discussions such as M&M conferences.

## **7. What are the potential benefits of implementing coping intelligence programs in a workplace?**

It is postulated by the authors that the introduction of CI into a workplace, especially one that is focused on the provision of services, may help with both employee coping under stress and with conflict resolution. Going back to our earlier discussion, the importance of CI may emerge in highly stressful situations where the overwhelming perception is that “nothing can be done” [20]. Under such circumstances, emotions may ‘take over’ and lead to inability to cope effectively with the particular stressor or a set of interrelated stressors. On the other hand, individuals who are able to maintain rational stance during highly stressful situations or circumstances, may be able to ‘weather the storm’ by either employing their social problem-solving skills or by relying on their attitudes and belief systems [20, 24, 25]. As noted previously, institutions, patients, and GME trainees can benefit from programs that teach effective coping. As shown in published research, if trainees can better ‘weather the storm,’ there will likely be fewer patient safety events, improved clinical outcomes, and reduced provider burnout [63, 64, 68].

## **8. Efficient versus inefficient coping: importance in life satisfaction**

Research suggests that older individuals employ efficient coping strategies more often than younger groups, likely a reflection of an individual ‘coping repertoire’ that arises as a result of the cumulative ‘life experience’ and the associated development of emotional and cognitive mental processes. Of importance, there is evidence to support the viewpoint that low life satisfaction is related to inefficient coping strategies across emotional, cognitive, and behavioral domains [20]. To support this viewpoint, data show a relationship between increase in maladaptive behaviors and high levels of impulsivity [69, 70]. Other important concepts within this general context include social plasticity (e.g., ability to be flexible in social relationships and establishing social contacts) as well as one’s adequacy and timely channeling of emotional responses [20].

## **9. Mentoring to improve coping skills**

Traditional medical education involves the use of mentors since the time of Aristotle. It allows a physician who has navigated the training and practice of

medicine to model and encourage the coping skills previously described. The personal relationship developed within a mentoring relationship has been shown to improve transitions for practicing physicians new to a hospital [71]. The tremendous time and intellectual commitments required to effectively train residents and medical students are, in turn, known to affect the trainees' personal lives, including interpersonal relationships, community activities (and thus support), and even the financial domain. Well-designed mentoring programs should incorporate all of the above-listed topic areas, beginning with the training dedicated to ensuring mentor competency and optimization of mentorship efficacy. Subsequent to this, properly trained mentors may begin to guide their mentees through a series of conversations that provide the opportunity to suggest methods of dealing with the issues of time management, practice management, meaning and purpose in medical practice, as well as bringing to light the topic of coping mechanisms that may be useful to the mentee in regards to the various domains and/or stressors of the modern health-care environment. Physicians who participated in such well-structured programs reported that despite the time constraints and added work demands, the mentoring process helped them achieve greater professional fulfillment and a sense of personal accomplishment [72].

### **9.1 Coping intelligence in the context of resiliency**

The concept of resiliency warrants a brief discussion as well. Resiliency has been recognized as a quality beneficial to coping with adversity, and can be defined as the ability to respond to stressful situations in an adaptive and healthy manner [73]. It can also be thought of as the ability to withstand, adapt to, and recover from adversity and stress [74, 75]. Consequently, there is inherently a significant amount of overlap between resiliency and CI. Individuals with high resiliency address challenges and stressful changes in their personal and professional lives with flexibility and retained optimism [49]. Highly resilient individuals also recover from stressful or difficult experiences faster and with greater awareness of their environment and their responses to it [76, 77]. In brief, having resiliency not only enables an individual to be adaptive when confronted with difficulties, but also allows them to learn from the experience and therefore, be better prepared for future stressors. Ultimately, this fosters self-confidence and success in the face of adversity.

The Resiliency Scale was developed in the early 1990's by psychologists Wagnild and Young [78–80]. Early on, it was applied primarily in older patient populations to assess one's ability to adapt more effectively as they aged [81–83]. It sought to quantify and stratify individuals into groups that were at risk for maladaptive coping when faced with change and adversity as they aged. The ultimate goal of such efforts was to devise new interventions to enhance coping skills in individuals with diminished resiliency.

Research is also helping to define the quality of resilience that has been anecdotally recognized in successful GME trainees. For example, some have referred to this trait as “grit” – the previously undesignated characteristic that makes an individual both less likely to experience burnout and better equipped at managing demands of graduate medical training. It is specifically defined as perseverance and passion for long term goals; clearly a valuable quality in GME trainees across all specialties [84]. Higher levels of “grit” have been shown to result in decreased feelings of burnout, depersonalization and emotional exhaustion. It also supports the belief that with determination and hard work, one can be highly successful regardless of innate talent. Finally within the context of this chapter, the substance of “grit” may indeed represent a manifestation of CI.

Several instruments now exist to measure resiliency, expanding on the initial work of Wagnild and Young. Of special importance to our discussion is the Academic Resilience Scale (ARS-30) [85]. Created in 2016 by Cassidy, the ARS-30 aims to measure the participants' mood and attitudes toward adversity in education, focusing on three key factors – perseverance, reflecting and adaptive help-seeking, as well as negative affect and emotional response [85]. These factors further delineate and quantify resiliency as key characteristic of individuals who do not give up when faced with stressors, recover from adversity in a positive manner and maintain optimism. The ARS-30 reinforced the qualities of resiliency and the ability to identify those who will be successful in academics as well as those who would benefit from further, more personalized skill-building. While research is ongoing, the ability to recognize and quantify resiliency may ultimately lead to more effective interventions to avoid burnout, improve CI and finally, facilitate individual and team success amid adversity.

## **9.2 Empathy and compassion: key components of the overall matrix of coping**

Without a doubt there is a need in medicine to develop both EI and CI to help manage the stress that comes from one's very functioning in an administrative system that may be characterized by at least some priorities that may deviate from the primary role of a physician/trainee – to help the sick and save lives [86–88]. Various administrative tasks and clinical challenges that physicians must successfully navigate may create a highly stressful environment. Without the ability to cope effectively, draw appropriate boundaries, and recognize one's limits, many physicians are unable to successfully reconcile clinical and administrative responsibilities. In this context, one phrase often used by physicians captures the above, “you can only control what you can control.” Moreover, it is important that healthcare leaders are aware of, and subsequently embrace critical skillsets that help elevate one's overall leadership effectiveness [89, 90].

High quality, compassionate leadership is critical in today's highly stressful healthcare environment [91–93]. As such, it is crucial for the institutional leadership (at various levels) to bring structure and order to an environment often characterized by controlled chaos within a highly diverse matrix of people, skills, and functions [92, 94, 95]. Hence, in difficult time – regardless of the circumstances – and despite all of the efforts to develop and mature our individual and collective emotional and coping intelligence, physicians must remember their professional oath and responsibility - to do no harm and to help the sick [96, 97]. Our patients depend on our empathy and compassion and balancing our emotions in a system that inherently fosters the emergence of burnout as well as mental and physical exhaustion [6, 11, 29, 64, 98].

Unfortunately, there are growing concerns that among the consequences of relying on CI and/or EI, especially in the context of managing burnout, is increasing apathy and a recognition that the “system is broken.” This, in turn, may result in further physician/trainee disengagement and deterioration of the critically important emotional component that is necessary to venture beyond the mindset that providing healthcare is “just a job” or “over when my shift ends.” It is therefore critical, as life-long students of EI and CI, that we recognize that our inherent human compassion and empathy must not only be preserved, but also maintained within a framework which fosters an individual's ability to be an effective, empathetic, and emotionally stable physician/trainee [99, 100].

While the topic of burnout, including its avoidance and mitigation, is beyond the scope of this manuscript, there are overlaps across the physical and emotional drivers of burnout. Physicians/trainees may benefit from the knowledge of such

overlaps, including the knowledge of how EI and CI may be beneficial in learning how to better establish and manage critical boundaries that are critical to one's emotional and physical well-being. Mahatma Gandhi once said: "Where there is love there is life" [101]. Nowhere else is such a concept more true than in medicine, but such energies must be kept in balance with the recognition that medicine is a life-long endeavor and to function effectively, for an entire career, a mastery of CI is necessary to successfully manage and contain the growing stressors, professional and personal challenges, and administrative complexities of modern healthcare.

It is also important to recognize that even in the best of circumstances and workplace environments there will be substantial personal and professional career challenges. One must concede that "modern medicine is a business" – and much like most businesses, leadership may change, high (and low) performers will come and go, and economic variables and incentives will be in constant flux [102, 103]. The overall environment can (and likely will) change. At times, this change may be rapid and not always consistent or in alignment with established goals and/or agenda. Having a solid foundation in EI and CI will be invaluable when such changes occur, especially when the positive aspects of our work-life integration or culture, become misaligned [104–107]. Such misalignments will often result in substantial institutional changes – changes in processes, protocols, cultures, team structures and organization – and individuals. You (or key members of your team) might, and potentially will, leave (even if not on their own accord), but a true sign of a solid foundation in CI and EI is to be able to adapt, accept, and navigate such changes when they occur.

**Limitations:** This is a largely exploratory chapter in an area that requires a significant amount of work to better understand all of the intricacies and complexities involved in behavioral responses to burnout and extreme stress. Current literature tends to be more focused on EI, with admittedly insufficient attention to coping as a unique and separate topic. Only with greater appreciation of various factors that contribute to maladaptive coping can we develop better informed and more effective mitigation strategies.

## **10. Conclusion**

When the professional environment becomes too complex for one to fully understand and manage, social and emotional skills that allow one to function meaningfully under normal conditions may become insufficient. This, in turn, exposes an important gap in our current ability to cope with either momentary or sustained stressors. Under the proposed new paradigm, coping intelligence can be viewed as an extension of emotional intelligence when one's capacity to deal with stress exceeds a certain, highly individualized threshold. In a way, coping intelligence represents a much deeper and more refined form of applied self-awareness and requires much more intensive self-reflection and self-discovery. More research is warranted in this critically important and developing area.

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