

Commentary

Agilience: Bridging Agility and Resilience for Safer Healthcare—A Conceptual Commentary

Elissa Dabkowski ^{1,*} , Simon J. Cooper ² , Jhodie Duncan ³  and Karen Missen ¹ 

¹ Institute of Health and Wellbeing, Federation University Australia, Churchill, VIC 3841, Australia; karen.missen@federation.edu.au

² School of Nursing and Midwifery, Edith Cowan University, Perth, WA 6000, Australia; simon.cooper@ecu.edu.au

³ Latrobe Regional Health, Traralgon, VIC 3844, Australia; jhodie.duncan@lrh.com.au

* Correspondence: e.dabkowski@federation.edu.au; Tel.: +61-3-5122-6477

Abstract

Healthcare systems operate in safety-critical environments where rapid adaptation and sustained functioning must occur simultaneously, yet existing safety frameworks tend to conceptualise agility and resilience as separate, sequential, or retrospective capabilities. This conceptual separation limits understanding of how safety is enacted during disruption, when healthcare workers and organisations must respond in real time without temporal or structural buffers. This paper introduces agilience as an emerging conceptual construct that captures the concurrent enactment of agility (rapid adaptation) and resilience (sustained functioning, recovery, and learning) under conditions of uncertainty. Drawing on safety science, resilience engineering, organisational theory, and comparative industry literature, this conceptual commentary clarifies how agilience extends existing Safety-I and Safety-II paradigms by addressing the temporal gap between prevention-focused and learning-focused approaches. Agilience is positioned as both an explanatory lens and an aspirational organisational state, highlighting the alignment required between individual adaptive capability and organisational structures to support safe, sustainable care delivery. The paper outlines the defining features, boundaries, and system conditions under which agilience becomes visible, and illustrates its relevance through healthcare examples. By articulating agilience as a distinct conceptual contribution, this work provides a foundation for future empirical investigation, measurement development, and application in healthcare safety management.

Keywords: agilience; agility; resilience; patient safety; healthcare safety management; nursing workforce; organisational resilience; Safety-I and Safety-II



Academic Editor: Francisco Epelde

Received: 5 November 2025

Revised: 26 January 2026

Accepted: 28 January 2026

Published: 3 February 2026

Copyright: © 2026 by the authors.

Licensee MDPI, Basel, Switzerland.

This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution \(CC BY\)](https://creativecommons.org/licenses/by/4.0/) license.

1. Introduction

The term “agilience” is introduced as a novel concept combining two constructs, agility and resilience, within the context of healthcare safety management. As a portmanteau, agilience is defined as the capacity to rapidly adapt to uncertain situations, merging the swift adaptability of agility with the enduring capacity for change represented by resilience. In healthcare safety management, these constructs are often discussed in parallel rather than in concert, creating a gap in understanding how rapid adaptation and sustained endurance co-occur in practice. Recent pressures such as the COVID-19 pandemic, workforce shortages, digital system failures, and climate-related events have further exposed the limitations of existing safety frameworks, particularly their ability to account for rapid adaptation

alongside sustained care delivery. Traditionally, resilience refers to the ability to recover from adversity, while agility emphasizes the quick adaptation to new or unpredictable conditions [1]. Although both constructs are critical for healthcare workers, their intersection and collective impact on safety management have not been extensively explored.

Despite extensive scholarship on agility, resilience, and safety management, these concepts are typically examined in isolation or treated as sequential capabilities. This creates a conceptual blind spot in healthcare safety research, where clinicians and organisations are required to adapt rapidly while simultaneously sustaining safe care delivery under conditions of uncertainty. Existing frameworks do not adequately explain how these demands are managed concurrently, nor how misalignment between agility and resilience contributes to safety risk. Addressing this gap requires a conceptual approach that moves beyond aggregative or retrospective models.

This paper positions agilience not as a fully operationalised theory but as a starting point for scholarly debate and empirical inquiry. By exploring agilience, we initiate a conversation on its potential to inform patient, healthcare worker, and organisational safety strategies. This innovative concept has the potential to transform the way we understand and manage safety in healthcare environments, particularly in the context of global health emergencies. In drawing comparisons to “leagility” in manufacturing industries, this paper offers a unique opportunity to apply the concept of agilience to patient safety in healthcare. To clarify its conceptual contribution, the paper first situates agilience in relation to adjacent safety constructs before examining its alignment with Safety-I, Safety-II, and resilience engineering.

2. Design and Scope

This manuscript adopts a conceptual commentary and theoretical synthesis design. Rather than reporting empirical findings, the paper integrates and extends existing theoretical perspectives to introduce agilience as an emerging construct for healthcare safety management. Conceptual commentary and theoretical synthesis are well-established scholarly approaches for clarifying and advancing concepts in complex fields where empirical operationalisation is still evolving [2–4]. In this commentary, conceptual specificity is provided through definitional boundaries, specification of enabling conditions, illustrative analytic vignettes and testable propositions, rather than through empirical claims of effectiveness.

The scope of this paper is deliberately focused on the intersection of agility and resilience within healthcare safety contexts. Although both constructs are well established across safety science, organisational theory, and healthcare literature, they are most often examined independently or in parallel rather than as a unified construct. This limits understanding of how rapid adaptation and sustained functioning are enacted concurrently in safety-critical healthcare environments, where clinicians and organisations must respond immediately to disruption while maintaining ongoing care delivery. The concept of agilience is introduced to address this conceptual gap by describing how agility and resilience are enacted concurrently in healthcare settings where temporal or structural buffers are rarely available.

This commentary draws on key literature from safety science, resilience engineering, organisational theory, healthcare leadership, and selected comparative industry sources. Consistent with conceptual scholarship, a purposeful, theory-informed synthesis was undertaken rather than a systematic review, integrating relevant bodies of work to support theory development [4,5]. Consistent with conceptual scholarship, the contribution of this paper lies not in empirical results, but in the development of theoretical insights. These include: (1) a clarified definition of agilience; (2) its positioning in relation to Safety-I

and Safety-II paradigms; and (3) illustrative examples demonstrating how agility may be enacted across individual, team, and organisational levels in healthcare. To enhance conceptual rigour, the proposed construct is subsequently aligned with foundational elements of theory construction, as described by Dubin [2], to support future empirical and theoretical development. Together, these insights provide a foundation for future empirical investigation, measurement development, and practical application in healthcare safety management. It is important to note that agility is not proposed as a replacement for existing emergency procedures, regulatory frameworks, or situation-specific response protocols, but rather as a conceptual lens for understanding how healthcare systems and workers enact adaptation and endurance across diverse safety-critical contexts.

3. Theoretical Underpinning: Agility and Safety

3.1. *Agility in Relation to Adjacent Safety Constructs*

Agility is positioned within an established landscape of safety and organisational constructs, including agility, resilience, Safety-II, high-reliability organising (HRO), and resilience engineering. Concepts such as Safety-II [6], resilience engineering [7], and high-reliability organising [8] each have advanced understanding of how systems function under conditions of risk and complexity. While these frameworks share conceptual overlaps, agility is not intended as a simple aggregation of agility and resilience. Rather, it is proposed as a distinct analytical lens that captures the concurrent enactment of rapid adaptation and sustained functioning during disruption, particularly in safety-critical healthcare contexts where temporal or structural buffers are absent. Agility is therefore not defined by the presence of two capabilities, but by the interaction conditions under which they must co-occur (temporal compression, constraint, and limited buffering) and the mechanisms that stabilise rapid change while maintaining safety.

Agility is commonly understood as the capacity for rapid, flexible response to changing conditions, enabling swift decision-making and immediate adaptation [9,10]. In healthcare, this capacity is evident in frontline responses to emerging threats, such as rapid role reconfiguration or workflow modification. However, agility alone does not account for the endurance, recovery, and learning processes required to sustain safe practice over time. Without supporting resilience mechanisms, agile responses may become unsustainable, increasing variability, fatigue, and risk.

Resilience, by contrast, refers to the capacity of individuals, teams, or systems to absorb disturbance, recover, and adapt over time. Within resilience engineering, resilience is often identified retrospectively through analysis of how systems continue to function or recover following disruption [7,11]. While this perspective has significantly advanced understanding of success under variability, it provides limited insight into how safety is enacted during unfolding disruption, when recovery and learning have not yet occurred.

Safety-II and high-reliability organising further emphasise anticipation, everyday performance and learning from what goes right [6,8]. These frameworks have been instrumental in shifting safety thinking away from linear failure models, yet they remain primarily explanatory, focusing on system behaviour across time rather than on the real-time interaction between immediate adaptation and sustained functioning at the point of care.

Agility differs from these adjacent concepts by explicitly focusing on when and how rapid adaptation and sustained functioning occur together during disruption. It specifically addresses the period during disruption when healthcare workers and organisations must adapt rapidly while maintaining safe, continuous care delivery. Rather than describing adaptation followed by recovery, agility captures the co-presence and interaction of these capacities under conditions of uncertainty, time pressure, and constraint. Importantly,

agilience does not replace existing safety frameworks. Instead, it complements Safety-I, Safety-II, and resilience engineering by addressing a conceptual gap between prevention-focused and learning-focused approaches. While Safety-I emphasises control prior to events, and Safety-II and resilience engineering emphasise learning following events, agilience focuses on how safety is enacted in situ, when neither prevention nor recovery alone is sufficient.

By articulating this distinction, agilience is advanced as an emergent theory-building construct. Its contribution lies not in redefining agility or resilience, but in explicating their interaction under specific system conditions common to healthcare, providing a foundation for future empirical and operational development. Table 1 summarises the conceptual distinctions between agilience and adjacent safety and organisational constructs, highlighting agilience's unique focus on the concurrent enactment of rapid adaptation and sustained functioning during disruption.

Table 1. Conceptual comparison of agilience and adjacent safety and organisational constructs.

Construct	Primary Temporal Focus	Mode of Action	When Most Visible	Primary Contribution to Safety	Key Limitation in Healthcare Contexts
Agility	Immediate, short-term	Rapid adaptation, flexibility, swift decision-making	At the onset of disruption	Enables fast response to emerging threats and changing conditions	Lacks mechanisms for endurance, recovery and sustained safe functioning; may increase variability if unsupported
Resilience	Medium to long-term	Recovery, endurance, learning, system stabilisation	During recovery and post-disruption analysis	Supports continuity of function and learning following adversity	Often identified retrospectively; provides limited insight into real-time adaptation during unfolding disruption
Safety-I	Pre-event	Prevention, control, error reduction	Prior to adverse events	Reduces known risks through standardisation and control	Limited capacity to account for adaptation under complexity and uncertainty
Safety-II	Post-event/ system-level	Understanding success, learning from normal work	After events through analysis	Shifts focus to everyday performance and adaptive capacity	Primarily explanatory; less explicit about real-time interaction between adaptation and endurance
High-Reliability Organising (HROs)	Ongoing	Anticipation, sensitivity to operations, collective mindfulness	In high-risk, tightly coupled systems	Supports reliability under complexity through organisational principles	Focuses on organisational characteristics rather than moment-to-moment adaptive interaction
Resilience Engineering	System lifecycle	Anticipation, monitoring, response, learning	Across system functioning over time	Explains how complex systems sustain performance under variability	Emphasises system properties; less attention to temporal compression during acute disruption

Table 1. *Cont.*

Construct	Primary Temporal Focus	Mode of Action	When Most Visible	Primary Contribution to Safety	Key Limitation in Healthcare Contexts
Agilience (proposed)	In situ, concurrent	Simultaneous rapid adaptation and sustained functioning	During disruption under time pressure and uncertainty	Explains how safety is enacted when adaptation and endurance must co-occur	Not yet operationalised; requires further empirical development and measurement

Note. Conceptual descriptions of agility, resilience, Safety-II, high-reliability organising, and resilience engineering are informed by established safety science literature [6–8]. The definition of agilience represents the authors' theoretical contribution.

3.2. *Agilience, Safety-I, Safety-II and Resilience Engineering*

Having distinguished agilience from adjacent safety and organisational constructs, the following section situates the concept within established patient safety paradigms, particularly Safety-I, Safety-II, and resilience engineering. Patient safety remains a global health priority, with the World Health Organisation (WHO) estimating that four out of ten people suffer harmful events in healthcare settings, with up to 80% considered preventable [12]. Trends in safety research have shifted from hindsight to foresight safety management with growing attention to technical safety, human factors, safety management systems, safety culture and resilience [13]. Further, the work of Reason [14] and Hollnagel [6] has greatly contributed to our understanding of risk and safety management in healthcare settings. Hollnagel's Safety-I model describes the reactive nature of safety management, in which the intention is to keep adverse outcomes 'as low as possible' [6]. The model suggests that safety can be achieved through strict control measures, with the goal of preventing failures before they occur. In contrast, the Safety-II model takes a proactive approach with a focus upon succeeding under variable conditions, rather than focusing on 'failures' [6]. It focuses on what works well, even under challenging conditions, and encourages the exploration of everyday resilience within complex systems [6]. Healthcare environments typically require both approaches, as organisations must prevent known risks while enabling adaptation to emerging threats and complexity [14]. While there is extensive literature examining agility and resilience within healthcare, these constructs are most often addressed independently or sequentially. The capacity to adapt rapidly in the face of uncertainty (agility) and the capacity to sustain functioning, recover, and learn under pressure (resilience) align closely with Safety-II's emphasis on success in complex systems. However, existing frameworks provide limited insight into how these capacities are enacted simultaneously during disruption. Agilience addresses this gap by focusing on the real-time interaction between rapid adaptation and sustained functioning when healthcare systems must respond without temporal or structural buffers.

Resilience engineering provides an additional theoretical lens for understanding agilience. Resilience engineering focuses on the ability of complex systems to adapt, learn, and recover from disturbances, rather than simply preventing failures [7]. It emphasizes the proactive adaptation of systems to changing environments. This perspective aligns with agilience, as it encompasses both the reactive adaptation of resilience and the proactive adaptability of agility.

According to resilience engineering principles, systems are most effective when they can anticipate disruptions, monitor performance, and learn from experiences to improve future responses [11]. Agilience provides a lens for examining how these principles are enacted during disruption, when rapid adaptation and sustained safe functioning must co-occur. By enhancing the ability to respond quickly (agility) and recover effectively

(resilience), healthcare workers and organizations are better prepared for emergencies and ongoing challenges. This focus can support more sustainable and flexible patient safety strategies across disruptions such as pandemics, cyber incidents, and workforce crises.

4. Agility in Healthcare

The following section briefly revisits agility to clarify its conceptual foundations before examining how it contributes to the proposed construct of agilience. Traditionally, agility was defined in a physical capacity, relating to a person's ability to move quickly and change direction. Subsequent descriptions included the relationships between agility and cognitive elements, such as visual scanning, visual scanning speed, anticipation and decision making [15]. These are important contributions to the collective understanding of individual agility, as they encourage opportunities to focus on agility in both a physical and cognitive sense. Historically, concepts of individual agility were explored to identify people with leadership potential. This is where learning agility was first introduced by Lombardo and Eichinger [16] defining it as 'the willingness and ability to learn new competencies and perform under first-time, tough or different conditions.' Four facets of measurable learning agility were identified: people agility, results agility, mental agility and change agility [16]. People agility depicts people who have self-awareness and who learn from experience, whilst results agility pertains to people who achieve under tough conditions [16]. Mental agility describes people who consider alternative solutions and are comfortable with complexity and explaining their thinking to others [16]. Lastly, change agility describes people who are curious and who regularly engage in skill-building activities [16]. Ultimately, a person with high learning agility seeks new learning experiences and challenges, actively seeks feedback, engages in self-reflection, and evaluates their experiences [16,17]. These constructs of learning agility are relevant to the healthcare environment, as they provide means of enhancing teamwork and identifying people with leadership potential [16].

The identification of learning agilities transitions into the idea of leadership agility, which is the extent to which an organisation's leaders effectively adapt to environmental changes [18]. Similarly to learning agility, the core feature of agile leadership is the leader's ability to engage in reflective action to gain greater insight [10]. Nurse leaders must be able to adapt to the situation, respond to the reactions of their team and have sufficient agility to deal with unexpected circumstances [19]. Nurses and allied health professionals are encouraged to engage in regular reflective practice to gain insight into their own thoughts and behaviour, and to further their development within healthcare. Additional focus on agile leadership assessments, training and coaching is recommended within healthcare organisations to close agility gaps and to improve leadership culture [10].

Various definitions of agility have been identified within other industries and have been applied in a healthcare context. In a business and information technology (IT) setting, organisational agility is the ability of an organisation to adapt to sudden changes in markets, technology, legal constraints, and environmental changes [9]. This is important as organisations with greater agility are more effective in dealing with rapid change, produce better business outcomes and add greater value for their stakeholders [10]. The foundation of organisational agility is the workers within the organisation and their willingness to adapt to any changes or new policies [20]. Therefore, consideration needs to be given to both individual, leadership, and organisational agilities, given that employees are usually responsible for implementing any system changes. An agile workforce may buffer the relationship between environmental uncertainty and healthcare outcomes in a healthcare setting, denoting its significance in patient safety [21]. Workforce agility is important in maintaining the status quo of a dynamic healthcare system, emphasising the need to progress various agilities in employees.

5. Resilience in Healthcare

Resilience is a key component to many theories and models of safety, given its versatility and significance across disciplines and sectors. The concept of resilience has been widely researched across healthcare, investigating its influence in patients, healthcare workers and leaders, communities, organisations and on a systemic level. The American Psychological Association [22] defines resilience as ‘the process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioural flexibility and adjustment to external and internal demands.’ Although this definition largely relates to psychological resilience and the ability of a person to ‘bounce back,’ other definitions recognise the complexity and diversity of resilience [23]. Resilience may have specific meaning for an individual, family, organisation, society, and culture, in which individuals require a type of resilience depending on the nature of the trauma [23]. In a healthcare context, resilience is considered to be a protective factor in preventing occupational burnout, particularly for nurses who encounter workplace adversity [24]. This research is relevant, as it provides opportunities to develop strategies to optimise resilience in the workplace.

The Swiss Cheese model of accident causation is an iconic contribution to the realm of safety, recognising the variability between the environment and subsystems [14]. The slices of cheese with varying degrees of holes represent an organisation’s defence against failure or hazards [14]. This model purports that an adverse incident is likely to occur when a series of cheese holes ‘line up’, causing harm to people, assets, and the environment [14]. Relating this model to a healthcare setting, healthcare workers and organisations need to adapt to various situations due to the unpredictability of their environment. This brings forth the concept of organisational and systemic resilience. A system is deemed to be resilient if it can maintain its functioning before, during and after a disturbance, and can sustain required operations during times of uncertainty [7]. Maintaining resilience allows high-reliability organisations to continue to safely function in the face of uncertainty [8].

Individuals and communities are situated along a ‘continuum’ of resilience, in which one can never be fully resilient, due to new and unprecedented threats [25]. This creates a need for continuous quality improvement processes, where resilience is measured, assessed, and efforts are made to improve or promote it. Resilience itself cannot be measured until after an impact, therefore only the potential for resilience can be determined [11]. As an example, the impact of the COVID-19 pandemic on individual and organisational resilience is still yet to be fully understood, due to the ongoing crisis. Resilience performance can be identified as the potential to respond and intervene, the potential to monitor, the potential to learn and the potential to anticipate [26]. In a healthcare setting, adaptability and flexibility of healthcare workers is essential; however, human error is also the cause of many errors [7]. Therefore, a resilient system must be proactive, flexible, adaptive, and prepared [7], with ongoing efforts to advance the contribution of resilience to safety management. The addition of agility to resilience combines the proactive and reactive components of safety management. Agilience complements Safety-I and Safety-II by focusing on how safety is enacted during disruption, when rapid adaptation and sustained functioning must co-occur.

6. A Portmanteau Approach from Industry

The preceding sections have outlined existing perspectives on agility, resilience, and safety management in healthcare. Building on this foundation, the following section articulates the original conceptual contribution of this paper by defining agilience as an emerging construct and situating it within safety science and healthcare contexts. The concept of agilience draws similarities to another portmanteau originating from the manufacturing

industry. Historically, the use of the term ‘agility’ in the manufacturing industry was first introduced by the, 21st Century Manufacturing Enterprise Strategy [27]. Their manuscript was developed in response to the increasing rate of change and uncertainty in business [27]. This was followed by advances in the software industry with the publication of the twelve philosophical principles of the Agile Manifesto [28]. Many definitions of supply chain agility have been proposed, with this current paper using the definition from Swafford et al. [29], ‘the supply chain’s capability to respond in a speedy manner to a changing marketplace environment’. This description reiterates the importance of time, in response to environmental changes.

Manufacturing industries include a range of approaches to respond to market demand. Lean strategies enable cost/time efficiency and a reduction in unnecessary business practices, whilst agile strategies enable proactive and flexible responses to market changes [30]. In a healthcare context, a lean strategy is best suited to a market with predictable demand and low variety, as achieving lean cost efficiency at the cost of agility may impact patient safety [31]. The complementary nature of these two manufacturing paradigms inspired the term ‘leagility’ (lean/agile), referring to a combination of both strategies with a decoupling point, acting as a buffer [32]. The decoupling point is the position along the supply chain in which lean changes to agile [32]. This is important to note because this buffer safeguards against unexpected situations. The concept of leagility also applies to disaster supply chain scenarios, in which organisations may require greater agility strategies to accommodate additional requirements. This was demonstrated during the COVID-19 pandemic, in which increased demands were placed on healthcare organisations. The diversion of resources to address the pandemic has led to a disruption of essential health services, requiring urgent adaptation from a transmission, socio-economic, cultural, public attitude, and health system perspective [33]. This integration of seemingly competing capabilities in industry highlights how conceptually unified approaches can address complex, high-pressure environments, providing a useful parallel for examining safety management challenges in healthcare.

7. Agilience as an Emerging Construct: Alignment with Dubin’s Theory-Building Framework

In early stages of theory development, conceptual clarity is achieved by specifying foundational elements rather than fully operationalised models. Dubin [2] proposes that theories are built through the identification of units, laws of interaction, boundaries, and system states. While agilience is not advanced here as a complete theory, aligning the construct with these elements strengthens its conceptual rigour and supports future empirical development.

Units: The core units of agilience are agility and resilience, conceptualised as distinct yet interdependent capabilities within healthcare safety systems. Agilience represents their simultaneous enactment rather than their independent or sequential application.

Laws of interaction: Within agilience, agility and resilience interact dynamically rather than linearly. Rapid adaptive responses (agility) enable immediate action under uncertainty, while resilience processes support endurance, recovery, and learning. The interaction is mutually reinforcing: agility without resilience risks unsustainable or unsafe responses, while resilience without agility may delay critical adaptation.

Boundaries: The concept of agilience is bounded to safety-critical, high-reliability healthcare contexts characterised by uncertainty, time pressure, and institutional constraint. It is not intended to describe routine operations under stable conditions, nor to replace existing safety or resilience frameworks.

System states: Agilience becomes most visible during periods of disruption, such as pandemics, digital system failures, workforce shortages, or climate-related emergencies. Under these system states, healthcare workers and organisations must simultaneously adapt and sustain safe care delivery, revealing the limits of agility-only or resilience-only responses.

In this paper, agilience is conceptualised as an emerging theoretical construct with aspirational implications. As a construct, it offers an explanatory lens for understanding how agility and resilience interact under conditions of uncertainty. As an aspiration, it highlights the organisational conditions required to support safe, adaptive, and sustainable practice. This dual positioning is intentional, reflecting early-stage theory development in which conceptual clarification precedes operationalisation and empirical testing. Unlike resilience, which is often operationalised retrospectively following system impact, agilience encompasses both prospective and in situ components. It reflects the capacity to anticipate, adapt, and sustain safe practice during unfolding disruption, as well as to learn following recovery. As an emerging construct, agilience is not yet operationalised for measurement; rather, this paper provides conceptual foundations to support future development of indicators that capture adaptive capacity during, not only after, system stress.

Consistent with early-stage theory development, the next step is not immediate operationalisation but systematic clarification of defining attributes and indicators. While agilience is not yet operationalised, future empirical research could explore its presence through qualitative and mixed-methods approaches. Potential pathways include ethnographic observation and incident debrief analysis to identify observable markers of concurrent adaptation and sustained functioning during disruption, as well as organisational diagnostics examining governance flexibility, escalation clarity, and availability of safety scaffolding. A Delphi method involving multidisciplinary healthcare and safety experts may be used as an intermediate step to establish consensus on defining attributes, enabling conditions and indicators of agilience prior to scale or framework development. Such approaches would support the development of context-sensitive indicators capable of capturing agilience as enacted in situ across individual, team and organisational levels.

8. Agilience at Individual and Organisational Levels

While agility and resilience are often discussed at the level of individual capability, agilience must also be understood as an organisational property shaped by structure, governance, and institutional constraints. Healthcare organisations operate within highly institutionalised environments characterised by regulation, standardisation, and normative pressures, which can limit rapid organisational adaptation even when individual workers demonstrate high agility and resilience.

From this perspective, agilience does not emerge solely from agile or resilient individuals, but from the alignment between individual capabilities and organisational conditions that enable or constrain adaptive action. An organisation may employ highly agile and resilient staff yet remain organisationally inflexible due to rigid hierarchies, risk-averse cultures, or tightly coupled systems. Conversely, organisations may adopt structurally agile practices (e.g., flexible staffing models or decentralised decision-making) while lacking workforce support mechanisms that sustain resilience over time.

Conceptually, this suggests four broad organisational states: (1) agile and resilient individuals within non-agile, non-resilient organisations; (2) non-agile individuals within non-agile organisations; (3) non-agile individuals within structurally agile organisations; and (4) alignment between agile, resilient individuals and organisational structures that support adaptive and sustainable practice. Agilience, as proposed here, represents an aspirational yet theoretically grounded state of alignment, in which individual and or-

organisational capabilities reinforce one another to support safe care under conditions of uncertainty. This aspirational framing is not normative ‘best practice’ guidance, but a way of specifying the system conditions under which agility is more or less likely to emerge. Table 2 summarises the four organisational states that emerge from varying alignment between individual and organisational agility.

Table 2. Conceptual Matrix of Individual and Organisational Agility in Healthcare.

Individual Agility	Low “Organisational Agility”	High “Organisational Agility”
High	Individual-dependent adaptation Healthcare workers demonstrate high agility and resilience, frequently adapting practice and compensating for system limitations. However, rigid organisational structures, hierarchical decision-making, and limited flexibility constrain sustainable adaptation, increasing reliance on workarounds and risk of workforce fatigue.	Aligned agility (aspirational state) Individual capability and organisational conditions are mutually reinforcing. Structures, governance, and culture enable rapid adaptation while supporting recovery, learning, and workforce wellbeing, allowing safety to be maintained during disruption.
Low	Systemic fragility Limited individual adaptive capacity combined with inflexible organisational conditions results in poor preparedness and reduced ability to respond to disruption, increasing vulnerability to safety failures and limiting recovery.	Structurally agile, workforce-vulnerable Organisational flexibility is prioritised without sufficient workforce support, training, or recovery mechanisms. Agility is achieved at the expense of resilience, increasing the risk of moral distress and unsustained performance.

Note. This matrix illustrates conceptual organisational states rather than empirical classifications. Agility is proposed as the aligned state in which individual capability and organisational conditions jointly support safe, sustainable care delivery under conditions of uncertainty.

9. Examples of Agility in Practice

The following examples are presented as analytical vignettes and interpreted through the organisational alignment states outlined in Table 2, illustrating how alignment or misalignment between individual capability and organisational conditions shapes the enactment of agility in practice. In this paper, an event is considered illustrative of agility when it demonstrates: (1) simultaneous rapid adaptation and sustained functioning, (2) action under conditions of uncertainty and time pressure, and (3) maintenance of safety despite limited temporal or structural buffering. Each vignette is structured using a consistent analytic logic: disruption context, adaptive response, maintenance of safety, interaction mechanisms, and outcomes. They are presented as structured illustrations that apply predefined analytical criteria, rather than as empirical validation, and are intended to demonstrate analytic application of the construct rather than evidence of effectiveness.

Example 1: Cybersecurity Breach Requiring Immediate Transition to Paper-Based Systems

Disruption context: A cybersecurity breach resulted in loss of access to core digital systems (e.g., electronic documentation, ordering systems), creating an immediate operational disruption in a safety-critical environment. Care delivery needed to continue without the usual digital safeguards and information pathways, while patient flow (including admissions) persisted.

Adaptive response (agility): Staff rapidly shifted to paper-based workflows, reconfigured communication channels, and redistributed tasks to preserve continuity of care. Immediate adaptations included establishing temporary documentation processes, clarification of responsibility for tracking orders/results and creating workarounds for information transfer across teams.

Maintenance of safety (resilience): To sustain safe functioning beyond the initial pivot, teams relied on existing safety practices that required reconfiguration for manual processes, including cross-checking of paper charts, enhanced verbal handover routines, and prioritisation of high-risk medication and documentation points. Sustained functioning required pacing workloads, managing fatigue, and maintaining situational awareness as the absence of electronic prompts and decision-support increased cognitive load.

Interaction mechanisms (how agility and resilience co-occurred): This vignette illustrates agiliance through observable mechanisms, including:

1. Temporal compression: the transition required immediate action without a buffer period for training or formal process redesign.
2. Reconfiguration of safety controls: established checking, verification, and escalation practices were maintained but adapted for manual workflows, increasing reliance on shared vigilance and verbal confirmation.
3. Cognitive load redistribution: the loss of electronic decision support (e.g., alerts, order tracking, access to electronic histories) shifted risk management to clinicians, necessitating compensatory strategies to prevent omission and duplication.
4. Workflow and role adaptation: rapid task redistribution (agility) required stabilisation through existing team routines, leadership oversight, and informal coordination (resilience) to sustain safe functioning.

Outcomes and learning: Safe care delivery was maintained during the disruption through concurrent rapid adaptation and stabilisation of existing safety practices. As digital systems were progressively restored, teams were required to manage the transition back to electronic workflows, including reconciliation of paper documentation, verification of medication records, and confirmation of pathology and referral status to prevent duplication or omission. Where post-incident review occurred, this phase informed refinement of downtime and recovery procedures, clarified responsibilities during system restoration, and highlighted dependencies on electronic prompts and decision-support, supporting future preparedness.

Interpretation via Table 2: This vignette most closely reflects individual-dependent adaptation when safe functioning relies heavily on staff workarounds in the absence of organisational scaffolding; it approaches aligned agiliance when downtime procedures, leadership support, and clear governance structures enable both rapid adaptation and sustained safe practice.

Example 2: Redeployment to Critical Care During Workforce Surge

Disruption context: During the COVID-19 pandemic, and in subsequent workforce surge events, severe staffing shortages necessitated rapid redeployment of nurses from non-critical care settings into intensive care environments. In some instances, nurses with limited post-registration experience, those returning to the workforce after extended absence, and retired clinicians were rapidly re-engaged. Concurrently, less experienced nurses were promoted into team leader or coordination roles due to workforce attrition. Redeployment occurred under conditions of uncertainty and time pressure, with limited opportunity for formal preparation or staged transition.

Adaptive response (agility): An acute care nurse with minimal exposure to ventilated patients was assigned to support care delivery in an intensive care unit. Immediate adaptation involved rapid orientation to unfamiliar clinical environments, technologies, and workflows, shadowing experienced ICU staff and undertaking essential patient care tasks aligned with capability. Roles were dynamically adjusted to enable contribution while limiting exposure to high-risk decision-making beyond scope or experience.

Maintenance of safety (resilience): Sustained safe functioning required mechanisms beyond initial redeployment. These included close supervision, structured escalation

pathways, repeated micro-learning, and reliance on team routines to manage fatigue, emotional stress, and heightened cognitive load. For less experienced and returning staff, safety was supported through paired working, explicit task boundaries, and frequent cross-checking. For nurses promoted into leadership roles, resilience was scaffolded through shared leadership models, peer consultation, and informal mentoring.

Interaction mechanisms (how agility and resilience co-occurred): Agilience is illustrated through several observable interaction mechanisms:

1. Guided flexibility: rapid role adaptation was enabled through supervised task allocation rather than autonomous scope expansion.
2. Distributed leadership under constraint: leadership responsibilities shifted rapidly to maintain coordination despite limited experience.
3. Progressive capability building: short-cycle learning supported endurance and reduced risk over time.
4. Relational coordination: communication, psychological safety and team familiarity enabled rapid task redistribution while maintaining safeguards.
5. Sustainment supports: rostering adjustments, informal debriefing and peer support (where available) prevented rapid adaptation from becoming unsafe or unsustainable.

Outcomes and learning: Care delivery was maintained during workforce disruption through concurrent rapid adaptation and stabilisation practices. Learning from these redeployments informed clearer articulation of minimum safe redeployment conditions, including supervision ratios, task boundaries, leadership support mechanisms, and training requirements to strengthen preparedness for future surge conditions.

Interpretation via Table 2: This vignette reflects movement between individual-dependent adaptation, where safety relies heavily on personal coping and informal support and aligned agilience, where organisational structures, leadership oversight and workforce supports enable both rapid adaptation and sustained safe practice.

Taken together, these analytical vignettes show how agilience becomes visible when healthcare systems must enact rapid adaptation and sustained functioning simultaneously during disruption. Across both technological failure and workforce surge contexts, safety was maintained not through agility or resilience alone, but through their concurrent interaction, shaped by the alignment between individual capability and organisational conditions. The vignettes further indicate that agilience is not a fixed attribute, but an emergent property that fluctuates with governance, leadership support, task design, and available safety scaffolding. These observations highlight the practical significance of agilience for healthcare safety management and inform consideration of its implications when agility and resilience are misaligned, overextended, or unsupported. The following section therefore examines the implications of agilience for patient safety, workforce wellbeing and organisational risk in safety-critical healthcare environments.

10. Implications for Safety

While this commentary draws primarily on nursing and healthcare workforce examples, the enactment of agilience is likely to vary across professional groups due to differences in scope of practice, decision autonomy, training pathways, and organisational positioning. For example, nurses, medical practitioners, and allied health professionals may demonstrate agilience through distinct adaptive behaviours, escalation practices, and sustaining mechanisms shaped by disciplinary norms, regulatory frameworks and inter-professional team configurations. Exploring such professional variability represents an important direction for future empirical research, rather than a limitation of the present conceptual contribution.

The value of agilience is most evident when agility and resilience are misaligned. Overemphasis on resilience without agility may result in endurance of unsafe or inefficient practices, delayed responses to emerging threats, and workforce exhaustion. Conversely, agility without resilience may produce rapid but unsustainable adaptations, increasing risk, variability, and moral distress among staff. In safety-critical healthcare settings, such imbalances can contribute to patient harm, staff burnout, and organisational fragility. Agilience provides a conceptual lens for understanding how such failures emerge when rapid adaptation and sustained recovery are not jointly supported.

The framework for action in the Global Patient Safety Action Plan 2021–2030: Towards Eliminating Avoidable Harm in Health Care, aims to eliminate avoidable harm to patients and healthcare workers [34]. This framework recognises the role of both Safety-I and Safety-II models for improving patient safety, and the contribution of proactive risk management and resilience in high-reliability organisations [34]. Exploring the concept of agilience may enhance our understanding of the relationship of these two constructs in healthcare, since agility practices directly improve resilience in supply chain management [35]. The proactive and reactive elements of agilience describe the conduct in which frontline workers have responded to the events of the COVID-19 pandemic. Agilience serves as an analogy to leagility, in which it is a combination of both paradigms without the decoupling point acting as a buffer, due to the intertwined nature of these constructs. Further exploration of agilience could focus on how this combined agility-resilience framework enhances patient safety in high-risk healthcare environments. Investigating the presence of agilience in healthcare teams could provide insights into its role in reducing medical errors, improving communication during emergencies, and enhancing the overall safety culture in healthcare settings. While first observed acutely during the pandemic, the concept of agilience is increasingly critical for ongoing systemic pressures, including chronic workforce strain, climate-related disasters, and the rapid digitalisation of health services. While specific threats such as cyber incidents, pandemics, or natural disasters require tailored procedural responses, the underlying capacity to adapt rapidly while sustaining safe care delivery represents a common safety challenge across these contexts.

This paper introduces agilience as a conceptual construct for healthcare safety, using a portmanteau to articulate the simultaneous interaction of agility and resilience. To date, the term has not been defined or theorised within healthcare safety literature. As proposed here, agilience offers a novel lens through which patient safety can be understood, with implications for advancing theoretical and applied approaches to safety management. Future research may expand on previous studies such as Braun et al. [36], which investigated the contribution of seven dimensions, including agility and resilience, towards organisational change. Further research into the common characteristics of agility and resilience at an operational level has also been proposed [37], however this paper has explored the concept of combining both constructs. Developing validated agilience tools may provide insight into the presence of agility-resilience in healthcare workers and its significance to an organisation. This provides opportunities to develop agilience specific programs for healthcare workers and for undergraduate courses. Advancing the education of healthcare workers improves population health and resilience and builds the capacity for communities to respond to health emergencies [33]. There is also the possibility of investigating agilience from a patient's perspective and exploring its application to a hospital environment.

Ultimately, an initial concept emerges as a vague idea, which is then followed by gradual clarification as the theory takes a more precise, coherent and rigorous form [38]. Agilience is the initial concept, requiring further exploration into its contribution to safety management in healthcare.

11. Conclusions

This paper advances agiliency as an emerging conceptual construct for understanding how healthcare systems enact safety under conditions of disruption. By focusing on the simultaneous requirements for rapid adaptation and sustained functioning, agiliency addresses a critical gap in existing safety frameworks that primarily conceptualise safety either before or after system impact. Positioned as both an explanatory lens and an aspirational organisational state, agiliency highlights the importance of alignment between individual adaptive capability and organisational structures, governance, and culture. Importantly, agiliency does not replace established Safety-I or Safety-II approaches, but complements them by focusing attention on safety as it is enacted during disruption. As a theory-building contribution, this work provides a foundation for future empirical investigation, including the development of indicators capable of capturing adaptive capacity in real time and across organisational levels. As healthcare disruption becomes routine rather than exceptional, the ability to conceptualise safety as concurrent adaptation and endurance may be critical to the future of healthcare safety management.

Author Contributions: Conceptualization, E.D.; methodology, E.D.; formal analysis, E.D.; writing—original draft preparation, E.D.; writing—review and editing, E.D., S.J.C., J.D. and K.M.; supervision, S.J.C., J.D. and K.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Data Availability Statement: The original contributions presented in this study are included in the article. Further inquiries can be directed to the corresponding author(s).

Acknowledgments: Generative artificial intelligence (AI) in the form of ChatGPT 5.2 was used to support the development of this manuscript in refining wording, improving clarity, and suggesting structural adjustments. All content, interpretations, and conclusions are the responsibility of the authors, who reviewed and verified the accuracy and originality of the final text.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Pipe, T.B.; Buchda, V.L.; Launder, S.; Hudak, B.; Hulvey, L.; Karns, K.E.; Pendergast, D. Building personal and professional resources of resilience and agility in the healthcare workplace. *Stress Health* **2012**, *28*, 11–22. [CrossRef] [PubMed]
2. Dubin, R. *Theory Building*, Rev. ed.; Free Press: Washington, DC, USA, 1978.
3. Whetten, D.A. What constitutes a theoretical contribution? *Acad. Manag. Rev.* **1989**, *14*, 490–495. [CrossRef]
4. Jaakkola, E. Designing conceptual articles: Four approaches. *AMS Rev.* **2020**, *10*, 18–26. [CrossRef]
5. Grant, M.J.; Booth, A. A typology of reviews: An analysis of 14 review types and associated methodologies. *Health Inf. Libr. J.* **2009**, *26*, 91–108. [CrossRef]
6. Hollnagel, E. *Safety-I and Safety-II: The Past and Future of Safety Management*; Ashgate Publishing Limited: Farnham, UK, 2014.
7. Hollnagel, E. Resilience—The challenge of the unstable. In *Resilience Engineering: Concepts and Precepts*, 1st ed.; Hollnagel, E., Woods, D.D., Leveson, N.C., Eds.; Taylor & Francis Group: Abingdon, UK, 2006.
8. Weick, K.E.; Sutcliffe, K.M. *Managing the Unexpected: Resilient Performance in an Age of Uncertainty*, 2nd ed.; John Wiley & Sons, Incorporated: Hoboken, NJ, USA, 2011.
9. Breu, K.; Hemingway, C.J.; Strathern, M.; Bridger, D. Workforce agility: The new employee strategy for the knowledge economy. *J. Inf. Technol.* **2002**, *17*, 21–31. [CrossRef]
10. Joiner, B. Leadership agility for organizational agility. *J. Creat. Value* **2019**, *5*, 139–149. [CrossRef]
11. Hollnagel, E.; Woods, D.D. Epilogue: Resilience engineering precepts. In *Resilience Engineering: Concepts and Precepts*, 1st ed.; Hollnagel, E., Woods, D.D., Leveson, N.C., Eds.; Taylor & Francis Group: Abingdon, UK, 2006. [CrossRef]
12. World Health Organisation. Patient Safety. 2019. Available online: <https://www.who.int/news-room/fact-sheets/detail/patient-safety> (accessed on 16 September 2023).
13. Pasman, H.J.; Fabiano, B. The Delft 1974 and 2019 European Loss Prevention Symposia: Highlights and an impression of process safety evolutionary changes from the 1st to the 16th LPS. *Process Saf. Environ. Prot.* **2021**, *147*, 80–91. [CrossRef]
14. Reason, J.T. *The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries*; Ashgate Publishing, Ltd.: Farnham, UK, 2008.

15. Sheppard, J.M.; Young, W.B. Agility literature review: Classifications, training and testing. *J. Sports Sci.* **2006**, *24*, 919–932. [CrossRef]
16. Lombardo, M.M.; Eichinger, R.W. High potentials as high learners. *Hum. Resour. Manag.* **2000**, *39*, 321–329. [CrossRef]
17. De Meuse, K.P.; Dai, G.; Hallenbeck, G.S. Learning agility: A construct whose time has come. *Consult. Psychol. J. Pract. Res.* **2010**, *62*, 119–130. [CrossRef]
18. Attar, M.; Abdul-Kareem, A. The role of agile leadership in organisational agility. In *Agile Business Leadership Methods for Industry 4.0*; Bulent, A., Ed.; Emerald Publishing Limited: Leeds, UK, 2020; pp. 171–191. [CrossRef]
19. Maxwell, E. Good leadership in nursing: What is the most effective approach. *Nurs. Times* **2017**, *113*, 18–21.
20. Storme, M.; Suleyman, O.; Gotlib, M.; Lubart, T. Who is agile? An investigation of the psychological antecedents of workforce agility. *Glob. Bus. Organ. Excell.* **2020**, *39*, 28–38. [CrossRef]
21. Snyder, K.A.; Brewer, B.B. Workforce agility: An answer to turbulence in acute care nursing environments? *Nurs. Manag.* **2019**, *50*, 46–50. [CrossRef] [PubMed]
22. American Psychological Association. APA Dictionary of Psychology. 2020. Available online: <https://dictionary.apa.org/resilience> (accessed on 29 April 2021).
23. Southwick, S.M.; Bonanno, G.A.; Masten, A.S.; Panter-Brick, C.; Yehuda, R. Resilience definitions, theory, and challenges: Interdisciplinary perspectives. *Eur. J. Psychotraumatol.* **2014**, *5*, 25338. [CrossRef] [PubMed]
24. Jackson, J.; Vandall-Walker, V.; Vanderspank-Wright, B.; Wishart, P.; Moore, S.L. Burnout and resilience in critical care nurses: A grounded theory of managing exposure. *Intensive Crit. Care Nurs.* **2018**, *48*, 28–35. [CrossRef]
25. Chandler, D. Resilience and human security: The post-interventionist paradigm. *Secur. Dialogue* **2012**, *43*, 213–229. [CrossRef]
26. Jonassen, J.R.; Hollnagel, E. License to intervene: The role of team adaptation in balancing structure and flexibility in offshore operations. *WMU J. Marit. Aff.* **2019**, *18*, 103–128. [CrossRef]
27. Ismail, H.S.; Sharifi, H. A balanced approach to building agile supply chains. *Int. J. Phys. Distrib. Logist. Manag.* **2006**, *36*, 431–444. [CrossRef]
28. Agile Alliance. 12 Principles Behind the Agile Manifesto. 2021. Available online: <https://www.agilealliance.org/agile101/12-principles-behind-the-agile-manifesto/> (accessed on 14 March 2021).
29. Swafford, P.M.; Ghosh, S.; Murthy, N. The antecedents of supply chain agility of a firm: Scale development and model testing. *J. Oper. Manag.* **2006**, *24*, 170–188. [CrossRef]
30. Vinodh, S.; Aravindraj, S. Evaluation of leagility in supply chains using fuzzy logic approach. *Int. J. Prod. Res.* **2013**, *51*, 1186–1195. [CrossRef]
31. Mishra, V.; Samuel, C.; Sharma, S.K. Lean, agile and leagile healthcare management—A case of chronic care. *Int. J. Healthc. Manag.* **2019**, *12*, 314–321. [CrossRef]
32. Naylor, J.; Naim, M.M.; Berry, D. Leagility: Integrating the lean and agile manufacturing paradigms in the total supply chain. *Int. J. Prod. Econ.* **1999**, *62*, 107–118. [CrossRef]
33. World Health Organisation. COVID-19 Strategic Preparedness and Response Plan. 2021. Available online: <https://www.who.int/publications/i/item/WHO-WHE-2021.02> (accessed on 28 April 2021).
34. World Health Organisation. Global Patient Safety Action Plan 2021–2030: Towards Eliminating Avoidable Harm in Health Care. 2021. Available online: <https://www.who.int/teams/integrated-health-services/patient-safety/policy/global-patient-safety-action-plan> (accessed on 16 September 2021).
35. Lotfi, M.; Saghir, S. Disentangling resilience, agility and leanness. *J. Manuf. Technol. Manag.* **2018**, *29*, 168–197. [CrossRef]
36. Braun, T.; Hayes, B.; Demuth, R.; Taran, O. The Development, Validation, and Practical Application of an Employee Agility and Resilience Measure to Facilitate Organizational Change. *Ind. Organ. Psychol.* **2017**, *10*, 702–722. [CrossRef]
37. Gligor, D.; Gligor, N.; Holcomb, M.; Bozkurt, S. Distinguishing between the concepts of supply chain agility and resilience: A multidisciplinary literature review. *Int. J. Logist. Manag.* **2019**, *30*, 467–487. [CrossRef]
38. Chalmers, A.F. *What Is This Thing Called Science?: An Assessment of the Nature and Status of Science and Its Methods*, 2nd ed.; University of Queensland Press: Brisbane, Australia, 1982.

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.