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Evolution of Resilience Construct, Its Distinction with Hardiness, Mental Toughness, Work Engagement and Grit, and Implications to Future Healthcare Research

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ABSTRACT

Over the past three decades, growing literature have examined the role of resilience in helping individuals to thrive from adversities. Resilience was studied among children growing under high-risk conditions, genocide survivors, immigrants, patients, and recently, physicians. Through a narrative review, this article critically examines resilience construct development, definitions, and themes, its generalisability across domains, and stability over time. Similarities and distinguishing characteristics of resilience and related terms such as hardiness, mental toughness, work engagement and grit are discussed. The article then discusses the evolution of resilience studies, available interventions and the implication of the current understanding for future research in the context of physicians.

Keywords: *Resilience, Work engagement, Well-being, Burnout, Healthcare workers*

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INTRODUCTION

Long hours, intense workload, brief consultation time and electronic medical records predispose physicians to mental health problems (1). When compared to the general population, physicians had a significantly higher rate of burnout, anxiety, depression and suicides (2–4). Physicians in the United States were reported to be 1.97 times more likely to experience burnout when compared to the workers from other sectors, even after controlling for age, gender, relationship status and hours worked per week (2).

Despite the increasing prevalence of mental health problems (2), several studies proposed that some physicians were able to thrive in these situations (5–6). Resilience gained attention in the medical literature over the past decade following the article “If every fifth physician is affected by burnout, what about the other four? Resilience strategies of experienced physicians” (7). Resilience gained more attention when growing quantitative studies reported significant negative correlations with mental health problems such as burnout, depression and stress (8–10). However, resilience has been defined differently and interchangeably used with other related constructs.

In view of increasing interest in physicians well-being, it is important to examine the historical perspective of resilience and its implication to research involving physicians. This article aims to review studies on resilience construct through a narrative review. The review addresses four research questions:

- a. What are the waves of inquiry in resilience research?
- b. What are the common definition and themes of resilience?
- c. In what ways does resilience differ from its related concepts?

- d. How does this understanding influence resilience research in the context of physicians?

We performed an extensive literature review using search terms; resilience, hardiness, mental toughness, engagement, grit, and physician well-being. We used several search engines that include PubMed, Medline, PsycINFO, SCOPUS and Google Scholar. Based on the review findings, eight considerations are discussed to guide future research of resilience in the context of physicians and other healthcare professionals.

WAVES OF INQUIRY

Resilience originated from the Latin word “resilire”, which means to leap back, rebound, or recoil (11–12). Linguistically, resilience is defined as “the ability of people or things to recover quickly after something unpleasant such as shock or injury” (13), and “the state or quality of being resilient” (14). However, in the literature, resilience has been construed in numerous lenses; a trait, a quality, a process, a cycle, a system and a trajectory (15).

Resilience inquiry started as phenomenological observations and characterisations of the children that survived poverty or traumatic events such as violence or parental loss (15–16). Researchers found that around 50% to 70% of children from these extremely high-risk environments grew up to be successful by societal indicators and became competent and caring adults (17–18). The discourse then expanded to the socio-economically challenged population such as immigrants, teenagers with single parents and genocide survivors (15). Individuals that surpassed the expected average outcomes were described as stress-resistant, survivors, invulnerable, or resilient (19–20).

Initially, some researchers introduced resilience as “always being doing well” or “invulnerability” but this view has been

challenged as it implied adversities as non-contextual and resilience as a stable trait (18). The more recent views acknowledged that new vulnerabilities and strengths develop with changing life experiences and newly encountered adversities (21). In a parallel fashion, researchers then identified three antecedents to resilience development; the presence of a significantly challenging event, an interpretation that the event is physically or psychologically demanding, and the development of protective factors or mechanisms to reduce the effect of the event (12). Some studies considered that prolonged exposure may be necessary to affect resilience development (22). However, Bonanno (23) proposed that acute traumatic events have different effects on people and acute events such as the unexpected passing of a spouse, or natural disasters, may also result in resilience development.

Through his article in “The Metatheory of Resilience and Resiliency”, Richardson (16) described three waves of resiliency inquiry from his review on studies on the general population. As discussed above, resiliency inquiry expanded the discourse on mental health from the disease model to positive psychology (24). In contrast to the disease model that focuses on treating mental health problems, resilience is linked to the concept of positive psychology (empowering human strengths in facing adversities) (15, 24).

The first wave of resiliency inquiry sought to describe the characteristic features or traits of individuals who survive adversities as compared to those who succumbed to challenges (16). In one of the pioneering studies, researchers studied the children born in 1955 from the Hawaiian island who were exposed to stress immediately after birth, chronic poverty, parental psychopathology, or had troubled family environment. These children were followed from the age of one to two, ten, 18 and 32 years old. Werner (17) described several clusters of characteristics of resilient children. As toddlers, they were more alert, autonomous, had more positive social

orientation, greater communication skills and self-help skills. The resilient youth were more achievement-oriented, nurturant and responsible. These resilient children progressed into adults with educational or skills achievements that were similar to the other low-risk children who grew up in a more stable upbringing. On top of the qualities displayed by the children, Werner (17) also described protective factors such as the presence of substitute parental role, maternal employment and external emotional support. Resilience studies between 1979 to 2000 followed a similar paradigm and proposed various resilient qualities that include optimism, self-determination, wisdom, faith, creativity, happiness and excellence (16).

The second wave of the inquiry advances the understanding by exploring how such qualities or factors enhance resilience development (16, 21). Through the Resiliency Model, researchers proposed that resilient qualities are developed from the law of disruption and reintegration (25). The premise of the model is a person must undergo some challenges to become resilient, become disorganised, reorganise themselves, reflect on the experiences, and become stronger with a better resource of protective factors and coping skills. When facing adversities, the model proposed that individuals have the opportunity to consciously or unconsciously select the outcome of disruptions or adversities. Individuals may face temporary disruption or disorganisation but will form some perspective during reintegration. Individuals may end up in four possible options; resilient reintegration (becoming better from the adversities), homeostatic reintegration (just to heal), maladaptive reintegration, or dysfunctional reintegration. This process can be enhanced through some protective factors that were described in the first wave of resilience inquiry (25). This theory is supported by a review of resilience studies by Garcia-Dia et al. (12) which posited two common features of resilience; integration and effective coping. Individuals

with adaptive coping may re-establish homeostasis beyond his or her baseline and learn from the experience to face future adversities better (resilient reintegration) (25). While the model is linear, Richardson (16) acknowledged that multiple challenges may occur at once and resilient reintegration may be a delayed process rather than instantaneous.

The third wave acknowledged that everyone has an internal force that encourages us to find self-actualisation, wisdom and strength. Researchers in this wave explored the energy and motivation that drive individuals to reintegrate with resilience. In this phase, studies explored the role of the social environments in resilience development such as the professional team, family, or community (15). A systematic review on resilience themes among general practitioners revealed several contributing factors at various levels; individual (e.g., having a sense of purpose), work (e.g., control on work matters), and lifestyle (e.g., leisure time) (26).

Earlier research proposed that resilience is a stable trait, while later it is seen as a dynamic process, influenced by the interaction between an individual with the event and the environment (27). The more contemporary paradigm has also departed from a single possible pattern of resilience development to multiple dynamic processes that shape resilience development (19, 23).

COMMON DEFINITIONS AND THEMES

Despite the evolution of resilience theories, there is no universal definition of resilience (28). The waves of resilience inquiry as discussed above shaped not just the definition of resilience, but also the research focus during the respective time (Table 1). In a review of resilience studies, Windle (11) defined resilience as “the process of effectively negotiating, adapting to, or managing significant sources of stress or trauma. Assets and resources from the person, their life, and environment facilitate this capacity of adaptation and bounce back in the face of adversity. Across the lifetime, the experience of resilience will vary”. The American Psychological Association (APA) emphasised that resilience is not necessarily a trait and defined it as “the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress” (29).

Garcia-Dia et al. (12) outlined four common attributes across various resilience definitions and descriptions; determination, social support, self-efficacy and rebounding. A recent meta-synthesis of 21 resilience inventories used on various populations revealed four common themes; control, involvement, resourcefulness and growth (Table 2) (32). The meta-synthesis found that Connor-Davidson Resilience Scale was the only inventory with items that address all four themes in its measurement (30).

Table 1: The summary of resiliency inquiry according to the resilience metatheory by Richardson (16) and its influence on definitions and research focus

Wave	Descriptions	Related definitions	Research focus
First	Repeated observations of resilient qualities among individuals labelled as “survivors, stress-resistant, or resilient” that predicted positive achievements.	Personal qualities that enable an individual to function or thrive in the face of significant adversity (30). The process of, capacity for, or outcome of successful adaptation despite challenging or threatening situations (19).	List of resilient qualities, risk factors, and protective factors that help individuals face adversity.

(continued on next page)

Table 1: (continued)

Wave	Descriptions	Related definitions	Research focus
Second	Resilience development through the process of coping with adversities that results in a better outcome.	The process of coping with disruptive, stressful, or challenging life events in a way that provides the individual with additional protective and coping skills (when compared to pre-event) (25). A dynamic process of positive adaptation in the context of significant adversity (21).	Description of disruptive and reintegrative processes to achieve resilient qualities.
Third	Identification of the force that drives individuals to resilient reintegration.	Protective and vulnerable forces that exist at different levels – community, culture, family, and the individual (31).	Forces that individuals can utilise in the face of adversities.

Table 2: The thematic findings of resilience across 21 measurement scales (32)

Themes	Descriptions	Related constructs derived from resilience inventories
Control	Internally, resilient individuals are composed and controlled when facing adversities.	Emotion regulation Humour Internal locus of control Self-esteem
Involvement	Externally, resilient individuals are committed to deal with adversities.	Commitment Perseverance Tenacity
Resourceful	Externally, in the long run, resilient individuals search for appropriate resources to deal with future adversities.	Creativity Insight Novelty seeking Problem-solving Social resources
Growth	Internally, resilient individuals view adversities as opportunities for self-development.	Coping Empowerment Goal setting Strengthening/steeling effect Vision

Factors Contributing to Resilience Development

Over the past decade, studies have looked at the biological and physiological aspects of resilience development (12). Southwick and Charney (28) have proposed the role of neuroplasticity (the human brain potential to change following individual experiences) in resilience development among patients with depression and post-traumatic stress

disorders. Various animal studies have come to a similar conclusion – exposure to stress or harsh environment led to a positive change in the brain developments involving neurotransmitters synthesis, dendritic cells length and branching, and neural networks (31, 33). Growing human studies have also demonstrated experience-induced plasticity and the positive effect of well-being interventions on brain structure and functions (34). Emerging

evidence has also examined the genetic and environmental interactions, reporting few genotypes capable of moderating the effect of environmental risk factors (22, 35–36).

Resilience has been consistently correlated with protective or risk factors that can be broadly categorised into demographic and psychological (27). A meta-analysis on 33 studies by Lee et al. (27) indicated that the largest effect in resilience came from the protective factors (e.g., self-efficacy and positive affect), the medium effect came from risk factors (e.g., depression and anxiety), while the smallest effect came from demographic factors (e.g., age and gender).

Stability of Resilience

Studies have acknowledged the multidimensional nature of resilience (27). In a sample of maltreated school students, 64% were classified as academically resilient while only 21% were classified as resilient in social competence (37). Luthar et al. (21) argued that resilience is uniform across some theoretically related domains, but can be different in conceptually unrelated domains that are belonged to diverse cognitive, behavioural and emotional capacities. From 13 studies that examined resilience across various domains, ten studies failed to demonstrate the generalisability of resilience (35). Hence, researchers are encouraged to use terms such as “educational resilience” or “professional resilience” to imply a greater specificity in the interpretation of the study outcomes (21, 37).

In parallel with theories of resilience (25, 29), many studies have demonstrated the instability of resilience over time (35). While a study among police officers demonstrated the stability of resilience score across nine months (38), a meta-analysis of resilience randomised controlled trials among healthcare professionals demonstrated effectiveness only up to three months post-intervention (39). Similar findings were observed in longitudinal studies involving

children of 2 and 23 years follow-up which pointed to a lack of stability of resilience over time (40–41).

RESILIENCE AND RELATED CONCEPTS

Resilience has been interchangeably used and linked with hardiness, mental toughness, engagement and grit (15, 42). A study testing construct redundancy between resilience and hardiness, mental toughness and grit found that they were strongly correlated ($r = 0.62$ to $r = 0.78$) (43). However, Price (43) also demonstrated that these constructs are distinct through factor analysis and each of these constructs made unique contributions to stress and well-being. Hence, the following paragraphs dissect the constructs similarities and differences. The relationship and differences are summarised in a comparison diagram (Figure 1).

Hardiness

Hardiness is the most linked concept to resilience. It is characterised by commitment (searching for meaningful purpose), control (self-belief that one has control over challenges), and challenge (anticipation that change is a medium for growth) (44).

In her groundwork on hardiness, Kobasa (44) studied workers in the management line. She found that the participants with the “hardy personality” faced their life events with a meaningful purpose (commitment versus alienation), and were able to appraise the events in terms of the long-term impact on them (meaningfulness versus nihilism). They were more involved with their environment (vigorousness versus vegetativeness) and were driven by an internal locus of control instead of external (44). “Hardy” person appraises life events as less threatening, confident and able to cope well, hence reducing the experience of distress (23, 43). While the domains of

resilience and hardiness seem to overlap, hardiness has been proposed as one of the ways to develop resilience when facing ongoing adversities (45).

Mental Toughness

Mental toughness is often studied in highly competitive areas where performance is paramount for success such as sports, business and the army. Most studies were conducted within the context of sports athletes (46). Alongside sports contexts, mental toughness has been described as an important psychological resource that predicted academic and career success (47). In a study among university students, mental toughness was inversely correlated with stress, burnout and depression (48).

Similar to other constructs, there is no single defining model for mental toughness (43). It has been recognised as a multidimensional construct of commitment, challenge, control and confidence (47). A qualitative study verified earlier definitions of mental toughness which is “having a natural or developed psychological edge that allows one to cope better than his or her opponents alongside the demands (such as competition and training), more consistent and better than other opponents, determined, focused, confident, and in control under pressure” (49). A systematic review looking at quantitative and qualitative studies in mental toughness concluded that it is often linked with unshakeable self-belief, resilience, perseverance, concentration and effective coping. However, in contrast with resilience that focused on positive adaptation or reintegration during adversity, mental toughness is concerned more with thriving and superior functioning in the face of adversity (46, 50).

Engagement

Work engagement is one of the positive organisational behaviour (POB) constructs. POB focuses on the human resource

strengths and psychological abilities that are measurable, amenable and can be effectively managed to increase work performance (51). Engagement is defined as “a positive, fulfilling, work-related state of mind, characterised by vigour, dedication, and absorption” (52). It is characterised by high energy, strong involvement at work and a sense of efficacy and is recognised as a positive antithesis of burnout (exhaustion, depersonalisation and reduced accomplishment) (53–54).

Bakker and Demerouti (52) proposed resilience as an antecedent of work engagement. Resilience predicts work engagement together with other personal resources (such as optimism and self-efficacy), and job resources (such as supervision and autonomy) (52). This conceptual model was supported by a study among Czech workers in helping professions that found resilience as a strong predictor of engagement, and engagement as a significant mediator between resilience and job performance (55).

Grit

Grit is defined as the “passion for and perseverance toward especially long-run goals” (56). It is operationalised as a construct with two major facets; perseverance and consistency of passion (43). It is also defined as “working diligently towards a higher-order goal in an extremely long stretch of time” (57). Grit has been examined in recent years in various contexts such as military cadets, salespersons and teachers (58) and common outcomes measured were retention and intention to stay (57).

Review has proposed that grit and resilience terms are complex and more nuanced (59). Grit is more associated with success indicators, while resilience is more associated with well-being indicators (43, 59–60). A study among adults found that grit accounted for an average of 4%

of the variance in success outcomes (61). Resilience has been proposed as an inherent component of grit alongside passion. In a

study with neurosurgeons, grit and resilience were significantly correlated ($r = 0.42$) (60).

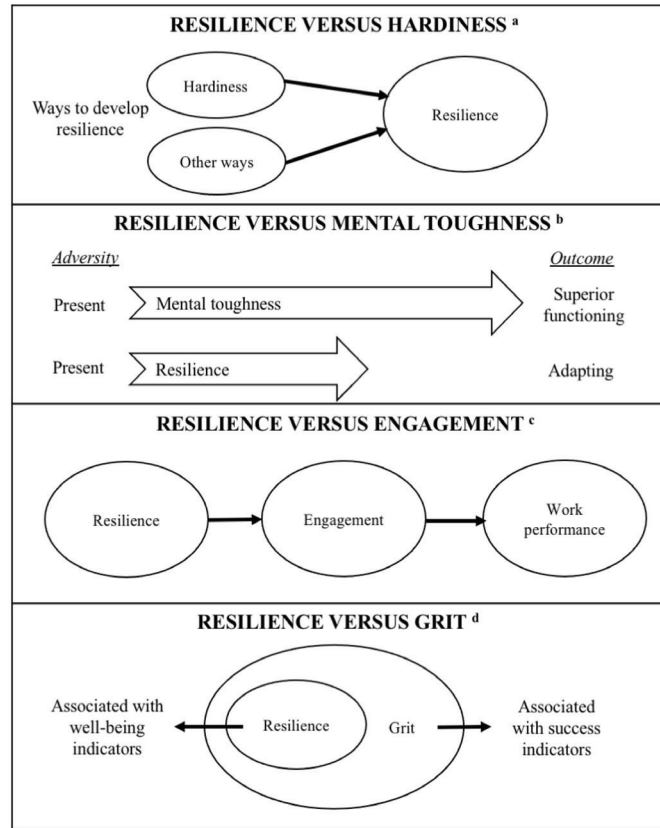


Figure 1: Relationship between resilience and related concepts.

What Resilience Is Not

Few earlier studies have introduced the concept of ego-resiliency (a set of traits that made an individual more resourceful, sturdy and flexible in response to varying adversities) (62). However, Luthar et al. (21) argued that ego-resiliency is a stable characteristic of an individual and does not assume exposure to adversities, while resilience is a dynamic process in response to adversities.

Another term commonly mistaken as resilience is recovery. Recovery is a trajectory where an individual normal functioning temporarily gives way to symptoms of psychopathology that last

for several months before returning to the baseline (23). In contrast to recovery, Bonanno (23) argued that resilience is an individual ability to maintain a stable equilibrium despite experiencing a transient disruption in their normal functioning.

RESILIENCE RESEARCH IN THE CONTEXT OF PHYSICIANS

In the medical literature, the discourse on resilience initially began as a potential measure to combat burnout syndrome (63–65). Similar to the other population, resilience has been associated with emotional well-being, compassion satisfaction, sense of accomplishment,

meaningful purpose in patient care (66–67). Resilience was found to inversely correlate with burnout, depression, stress, anxiety, intolerance to uncertainty and reluctance to reveal uncertainty to patients (8, 66, 68).

Studies proposed that resilience themes in physicians are not similar to the domains proposed in the general contexts (12, 32). For example, in a study using grounded theory, obstetrics and gynaecology residents conceptualised resilience as having aspiration and values, efforts, connection with patients, relationship with the medical community, self-care, external support and culture (69). Another study on doctors working in challenging areas proposed having a sense of control over their practice as one of the resilience themes (70). On top of other common themes, palliative care physicians also conceptualised resilience as having realistic expectations, setting healthy professional boundaries and self-regulating emotions (63). This highlights that resilience conceptualisation should not be assumed similar in physicians across different specialities who face a different kinds of adversities and protective factors (29, 71).

Interventions to Increase Physicians Resilience

Pioneering research demonstrated that resilience skills are amenable and educational interventions have been effective in enhancing resilience at the workplace (12, 72). A meta-analysis concluded that intervention to enhance protective factors is more effective than the intervention to reduce risk factors (27). Commonly described interventions are psychosocial skills, mindfulness, stress management, relaxation, coaching, simulation-based and narrative training (73). A recent meta-analysis reported a moderate positive effect of resilience training programmes (cognitive behavioural therapy, mindfulness and combined interventions) in the general population (74). However, two meta-analyses in the physician contexts found

weak evidence of resilience intervention effectiveness. Most of the studies had poor methodological rigour such as weak experimental designs, small sample size and inadequate descriptions for replication (73, 75).

Some researchers challenged that individual-targeted resilience intervention is just a quick-fix and did not address the external sources of problems (76). Thiemt (76) argued that physicians already face significant challenges in healthcare and individual resilience should not be promoted as a solution to burnout syndrome. She emphasised that, “The Titanic may have the most resilient captain, but this means nothing to the iceberg” and called for measures to improve system resilience. While system resilience is indispensable, Gridley (77) argued that such changes (e.g., workload reduction, workforce increase and change of work culture) are normally slow-moving. She proposed that both individual and systemic resilience are crucial so that physicians have a sense of control of their career, instead of being controlled by their career (7, 63).

Systematic implementation of workplace resilience training or intervention is not commonly studied or practised yet (15). However, in order to address burnout and well-being comprehensively, the Accreditation Council for Graduate Medical Education has pioneered a move through its common programme requirements for residency and fellowship programmes. Each programme is warranted to focus on improving physicians well-being and proposed measures include:

- a. Enhancement of purpose and experience in doctoring through protected time with patients, reducing non-physician obligation, increasing autonomy and work flexibility.
- b. Attention to workload intensity and scheduling.

- c. Evaluation of workplace and physicians safety.
- d. Adequate opportunity to attend medical, dental or mental health appointments during working hours.
- e. Empowering residents to identify symptoms of mental health and seek appropriate care.
- f. Providing physicians with access to confidential and affordable mental health assessment.
- g. Permission to take medical, emergency or parental leave without fear of undesirable consequences (with appropriate measures to ensure patient care coverage) (78).

IMPLICATIONS ON PHYSICIANS RESILIENCE RESEARCH

Following the increasing prevalence of mental health problems and strain from the current COVID-19 pandemic (79), it is expected that more studies will be done on physicians resilience. Based on the above discussion, careful consideration must be taken into account in designing such a study.

- a. Examination of resilience conceptualisation should not just focus on identifying resilience qualities but also the process of resilience development, and internal and external forces that drive resilient reintegration (16).
- b. Resilience is nuanced and contextual (27). While resilience has been proposed to be uniform in related domains (21), studies from physicians contexts described different sets of resilience themes across specialities (26, 69–70). The use of qualitative or mixed-method studies may help researchers to understand the conceptualisation of resilience in the studied population (71).

- c. All resilience measurement assumes that every participant experienced comparable adversities (21–22). In reality, there is variation in severity of high-risk environments or adversities, hence interpretation of resilience “prevalence” must be made with caution (35–36).
- d. Interventional studies should aim for randomised experimental design to establish causality, with adequate sample size, and intervention that has a theoretical basis (42, 73, 75).
- e. As resilience development or reintegration can vary from an individual to another, resilience measurement may not be stable or able to capture those who take a longer time to reintegrate (22, 35). Hence, based on a recent meta-analysis, a longitudinal study of more than six months are desirable to determine the effectiveness of resilience intervention (39).
- f. To examine the impact on well-being, intervention outcomes may not just be in the form of mental health problems reduction or absence of negative outcomes, but may also measure positive outcomes such as work engagement (27).
- g. Reviews have reported studies measuring resilience from scales of related constructs such as hardiness and competence, and this could lead to a mixture of unrelated interpretations (21). Given the presence of difference in this related construct, it is highly recommended, to use a resilience inventory to enhance the construct validity of resilience studies.
- h. As for now, there is no gold standard for resilience measurement (42). The most commonly used inventories in studies involving physicians were the Connor-Davidson Resilience Scale (30) and the Brief Resilience

Scale (80). These inventories were developed from a general context but have been validated in the healthcare professional population. A newly developed inventory for physicians is Medical Professionals Resilience Scale (81).

CONCLUSION

In tackling the conceptualisation of resilience, it was obvious from the literature that no universal definition is possible given its contextual nature. Although interchangeably used with related terms, resilience is distinct from hardiness, mental toughness, work engagement, and grit, and any measurement should be specific to enhance its validity. In the physician's context, resilience is increasingly studied as one of the approaches to address rising mental health problems. However, many methodological limitations have been pointed out in reviews and meta-analyses of resilience studies. Hence, future studies should be carefully designed to allow a better interpretation of resilience and its intervention effectiveness.

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