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Patient Resilience Across Illness Journeys: A Biopsychosocial Theory of Emotional Regulation, Social Support, Coping, and Healthcare Participation

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Abstract

Resilience in illness is often treated as a stable personal resource, yet illness journeys alter physiological burden, emotional demands, coping options, relationships, and opportunities to participate in care. This article develops a proposed biopsychosocial theory in which patient resilience is a time-varying capacity to preserve or reorganize adaptive functioning under illness-related demand. Biological burden constrains feasible adaptation; appraisal and emotional regulation shape interpretation; coping flexibility supports context-sensitive action; relational resources determine whether support is usable; and healthcare participation becomes adaptive when patients can convert knowledge, preferences, and effort into consequential involvement. Resilience can also be depleted when demands accumulate, support is mismatched, participation is obstructed, or self-management work exceeds available resources. The theory therefore shifts attention from identifying "resilient patients" toward explaining changing demand-resource configurations across illness transitions, while separating resilience from distress absence, adherence, activation, any single coping strategy, and clinical outcome.

Keywords: Patient resilience, Chronic illness, Emotion regulation, Coping flexibility, Social support, Patient participation

Introduction

Resilience is attractive in health research because it appears to explain variation in adaptation under adversity, but its definitions, measures, interventions, and outcomes remain heterogeneous [1, 2]. Longitudinal evidence in young adults with chronic conditions also shows that resilience-related characteristics can coexist with changing distress, perceived control, and affect rather than forming a simple resilient/non-resilient state [3].

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Illness journeys involve moving targets: symptoms, treatment demands, roles, relationships, and care opportunities change. A useful theory must therefore distinguish bodily constraint, appraisal and emotional regulation, coping behavior, relational resources, and healthcare participation. This article proposes that resilience is a time-varying biopsychosocial capacity to preserve or reorganize adaptive functioning under illness-related demand. The model is non-empirical and not presented as validated. It also does not equate resilience with optimism, low distress, adherence, self-management performance, activation, or favorable clinical outcome.

Defining resilience in health and illness

Across conceptual synthesis and meta-analytic process testing, illness representations, emotional responses, coping procedures, and appraisal operate as linked but non-interchangeable components of illness self-

regulation [4, 5]. Resilience, in the present theory, therefore refers to the capacity of the wider adaptive system rather than to any one appraisal or coping strategy.

This definition also avoids equating resilience with absence of distress. Fear, sadness, uncertainty, or fatigue may be proportionate responses to diagnosis or treatment, while low distress does not prove adequate resources or participation opportunities. The proposed definition is thus conditional: resilience is the capacity to maintain, recover, or reorganize psychologically, behaviorally, relationally, and participatorily relevant functioning within changing physiological and contextual limits. The same patient may be resilient in one domain and depleted in another, or resilient at one stage and vulnerable at the next.

Biological burden and physiological constraint

Allostatic-load research shows that cumulative physiological burden is multisystemic and measurement-dependent rather than reducible to one uniform threshold [6]. Physiological burden also reflects more than disease alone: discrimination exposure is associated with higher allostatic load, illustrating how structural conditions may become embodied [7].

The proposed theory therefore treats biological burden as a constraint envelope around adaptive capacity. Pain, fatigue, treatment toxicity, sleep disruption, cognitive impairment, or reduced mobility can narrow the range of feasible responses without determining them. A patient unable to sustain complex self-management during severe symptom burden may face a demand-capacity mismatch rather than deficient motivation. Because burden can worsen, accumulate, or recede, resilience must be understood partly as adaptation within changing physiological limits.

Emotional regulation and cognitive appraisal

Cognitive reappraisal is positively associated with measured personal resilience, although the association varies with resilience operationalization [8]. Longitudinal cancer research also links resilience and emotion-regulation variables with later perceived life changes, without establishing biomedical recovery [9]. In chronic pain, emotion-regulation-focused interventions show benefits for some outcomes, but evidence is heterogeneous and certainty varies [10].

The adaptive question is therefore not whether emotion is negative or positive, but whether regulation preserves workable options. Reappraisal may help when meanings are modifiable; acceptance may be more useful when control is limited; expression may support help-seeking. The proposed theory positions emotional regulation as a flexibility-supporting process: adaptation weakens when regulatory responses become rigid or prevent updating after circumstances change.

Coping flexibility and behavioral adaptation

In early breast-cancer treatment, coping flexibility moderated longitudinal symptom patterns [11]. Across 33 countries, greater flexibility in coping deployment was associated with better psychological adjustment during COVID-19, although context limits direct transfer [12]. In chronic pelvic pain, flexible self-regulation appeared within a broader psychosocial configuration [13], while qualitative MS evidence indicates that self-management depends on both personal and contextual requirements [14].

These findings argue against ranking coping strategies as universally “good” or “bad.” Persistence can be useful when goals remain attainable and costly when they do not; disengagement can conserve resources or become avoidance; help-seeking can mobilize support or become exhausting when systems repeatedly fail to respond. The proposed theory therefore defines coping flexibility as context-sensitive behavioral reconfiguration, constrained by bodily capacity, opportunity, and external resources.

Table 1 is needed to show why similar coping behaviors can have different meanings once mechanism, context, and boundary conditions are separated.

Table 1. When coping flexibility becomes adaptive: mechanism–context distinctions across illness demands

Adaptive process	Context changing its meaning	Competing interpretation	Boundary for the proposed theory
Coping case — Sustained problem-focused action			
Goal-directed persistence	Controllable symptoms or solvable care tasks	Persistence may reflect costly overexertion	Adaptation requires revising goals when demands become unattainable
Coping case — Reappraisal or meaning revision			

Updating interpretation	Uncertainty or transition	Positive reinterpretation can coexist with distress	Regulation is adaptive when it expands workable options
Coping case — Acceptance or strategic disengagement			
Conserving effort	Irreversible loss or limited control	May be mistaken for passivity	Reduced effort can be adaptive when control is genuinely limited
Coping case — Help-seeking			
Mobilizing external resources	Responsive versus unresponsive support	Repeated failure to obtain help can increase depletion	Coping capacity partly depends on external response
Coping case — Strategy switching			
Matching action to changing demand	Fluctuating symptoms or treatment phases	Frequent switching may reflect instability	Flexibility requires fit, not switching for its own sake

Social support and relational resources

Social support is not uniformly protective. In breast-cancer patients, perceived and received support showed distinguishable associations with illness acceptance through meaning-making and fear-related pathways, although cross-sectional mediation cannot establish temporal causality [15]. Qualitative evidence shows that loneliness in chronic illness may reflect lost reciprocity or participation despite social contact [16]. People living with MS likewise describe resilience through both personal effort and external social or contextual resources [17].

The proposed theory therefore treats relational resources as a contextual gradient rather than a present/absent variable. Support becomes usable when it fits the need, arrives at the right time, is experienced as safe and reciprocal, and can actually be mobilized. Reassurance can be mismatched when practical help is needed; advice can constrain autonomy; family involvement can support one decision and complicate another. Culture, stigma, caregiving capacity, language, and trust can alter whether relationships become adaptive resources.

Figure 1 is needed because the key question is how social connection becomes—or fails to become—usable adaptive capacity under changing illness conditions.

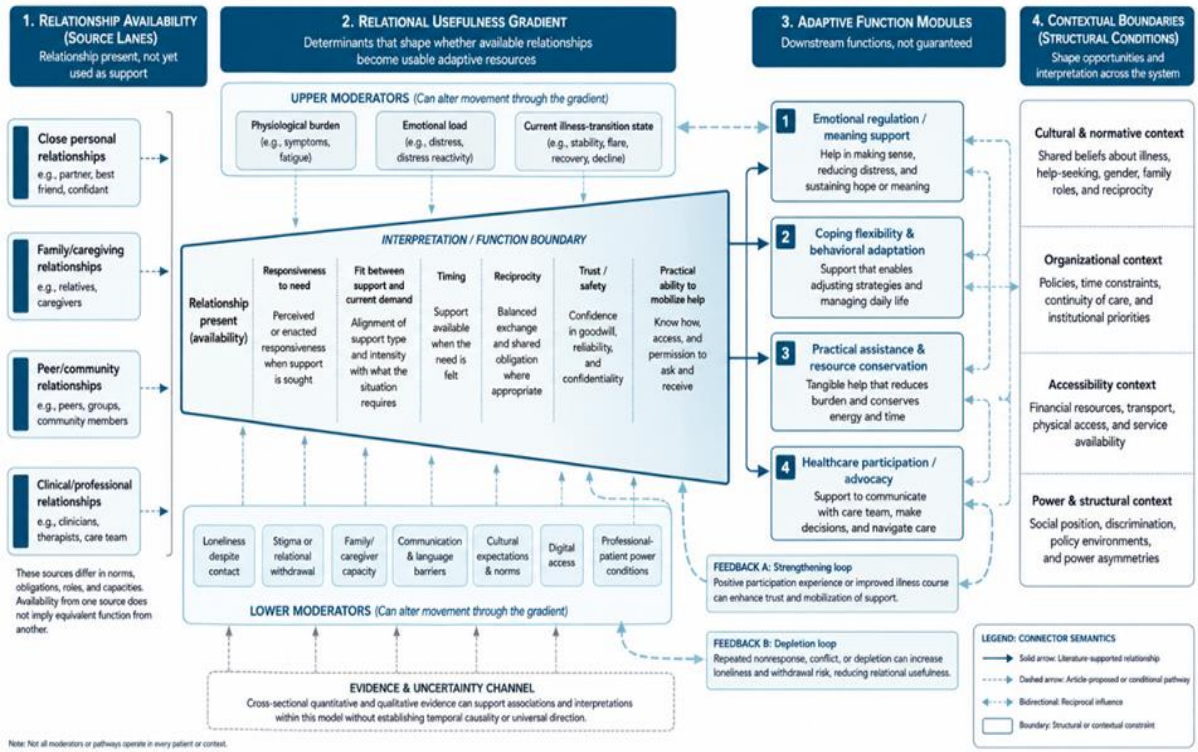

Figure 1. How relational availability becomes usable adaptive capacity under illness-related constraint

Healthcare participation as an adaptive resource

Patient activation is associated with chronic-condition self-management but is not equivalent to resilience [18]. Patient-provider communication also shapes self-management through informational and relational processes [19]. Readiness for shared decision-making is multidimensional and decision-specific, so a patient may value involvement yet lack information, confidence, opportunity, or support for a particular decision [20].

Participation is relationally produced. Relationship-centred shared decision-making distributes decision work among patients, care partners, and practitioners [21]. Technology can support this process, but randomized evidence shows heterogeneous functions and effects [22]. Conceptual work on experiential knowledge further argues that partnership requires recognition of what patients know from living with illness [23].

Digital evidence sharpens the boundary. Digital interventions and online communities can increase patient activation on average, while a randomized CKD study found effects that varied by analysis and baseline activation [24, 25]. Patient-reported outcome dashboards may facilitate shared decision processes, but uncontrolled improvement cannot establish causality [26]. Digital-health equity research identifies usability, connectivity, education, infrastructure, and non-digital alternatives as conditions for meaningful access [27]. mHealth engagement can also fluctuate, and repeated reporting can itself become burdensome [28].

The proposed theory therefore treats healthcare participation as an adaptive resource only when patients can convert knowledge, preferences, communication, and effort into consequential involvement. Participation work without reciprocal responsiveness may instead consume adaptive capacity.

Vulnerability, depletion, and resilience failure

Dynamic resilience can fail when illness-related demands rise faster than regulatory, behavioral, relational, or participatory resources can be replenished. Physiological burden may narrow the coping repertoire; discrimination may add chronic strain; loneliness may persist despite contact; and inaccessible digital systems may convert participation into additional work.

Depletion matters because apparently adaptive behavior can become unsustainable. A patient may maintain treatment routines by sacrificing sleep or social recovery. Repeated help-seeking can become demoralizing when responses fail. Digital self-management can organize care while producing reporting fatigue. Reduced engagement may therefore reflect exhaustion, changing symptoms, poor usability, or low perceived value rather than deficient motivation.

Table 2 makes this heterogeneity explicit because similar observable behaviors can arise from different demand-resource configurations.

Table 2. Resilience depletion under unequal demand–resource configurations

Observable pattern	Demand-resource configuration	What may be depleted or blocked	Competing explanation	Interpretation boundary
Reduced self-management activity	High symptom/treatment burden with limited support	Energy, attention, planning capacity	Low motivation or low perceived value	Behavior alone cannot identify the cause
Social withdrawal	Illness disruption plus mismatched or stigmatizing relationships	Reciprocity, trust, willingness to seek help	Need for rest or temporary solitude	Contact frequency does not measure loneliness directly
Low decision participation	Complex decisions with weak communication or limited opportunity	Confidence, comprehension, perceived influence	Genuine preference to delegate	Nonparticipation is not always disempowerment
Declining digital engagement	Reporting burden, poor usability, access barriers, changing symptoms	Time, attention, digital confidence	Reduced need during stability	Usage metrics do not equal adaptive value
Persistent distress	Ongoing threat, uncertainty, or cumulative loss	Regulatory reserve and cognitive flexibility	Proportionate emotional response	Distress is not synonymous with resilience failure

Repeated strategy switching	Rapidly changing demands or poor strategy-context fit	Predictability and behavioral continuity	Exploratory adaptation during transition	Flexibility requires fit, not movement alone

The proposed model therefore conceptualizes resilience failure as a state of demand-resource mismatch rather than a stable patient deficiency. It may be temporary, domain-specific, or reversible when burden decreases, support improves, communication becomes more effective, or unnecessary participation work is reduced. This interpretation also prevents poor adaptation from being attributed to psychology when the operative constraint lies in symptom severity, poverty, discrimination, inaccessible care, language barriers, family overload, or organizational design.

Resilience across illness transitions

Illness transitions redistribute both demands and resources. Diagnosis can alter identity and expectations; treatment initiation may increase information and self-management work; exacerbation can narrow behavioral options; discharge can transfer responsibility from professionals to patients and families; survivorship can replace acute threat with uncertainty, surveillance, and altered roles. These transitions make resilience observable as change rather than as a fixed level.

Longitudinal family research in pediatric chronic illness shows that resilience profiles can shift over time and that these shifts are associated with parent-child interaction patterns [29]. Earlier longitudinal evidence in cancer and chronic illness likewise supports the broader premise that adaptation changes with context rather than progressing along one uniform trajectory [3]. The proposed theory therefore treats transitions as perturbation points at which physiological constraint, appraisal, coping strategy, relational availability, and participation opportunity may reorganize simultaneously.

A transition can increase vulnerability even when the patient previously functioned well. A new symptom, treatment escalation, caregiving change, job loss, or fragmented transfer between services may invalidate strategies that had been effective under the previous state. Conversely, transition can create opportunity when symptom control improves, responsibilities are redistributed, communication becomes clearer, or new relational resources become available. Resilience is therefore better represented as the capacity to reconfigure functioning across changing states than as stable resistance to disruption.

The temporal interpretation also requires distinguishing recovery from adaptation. Returning to a pre-illness state is not always possible or desirable, particularly when treatment creates lasting limitations or when illness changes roles, priorities, and expectations. Adaptive reorganization may therefore involve establishing a new workable pattern rather than restoring an earlier one.

Transitions are also socially distributed. A hospital discharge may reduce institutional monitoring while increasing family workload; a change to home treatment may improve autonomy for one patient and create substantial logistical burden for another. The same clinical transition can therefore increase resources in one domain while depleting another. The model predicts that such cross-domain redistribution, rather than the transition label itself, is what determines whether adaptive capacity is preserved.

The biopsychosocial resilience model

The proposed Biopsychosocial Resilience Model integrates five analytically distinct but interacting domains: physiological constraint; emotional regulation and cognitive appraisal; coping flexibility and behavioral adaptation; social and relational resources; and healthcare participation. None is proposed as sufficient by itself. Instead, resilience emerges when their configuration allows the patient to maintain or reorganize workable functioning under current illness-related demands.

The model begins with constraint rather than personality. Biological burden defines part of what is feasible, while structural exposure can increase that burden independently of individual psychological characteristics [6]. Appraisal then shapes what demands are perceived to mean and which responses appear available [4]. Coping processes translate interpretation into action, but their usefulness depends on fit with the situation rather than on strategy category alone [11]. Relational resources can expand or narrow available options depending on responsiveness, trust, reciprocity, and accessibility [16]. Healthcare participation adds another layer because patients may possess motivation and knowledge yet lack opportunity for meaningful involvement [20].

These domains are reciprocal. Worsening symptoms may reduce participation; poor participation may delay

clarification or assistance and thereby intensify uncertainty. Support can improve coping options, while repeated nonresponse can undermine trust and future help-seeking. Effective participation can make care more intelligible, but participation demands can also become burdensome. The model therefore rejects one-way assumptions in which psychological resilience simply produces better behavior and then better clinical outcomes.

A further model property is non-compensability. Resources in one domain may offset some pressure elsewhere, but not without limit. Strong social support cannot remove severe uncontrolled pain, and high activation cannot create access to unavailable services. Similarly, excellent symptom control does not guarantee emotional or relational adaptation. This prevents the model from implying that psychological strengths should compensate indefinitely for biological or structural constraints. Compensation is therefore conditional, partial, and potentially costly.

The model also distinguishes reserve from expenditure. A resource can exist without being continuously used, and an adaptive response can consume the very capacity that enabled it. Repeated self-monitoring, repeated explanation of symptoms, coordinating multiple clinicians, or constantly mobilizing family support may preserve care in the short term while eroding attention, trust, time, or relational reciprocity. Resilience assessment should therefore ask not only whether functioning is maintained but what it costs to maintain it.

Measurement is a central boundary. Treatment-belief research in children and adolescents shows that developmentally specific meanings may be missed when instruments import adult assumptions [30]. Similar caution applies across the model: distress, activation, coping, social support, digital engagement, and adherence measure different phenomena. A high score in one domain cannot substitute for direct measurement of another.

Table 3 distinguishes these measurement consequences because the proposed model depends on preserving construct boundaries rather than collapsing them into a single resilience index.

Table 3. Measurement choices that alter the interpretation of patient resilience

Measured signal	What it can legitimately indicate	What it cannot establish alone	Context that changes interpretation	Consequence for the proposed model
Self-reported resilience score	Perceived or trait-like resilience as operationalized by the instrument	Adaptive capacity across all illness domains	Instrument definition, timing, disease stage	Use as one indicator, not the model itself
Distress severity	Current emotional burden	Absence or presence of resilience	Threat level, loss, symptom burden, cultural expression	Distress may coexist with adaptive functioning
Coping strategy frequency	Reported use of a response	Whether that response fits current demands	Controllability, treatment phase, available alternatives	Evaluate strategy-context fit
Patient activation	Knowledge, confidence, and self-management orientation	Meaningful opportunity to participate in care	Communication quality, system responsiveness, decision type	Keep activation separate from participation opportunity
Social-support score	Perceived or received support as defined by the measure	Relational fit, reciprocity, or absence of loneliness	Timing, source, culture, stigma, caregiving capacity	Measure usability and context, not quantity alone
Digital engagement	Recorded interaction with a digital tool	Empowerment, benefit, or sustained adaptive value	Access, usability, symptom state, reporting burden	Treat engagement as behavior with competing explanations
Adherence or attendance	Completion of a prescribed action	Agreement, understanding, trust, autonomy, or resilience	Cost, access, side effects, treatment burden	Do not infer psychological adaptation from compliance

Figure 2 is required because the model's central claim concerns interacting pathways, feedback, rupture, and repair rather than a sequence of independent predictors.

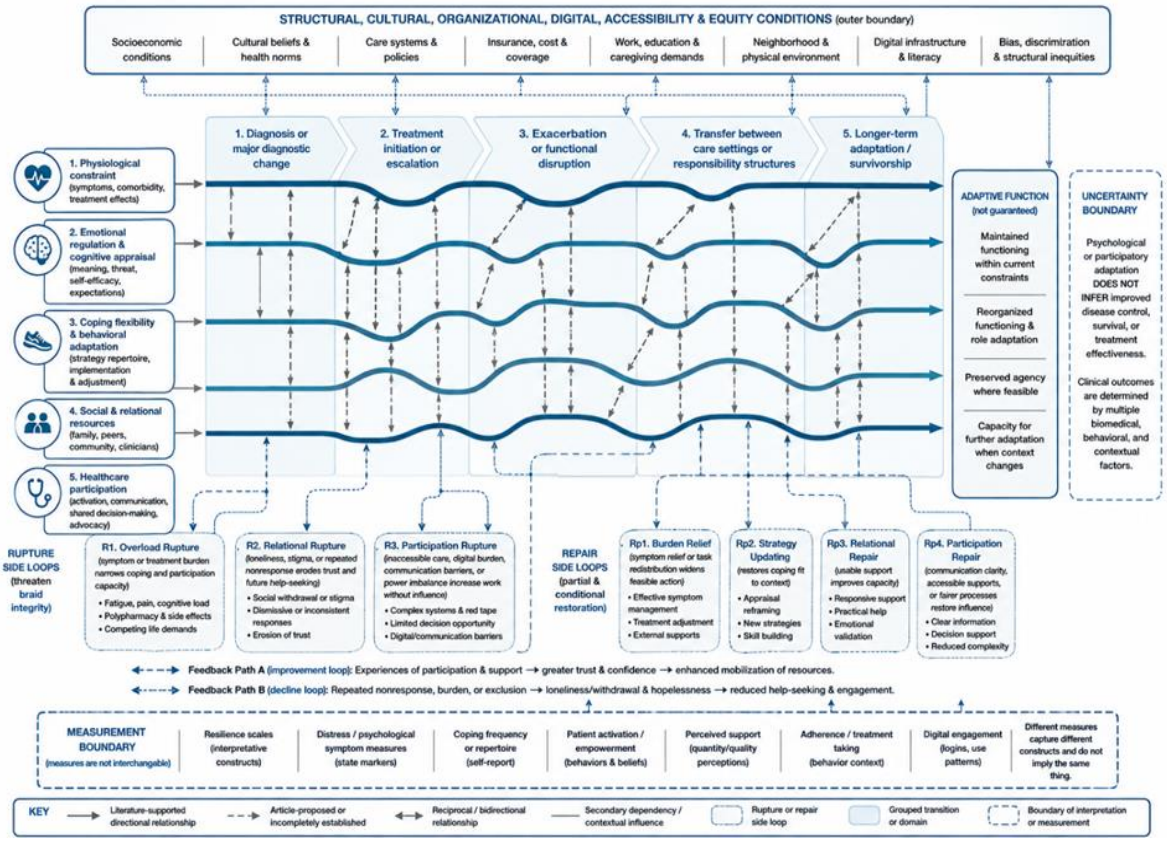

Figure 2. Adaptive capacity across illness transitions: braided pathways, rupture points, and repair opportunities

Moderators and testable predictions

The model is useful only if its propositions can be tested and potentially rejected. First, adaptation should depend more on configuration than on any single domain. A high resilience score should therefore fail to predict stable functioning when physiological burden, inaccessible care, or relational depletion are severe. Second, the same coping behavior should have different consequences across controllable and uncontrollable illness demands. Third, participation should be more adaptive when opportunity, communication, and influence are present than when patients are merely asked to perform more self-management work.

Fourth, transitions should increase the predictive value of change measures relative to static measures because resources and demands are being reorganized. Fifth, discrepancies among domains may be informative: high activation with low decision opportunity, or high social contact with persistent loneliness, should identify different vulnerabilities than uniformly low scores. Sixth, developmental and literacy conditions should modify interpretation. Health-literacy interventions can improve aspects of chronic-disease self-management, but heterogeneous findings caution against treating literacy as a context-independent individual resource [31].

Seventh, the model predicts asymmetry between resource gain and resource loss. Loss of a central resource, such as a trusted caregiver or accessible clinician, may destabilize several domains rapidly, whereas replacement resources may require time to become usable. Eighth, the effects of support should depend on fit and mobilizability rather than network size alone. Ninth, digital participation should show nonlinear value: additional engagement should cease to be adaptive when

reporting and coordination demands exceed perceived benefit. Tenth, the relationship between distress and resilience should vary by context, because proportionate distress can coexist with effective adaptation.

These are propositions of the article, not validated predictions. Testing them would require longitudinal, multilevel designs that measure changes in symptoms, appraisal, coping, relationships, participation opportunity, structural conditions, and functioning across clinically meaningful transitions.

These propositions also generate measurement requirements. Tests should combine patient-reported psychological measures with indicators of symptom burden, relational functioning, participation opportunity, and contextual constraints. Repeated measures around predefined transition points would be preferable to a single baseline resilience score. Analyses should examine within-person change and cross-domain discordance, while qualitative work can test whether the model's categories match lived experience or impose distinctions that patients themselves do not recognize.

Implications for supportive care

Supportive care informed by this model would assess constraints before prescribing resilience-building. Severe symptom burden may require symptom relief or workload reduction; rigid appraisal may call for psychological support; ineffective coping may require strategy expansion; relational depletion may require practical or social intervention; and participation barriers may require communication redesign or changes in service accessibility.

This approach also changes how reduced engagement is interpreted. Rather than asking only why a patient is insufficiently motivated, clinicians can ask whether the current care arrangement is consuming more adaptive capacity than it returns. Communication support, accessible decision aids, non-digital alternatives, health-literacy-sensitive materials, and explicit recognition of experiential knowledge may therefore function as resilience-supporting conditions when they reduce avoidable participation burden [19].

Supportive care should also be staged. During acute physiological overload, reducing symptom and treatment burden may be more realistic than asking for intensive psychological or behavioral work. During stabilization, attention can shift toward strategy updating, rebuilding relational reciprocity, and restoring decision capacity. During longer-term adaptation, the relevant task may be sustaining participation without turning self-management into a permanent transfer of clinical work onto the patient or family.

This framing has equity implications. A service cannot reasonably invoke resilience while leaving remediable communication, transportation, financial, language, disability-access, or digital barriers untouched. Where adaptive capacity is constrained by the care environment, intervention at the organizational level may be more appropriate than individual resilience training. The theory therefore places responsibility across patient, relational, clinical, and system levels rather than locating adaptation failure exclusively within the person.

The model does not imply that every patient should maximize participation. Delegation can be adaptive when it reflects preference rather than exclusion. Nor does supportive care require elimination of distress. The more defensible aim is to expand feasible options, reduce remediable constraints, and preserve the patient's capacity to reorganize functioning as circumstances change.

Results and Discussion

The proposed theory reframes patient resilience from an individual possession to a dynamic configuration of constraints and resources. The literature supports each component at different levels of evidence, but it does not validate the integrated model itself. This distinction is critical. Associations between reappraisal and resilience do not prove that reappraisal causes adaptation; associations between support and acceptance do not establish a universal relational mechanism; activation or adherence do not demonstrate meaningful participation; and digital engagement does not establish benefit.

The model also explains why apparently contradictory observations can coexist. Distress and resilience may occur together. Persistent effort may represent commitment or depletion. Withdrawal may reflect loss of support, need for recovery, or rational disengagement from an unresponsive system. High participation can be empowering when influence is real and burdensome when responsibility is transferred without resources. These competing explanations are not noise around the model; they are central to its testability.

One strength of this formulation is that it preserves clinically meaningful ambiguity. The same behavior can be adaptive, constrained, or depleting depending on why it occurs and what alternatives are available. That

ambiguity is often lost when resilience is represented by a single total score. The model instead requires interpretation of patterns: what demand is present, what resources are accessible, what response is being used, what costs accompany it, and whether the configuration remains workable over time.

Several boundaries remain. Evidence was drawn from heterogeneous illnesses, ages, cultures, and care settings, and the same process cannot be assumed to operate identically across them. Many studies are observational, cross-sectional, qualitative, or intervention-specific. Measures often capture proxies rather than the proposed model domains directly. Structural conditions including poverty, discrimination, language, disability access, digital exclusion, and service organization also limit how far patient-level explanations can travel.

The theory is also intentionally conservative about clinical translation. Even if the proposed domains predict psychological or participatory adaptation, that would not establish effects on disease progression, hospitalization, survival, or treatment efficacy. Those outcomes depend on biological and treatment processes that may be only partly influenced by behavior or participation. Any future validation should therefore pre-specify which outcomes belong to adaptive functioning and which require separate clinical hypotheses.

Future work should prioritize longitudinal transition designs, repeated measurement of multiple domains, dyadic or family data when relationships are central, and explicit separation of participation opportunity from activation or adherence. Validation would require demonstrating that the proposed configuration and change processes explain adaptation beyond existing single-domain constructs and do so without disguising structural disadvantage as psychological deficit.

Conclusion

Patient resilience across illness journeys is better conceptualized as a changing biopsychosocial capacity than as a fixed personal trait. The proposed theory locates that capacity in interactions among physiological constraint, emotional regulation and appraisal, coping flexibility, relational resources, and meaningful healthcare participation. It also treats depletion, rupture, and reorganization as normal possibilities when demands and resources change. The model is deliberately bounded: it does not equate resilience with low distress, adherence, activation, digital engagement, or favorable clinical outcome, and it is not presented as empirically validated. Its contribution is a testable framework for asking when adaptive capacity is supported, constrained, exhausted, or rebuilt across illness transitions.

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