



## Review Article

# Psychological Resilience under Adversity in University Students: A Scoping Review of Emotion Regulation, Social Support and Adaptive Coping

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**ABSTRACT**

Psychological resilience among university students has been examined across diverse adversities, but the evidence directly linking resilience with emotion regulation, social support, and adaptive coping remains unclear. This scoping review mapped adversity-specific evidence and distinguished co-measurement from verified focal findings. Peer-reviewed English-language journal articles published from January 2010 through June 2026 were identified through PubMed/MEDLINE, OpenAlex, and ERIC. Eligible studies involved tertiary students, an identifiable adversity or sustained adaptation demand, a resilience construct, and at least one focal domain. Study design, context, measures, and evidence state were charted and synthesized descriptively without meta-analysis. Ninety-seven studies met the criteria, yielding 103 study-domain units: 22 emotion-regulation, 50 social-support, and 31 positive/adaptive-coping units. Cross-sectional or observational designs accounted for 85 studies (87.6%). Pandemic/lockdown and academic/clinical demands were the primary adversity in 41 (42.3%) and 28 (28.9%) studies, respectively. Only 21 units (20.4%) contained a source-verified direct focal result; 26 involved an analyzed pair without a recoverable pair-specific estimate or source location, 43 co-measured the constructs without a reported focal analysis, and 13 had unavailable results or sources. Verified findings varied by strategy, support measure, coping definition, and resilience operationalization, limiting cross-study comparison and causal interpretation. Twenty-six of 137 sought reports remained unretrieved. The breadth of construct coverage therefore exceeded the availability of interpretable direct evidence. Prospective studies with specified adversity and adaptation criteria, repeated outcome assessment, and transparent pair-specific reporting are needed to examine these relationships over time.

**KEYWORDS** academic stressors • construct operationalization • cross-sectional studies • evidence classification • geographic distribution • longitudinal designs • measurement heterogeneity

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## 1. INTRODUCTION

University education coincides with a developmental period involving major academic, social, financial, and personal transitions [1]. Students must adapt to unfamiliar learning environments, intensive assessment demands, changing social networks, financial concerns, and uncertainty about future employment [2], [3]. These overlapping pressures require continuous adjustment and increasing personal responsibility, making university life a sustained rather than episodic source of stress [4].

Such demands may become more consequential when they intersect with illness, bereavement, economic hardship, discrimination, clinical-placement pressures, displacement, or major public-health disruptions. International evidence from the WHO World Mental Health International College Student Project indicates that common mental disorders are prevalent among university students across countries [5]. Mental-health difficulties are also associated with impaired academic functioning, including reduced performance and greater disruption of educational activities [6].

Academic adjustment nevertheless varies considerably among students exposed to apparently comparable pressures. Teixeira et al. [7] identified meaningful associations among perceived academic stress, coping, emotion dysregulation, affective states, and psychosomatic symptoms in higher-education populations. Some students maintain or regain psychological and academic functioning despite substantial demands, whereas others experience persistent distress, functional impairment, or disengagement. This variability directs attention toward the processes and resources that support adaptation under identifiable adversity.

Psychological resilience provides a useful conceptual framework for examining such variability, although the construct has developed through several theoretical traditions. Masten [8] described resilience as adaptive functioning supported by ordinary developmental systems rather than exceptional personal qualities. From a trajectory perspective, Bonanno [9] distinguished resilience from recovery by emphasizing relatively stable functioning following exposure to potentially traumatic events.

Other approaches place greater emphasis on context. Ungar [10] conceptualized resilience as a process shaped by interactions between individuals and culturally meaningful resources available within their social environments. Multisystem perspectives extend this position by locating adaptation across interacting biological, psychological, relational, and contextual systems [11]. Resilience can therefore be understood neither as an exclusively internal characteristic nor as a simple absence of psychological symptoms.

Despite differences in theoretical emphasis, contemporary resilience frameworks share two essential conditions: exposure to meaningful adversity and

evidence of adaptation. Denckla et al. [12] caution against identifying resilience solely from favorable psychological characteristics when the adversity against which adaptation is evaluated remains unspecified. Southwick et al. [13] similarly emphasize adversity, context, temporal processes, and adaptive functioning as central components of coherent resilience research. A resilience measure without an identifiable adaptation demand may consequently capture a perceived resource rather than resilience as demonstrated adaptation.

This distinction has direct implications for measurement in university populations. Resilience has been operationalized as perceived personal capacity, recovery tendency, adaptive process, academic response to difficulty, or observed outcome. These operational forms are related but cannot be treated as equivalent because they represent different theoretical objects and levels of inference.

The Connor–Davidson Resilience Scale, for example, assesses perceived capacity to cope with stress and adversity [14]. The Brief Resilience Scale instead focuses more specifically on perceived ability to recover or “bounce back” after stress [15]. Cassidy’s [16] Academic Resilience Scale addresses adaptive responses to significant academic difficulty rather than general resilience across life domains. A high score on these instruments therefore does not carry an identical substantive meaning.

Measurement heterogeneity becomes particularly important when findings are synthesized across studies. Ahluwalia et al. [17] identified substantial variation in the conceptualization and assessment of resilience within research on undergraduate mental health. Valid synthesis consequently requires preservation of each study’s operational definition, instrument, score direction, adversity context, and analytical role rather than treating all resilience measures as interchangeable indicators of the same phenomenon.

Three domains are especially prominent in explanations of adaptation among university students: emotion regulation, social support, and coping. These domains may contribute to adaptation through interacting pathways, yet they operate at different conceptual levels. Emotion regulation concerns processes through which emotional responses are modified; social support represents relational and institutional resources that are perceived, available, or received; coping refers to cognitive and behavioral efforts mobilized in response to appraised demands. Their interaction does not remove the need to preserve their theoretical boundaries.

Emotion regulation is particularly relevant because adversity may generate intense or persistent affective states that interfere with attention, decision-making, and goal-directed behavior. Gross’s process model differentiates regulatory strategies according to the point at which they influence the emotion-generative sequence [18]. Cognitive reappraisal modifies the interpretation of

a situation before an emotional response is fully developed, whereas expressive suppression primarily modifies the behavioral expression of an established response.

The consequences of a regulatory strategy, however, depend on context. Gross [19] emphasized interactions among regulatory strategy, individual characteristics, situational demands, and goals. Aldao et al. [20] reported systematic associations between several emotion-regulation strategies and psychopathology, but such aggregate associations do not justify classifying every strategy as universally adaptive or maladaptive. Interpretation therefore requires attention to when, how, and under what conditions a strategy is employed.

Measurement introduces an additional source of variation within this domain. Habitual reappraisal and suppression are conceptually distinct from broader difficulties involving emotional awareness, acceptance, impulse control, goal-directed behavior, and access to regulatory strategies, dimensions assessed by the Difficulties in Emotion Regulation Scale [21]. University research also links emotion regulation with outcomes such as academic adjustment and academic buoyancy [22]. These outcomes may be relevant to adaptation but should not automatically be classified as psychological resilience.

Social support represents a different type of resource because it is embedded within interpersonal and institutional relationships. Cohen and Wills [23] distinguished between a general main-effect model, in which support is beneficial across levels of stress, and a buffering model, in which support modifies the relationship between stress and adverse outcomes. A positive association between social support and resilience therefore indicates covariation but does not, without an interaction analysis, establish a buffering mechanism.

The construct of social support is itself heterogeneous. Thoits [24] differentiates perceived availability, enacted assistance, social integration, and other mechanisms through which relationships may affect health and adjustment. The Multidimensional Scale of Perceived Social Support assesses perceived support from family, friends, and significant others rather than the full range of structural, received, or institutional resources [25]. In university settings, potentially relevant sources also include lecturers, peers, clinical supervisors, student services, and institutions. Reviews by Li et al. [26] and Vicary et al. [26] indicate that associations with mental health and well-being vary according to support source, population, and outcome.

Coping constitutes a third heterogeneous domain. Lazarus and Folkman's [27] transactional model conceptualizes coping as cognitive and behavioral efforts arising from appraisal of situational demands and available resources. Problem solving, planning, acceptance, positive reframing, help seeking, avoidance, denial, and disengagement therefore represent distinct

responses rather than points along a single adaptive-maladaptive continuum. Skinner et al. [28] demonstrated that broad coping taxonomies can obscure meaningful differences in function and theoretical interpretation.

The Brief COPE further illustrates this problem because its subscales were designed to assess different coping responses rather than a single validated dimension of adaptive coping [29]. Classification of a coping response as positive or adaptive should therefore follow the terminology and analytical framework used by the primary study or instrument rather than being inferred retrospectively from a positive association with resilience. Coping also overlaps functionally with emotion regulation, but the two constructs retain distinct conceptual and measurement traditions [30], [31].

The resulting evidence base is heterogeneous across adversity definitions, resilience conceptualizations, instruments, resource domains, study designs, and statistical models. Previous reviews have examined important components of this literature separately. Ahluwalia et al. [17] mapped resilience in relation to undergraduate mental health; Kritikou and Giovazolias [22] examined emotion regulation, academic buoyancy, and academic adjustment; Li et al. [26] and Vicary et al. [32] synthesized evidence concerning social support; and Trudel-Fitzgerald et al. [30] examined conceptual and measurement boundaries between coping and emotion regulation. These contributions clarify individual domains but do not jointly map emotion regulation, social support, and adaptive coping in relation to adversity-defined resilience while retaining differences in measurement and evidentiary status.

A further methodological problem concerns the level at which evidence is represented. The presence of two constructs within the same study does not demonstrate that their relationship was statistically examined. A study may assess resilience and coping without reporting a pair-specific estimate, report only an unadjusted correlation, or estimate a direct, mediated, or moderated association. These represent different evidentiary states. Similarly, a variable described as a predictor in a cross-sectional regression does not establish temporal precedence, while a statistically significant indirect effect does not independently demonstrate a causal mechanism. Evidence synthesis therefore requires preservation of the focal variable pair, study design, analytical role, effect metric, model specification, and source location.

These characteristics support the use of a scoping review. Munn et al. [7] identify scoping reviews as appropriate for clarifying concepts, mapping heterogeneous research, characterizing how evidence has been generated, and identifying gaps before narrower forms of synthesis are undertaken. An adversity-bounded approach is particularly necessary because resilience cannot be interpreted independently of the challenge against which adaptation is evaluated. Study-level mapping alone is also insufficient when one article

contributes evidence to several domains. The present review therefore distinguishes three nested units: the study, study-domain membership, and the focal relationship for which pair-specific evidence may or may not be available.

This scoping review maps how psychological resilience is conceptualized and measured alongside emotion regulation, social support, and positive or adaptive coping among university students exposed to identifiable adversity or sustained adaptation demands. It examines the publication, geographic, design, population, and adversity characteristics of the evidence base; compares how resilience and the three focal domains are operationalized; identifies evidence states at the study-domain and focal-relationship levels; and evaluates how findings and inferential limits vary by study design and analytical specification. By separating eligibility, domain membership, and pair-specific evidence while retaining instrument direction, analytical role, effect metric, and source verification, the review distinguishes directly demonstrated findings from descriptive, indirect, or unverified evidence and identifies priorities for more consistent measurement and prospective research.

## 2. LITERATURE REVIEW

### 2.1. Psychological Resilience under Adversity

University students encounter recurrent academic and clinical demands, financial constraints, major educational transitions, relational strain, discrimination, and acute crises. These exposures may coincide with anxiety, depressive symptoms, burnout, psychosomatic complaints, and impaired academic functioning, but they do not produce a uniform pattern of adaptation. Evidence from higher education indicates that stress appraisal, emotion regulation, and coping are associated with students' adjustment under academic pressure [7], while a broader scoping review links resilience with multiple dimensions of undergraduate mental health [17]. The relevant question is therefore not simply whether adversity is present, but how resilience is conceptualized and which personal, relational, and institutional

resources support adaptation when significant demands arise.

Within this literature, psychological resilience is most appropriately understood as adaptation in the presence of identifiable adversity. Resilience theory generally requires two elements: exposure to meaningful adversity or risk and evidence of comparatively positive adaptation. Developmental accounts conceptualize resilience as the operation of ordinary adaptive systems rather than as an exceptional personal quality [8]. Trajectory-based research further distinguishes stable functioning from recovery following disruption, thereby separating resilience from the mere absence of a diagnosed disorder [9]. Interdisciplinary formulations similarly recognize resilience as a capacity, dynamic process, or outcome, provided that both the relevant adversity and the criterion for adaptation are explicitly specified [12], [13]. These distinctions are particularly important in university populations, where exposure to academic, interpersonal, financial, and clinical stressors may vary substantially in intensity and duration.

Theoretical definitions of resilience, however, are not interchangeable with the instruments used to measure it. The Connor-Davidson Resilience Scale and its 10-item refinement assess perceived characteristics associated with coping and adaptation [14], [33]. The Brief Resilience Scale focuses more narrowly on the perceived ability to recover from stress [15], whereas the Resilience Scale emphasizes personal competence and acceptance of self and life [34]. These measures provide information about perceived resilience-related capacities or dispositions, but cross-sectional scores do not directly demonstrate change, recovery, or maintenance of functioning across time. A claim that resilience constitutes a process requires temporal or transactional evidence, whereas an outcome-based interpretation requires an explicit criterion indicating successful adaptation following adversity. Conceptual precision is therefore necessary when interpreting resilience scores in university-student research. Table 1 summarizes the construct boundaries adopted in this review to preserve these conceptual distinctions.

**Table 1.** Conceptual boundaries for resilience and adversity.

| Construct                | Operational meaning                                                                                                    | Appropriate evidence                                                                   | Interpretive boundary                                                                         |
|--------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Psychological resilience | Adaptation in the presence of an identifiable stressor, adversity, challenge, crisis, transition, or sustained demand. | A resilience construct plus documented adversity and an explicit adaptation criterion. | General wellbeing, persistence, or low distress without adversity is insufficient [12], [13]. |
| Capacity                 | Perceived adaptability, tenacity, or recovery propensity at a defined time.                                            | Validated capacity scales such as CD-RISC or the Resilience Scale.                     | A capacity score is not observed recovery or proof of a causal mechanism [14], [34].          |
| Process                  | Adaptation unfolding through transactions, strategy selection, or change over time.                                    | Longitudinal trajectories, repeated measures, or qualitative process evidence.         | Cross-sectional mediation does not establish temporal sequence.                               |

| Construct           | Operational meaning                                                              | Appropriate evidence                                                            | Interpretive boundary                                                     |
|---------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Outcome             | Maintained or recovered functioning after exposure to adversity.                 | Post-adversity functioning, recovery trajectory, or adversity-adjusted outcome. | Absence of symptoms alone may not represent positive adaptation [9].      |
| Academic resilience | Adaptation under substantial academic challenge or sustained educational demand. | Academic-resilience measures linked to an explicit academic stressor.           | Routine achievement without challenge is not academic resilience [16].    |
| Adversity context   | The boundary condition that makes resilience interpretable.                      | Named stressor or demand established independently of the observed association. | Adversity should not be inferred retrospectively from a negative outcome. |

A similar distinction applies to academic resilience, which narrows the construct to successful adaptation in the context of substantial academic challenge. The Academic Resilience Scale, for example, operationalizes students' responses to significant academic difficulty rather than routine academic performance [16]. This domain-specific conceptualization is useful for research in higher education because it aligns the adversity and adaptation criteria with academic functioning. Nevertheless, academic resilience should not be generalized automatically to trauma recovery, broader mental-health resilience, or adaptation in other life domains. Such generalization risks conflating resilience across substantially different stress contexts and outcome criteria.

The present review treats psychological resilience as an adversity-dependent form of adaptation and distinguishes it from the resources that may contribute to that adaptation. Emotion regulation, social support, and positive or adaptive coping are therefore conceptualized as distinct but potentially interacting resource domains rather than as interchangeable components of resilience itself. This distinction is necessary because the three domains differ in theoretical function, measurement, and level of analysis. It also prevents perceived adaptive capacity, regulatory strategy, social-resource availability, and observed recovery from being subsumed under a single protective-factor label [10], [12], [30].

## 2.2. Emotion Regulation as an Intrapersonal Resource

Emotion regulation comprises processes through which individuals influence which emotions arise, when they arise, and how those emotions are experienced or expressed [18]. The extended process model separates identification of a regulatory need, selection of a strategy, implementation, and monitoring [35]. This sequence matters for resilience research because a strategy can be available but poorly selected, correctly selected but weakly implemented, or effective in one context and costly in another. Emotion regulation is therefore more than the frequency of a single strategy.

Common instruments assess different parts of this domain. The Emotion Regulation Questionnaire measures habitual cognitive reappraisal and expressive suppression [36], whereas the Difficulties in Emotion Regulation Scale

assesses multidimensional dysregulation, including nonacceptance, limited strategy access, impulse-control difficulty, and problems maintaining goal-directed behavior [21]. High reappraisal, low suppression, and low dysregulation are not interchangeable indicators. Meta-analytic evidence outside the university-resilience literature suggests that regulatory strategies have different associations with psychopathology, but their utility still depends on the person, goal, intensity, timing, and controllability of the situation [19], [20].

University studies illustrate this heterogeneity. Emotion-regulation strategies and resilience have been positioned in cross-sectional structural models of pandemic-related mental health [37]–[39], while emotion-regulation difficulty has been modeled in relation to childhood trauma, resilience, and self-injury or burnout [40], [41]. Longitudinal modeling of training-related stress has also positioned emotion regulation and resilience sequentially, although measurement timing must support any process claim [42]. A controlled stressor study found that reappraisal tendency related differently to recovery, trait resilience, and an outcome-residual measure, demonstrating that the observed relationship depends on how resilience is operationalized [43]. These studies identify plausible associations and indirect paths; predominantly cross-sectional models cannot establish whether regulation precedes resilience, results from it, or covaries with shared antecedents.

## 2.3. Relational and Institutional Social Support

Social support refers to resources embedded in relationships and institutions. Its measurement may emphasize perceived availability, received assistance, network structure, satisfaction, or a specific source such as family, peers, teachers, or a university service [44], [45]. The Multidimensional Scale of Perceived Social Support, for example, differentiates perceived support from family, friends, and significant others [25]. Such measures should not be treated as equivalent to assistance actually received during an adverse event or to support-seeking recorded within a coping inventory.

Two theoretical functions must also be separated. A direct-effect account proposes that support is associated with adaptation across levels of stress. The stress-buffering hypothesis predicts that support attenuates the

association between stress and an outcome, which requires an interaction or an equivalent conditional test; a positive support-resilience correlation alone does not demonstrate buffering [23]. Social-ecological theory adds that access to culturally and contextually meaningful resources depends on institutional opportunity, social position, and the capacity to negotiate for support [10].

Empirical student research commonly places support and resilience in the same explanatory model. Perceived support has been examined in relation to academic burnout during online medical education, employment anxiety, social identity among international students, and university burnout [46]–[49]. Peer and teacher support has also been linked with academic resilience in medical or general college populations [50], [51]. Longitudinal studies of college transition and academic resilience are emerging [52], [53], but the broader evidence remains vulnerable to reciprocal influence, self-selection into supportive networks, common-method variance, and incomplete separation of support source from support function.

## 2.4. Positive and Adaptive Coping

Transactional stress theory defines coping as changing cognitive and behavioral efforts used to manage demands appraised as taxing or exceeding available resources [27]. Coping is therefore a response to a person-environment transaction rather than a fixed indicator of resilience. Strategy usefulness depends on the nature and controllability of the stressor, the timing of the response, and the criterion used to define adaptation. Broad dichotomies such as problem-focused versus emotion-focused or approach versus avoidance can conceal substantial variation within each category [28].

The Brief COPE illustrates the need for subscale-level interpretation because it assesses multiple strategies, including active coping, planning, acceptance,

positive reframing, support seeking, denial, disengagement, and self-blame [29]. A total coping score can combine strategies with different functions and directions. Positive or adaptive coping should therefore be defined from theory, the authors' construct label, and the instrument's subscale meaning before the statistical result is inspected. A positive coefficient cannot itself convert an ambiguous or avoidant strategy into adaptive coping.

Coping and emotion regulation overlap because both organize responses to emotionally significant demands. Conceptual reviews nonetheless advise preserving their theoretical origin and measurement context rather than collapsing them [30], [31]. University evidence supports this strategy-level approach. Adaptive coping has been associated with resilience among medical students, but estimates remain sample- and measure-specific [54]. A stress-management course study reported changes in selected coping strategies without a significant increase in resilience and lacked a comparison group, limiting causal interpretation [55]. Qualitative evidence from health-profession students further indicates that coping processes can replenish or deplete resilience-related resources across changing academic and pandemic conditions [56].

## 2.5. Measurement Alignment and Construct

Measurement choice determines the claim that can be supported. Capacity scales, recovery-propensity scales, academic-resilience instruments, regulation-strategy scales, dysregulation measures, support scales, and coping inventories do not estimate a common latent quantity. Their scores also differ in direction: a high CD-RISC score generally denotes greater perceived capacity, whereas a high DERS score denotes greater regulation difficulty. Table 2 summarizes the principal measurement implications for the present review.

**Table 2.** Common measurement families and their interpretive limits.

| Domain                | Instrument family                        | Primary construct captured                                                                              | Interpretive limit                                                                                 |
|-----------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| Resilience            | CD-RISC or CD-RISC-10                    | Perceived resilience characteristics or capacity.                                                       | Does not directly measure recovery across time [14], [33].                                         |
| Resilience            | Brief Resilience Scale                   | Perceived ability to recover or bounce back.                                                            | A trait-like score is not a demonstrated post-stressor trajectory [15].                            |
| Academic resilience   | ARS-30 and related scales                | Responses to substantial academic adversity.                                                            | Domain-specific adaptation should not be generalized to all adversity [16].                        |
| Emotion regulation    | Emotion Regulation Questionnaire         | Habitual cognitive reappraisal and expressive suppression.                                              | Two strategy frequencies do not represent regulatory flexibility or all stages of regulation [36]. |
| Emotion dysregulation | Difficulties in Emotion Regulation Scale | Multidimensional problems in awareness, acceptance, impulse control, goal pursuit, and strategy access. | Higher scores indicate difficulty; the scale is not equivalent to low reappraisal [21].            |
| Social support        | MSPSS or Social Support Questionnaire    | Perceived availability, satisfaction, or source-specific support.                                       | Perceived support is not necessarily received support or statistical stress buffering [25], [45].  |

| Domain           | Instrument family                                                            | Primary construct captured                                                     | Interpretive limit                                                                                                    |
|------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Coping           | COPE or Brief COPE                                                           | Multiple cognitive and behavioral coping strategies.                           | Subscales should remain separate; support-seeking within a coping inventory is not an external support resource [29]. |
| Process evidence | Repeated measures, trajectories, stressor tasks, or qualitative process data | Change, recovery, strategy selection, or resource use across context and time. | Design and timing must match the claimed process; a cross-sectional indirect effect is insufficient.                  |

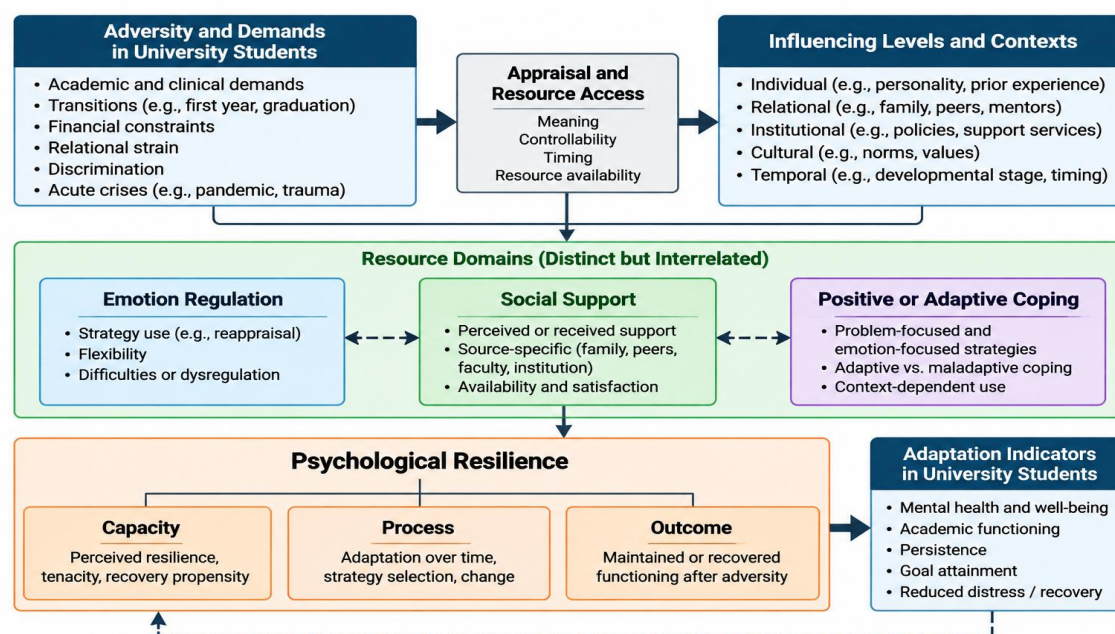
Construct non-equivalence has direct implications for synthesis. Effect magnitudes should not be ranked across unlike metrics, subscale direction must be retained, and analytical role must be separated from construct orientation. A resilience score used as a mediator remains a capacity measure unless the design demonstrates temporal adaptation. Likewise, support entered as a predictor is not automatically a contextual cause, and a coping score associated with lower distress is not necessarily evidence that coping generated resilience.

## 2.6. Integrated Theoretical Framework

No single theory fully specifies how the three resource domains relate to resilience. Transactional stress theory explains appraisal and context-sensitive coping; emotion-regulation theory specifies regulatory goals and stages; the stress-buffering model distinguishes direct support

effects from conditional protection; and social-ecological theory locates adaptation within access to relational, institutional, cultural, and material resources. Resilience trajectory and process perspectives define the adaptation criterion that these resource theories are expected to explain. Table 3 aligns each perspective with the evidence required to evaluate its propositions.

Figure 1 integrates these perspectives as a non-causal evidence map. Adversity and context bound the interpretation of all relationships. Appraisal and resource access shape which responses are feasible. Emotion regulation, social support, and positive or adaptive coping retain separate identities but may interact. Their association with resilience must then be interpreted according to whether resilience is measured as capacity, process, outcome, or academic adaptation. Feedback is plausible because prior adaptation can alter later appraisal, strategy selection, and access to support.



**Figure 1.** Integrated non-causal framework linking adversity, appraisal, resource domains, resilience orientation, and adaptation. The synthesis is informed by Cohen and Wills [23], Gross [18], [19], Lazarus and Folkman [27], and Ungar [10].

**Table 3.** Theoretical perspectives and evidence requirements.

| Perspective                     | Core proposition                                                                 | Application to the focal domains                                                        | Evidence needed for a strong test                                                         |
|---------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Transactional stress and coping | Responses depend on appraisal, controllability, timing, and available resources. | Explains why a coping or regulation strategy may differ in usefulness across stressors. | Repeated or prospective measurement of stressor, appraisal, strategy, and adaptation [27] |

| Perspective                         | Core proposition                                                                                          | Application to the focal domains                                                                            | Evidence needed for a strong test                                                                        |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Process model of emotion regulation | Regulation involves identifying a need, selecting and implementing a strategy, and monitoring its effect. | Separates strategy availability from selection, implementation, and flexibility.                            | Stage-specific or intensive longitudinal evidence rather than a single global strategy score [18], [19]. |
| Stress-buffering model              | Support reduces the effect of stress under specified conditions.                                          | Distinguishes support-resilience association from moderation of stress effects.                             | An explicit stress-by-support interaction or equivalent conditional model [23].                          |
| Social ecology of resilience        | Adaptation reflects access to and negotiation for culturally meaningful resources across social systems.  | Positions support and institutional opportunity as contextual resources, not merely individual perceptions. | Source-specific, multilevel, and culturally situated measurement [10].                                   |
| Resilience trajectory and process   | Resilience is sustained or recovered functioning in relation to adversity.                                | Defines whether the outcome represents capacity, process, recovery, or academic adaptation.                 | Adversity-linked trajectories, repeated outcomes, or clearly specified adaptation criteria [9], [12].    |

The arrows in Figure 1 express candidate relations for mapping or prospective testing. They do not establish a universal sequence. A study may position resilience as predictor, mediator, moderator, or outcome, but statistical placement alone does not determine temporal order. Strong causal interpretation would require a design that establishes exposure, temporal precedence, plausible counterfactual comparison, and adequate control of common causes.

## 2.7. Prior Reviews and Evidence Gaps

Existing reviews clarify individual segments of this literature but retain separate scopes. Reviews of undergraduate resilience emphasize mental-health correlates, emotion-regulation reviews emphasize academic buoyancy or adjustment, and social-support reviews focus on wellbeing, mental illness, or support

outcomes. A separate conceptual review demonstrates substantial overlap between coping and emotion-regulation measures across populations. Table 4 shows why these contributions do not replace a joint adversity-bounded map of the three resource domains.

Three gaps follow. First, construct co-occurrence is often treated as evidence of a direct relationship even when the focal pair is not estimated or reported. Second, capacity, process, outcome, and academic-resilience measures are combined despite supporting different claims. Third, adversity context, support source, coping subscale, regulation orientation, analytical role, and source location are not consistently retained together. These omissions prevent a clear account of what was measured, which variables were directly linked, and how strongly a reported estimate can support temporal or causal interpretation.

**Table 4.** Relationship between prior syntheses and the present review gap.

| Review                               | Primary scope                                                             | Contribution                                                                   | Unresolved issue for the present topic                                                                             |
|--------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Ahluwalia et al. (2025) [17]         | Resilience and mental health among undergraduate students.                | Maps the broader resilience-mental-health evidence base.                       | Does not jointly classify emotion regulation, social support, and adaptive coping with pair-level evidence states. |
| Kritikou and Giovazolias (2022) [22] | Emotion regulation, academic buoyancy, and academic adjustment.           | Clarifies regulation within academic adjustment and self-determination theory. | Academic buoyancy or adjustment is not equivalent to adversity-defined psychological resilience.                   |
| Li et al. (2025) [26]                | Social support, wellbeing, and mental health among college students.      | Synthesizes support sources and student mental-health outcomes.                | Does not require a resilience construct or distinguish direct association from stress buffering.                   |
| Vicary et al. (2025) [32]            | Social support among university students living with mental illness.      | Provides a focused synthesis for a clinically relevant student population.     | Population and outcome scope do not cover the three focal domains or multiple resilience orientations.             |
| Trudel-Fitzgerald et al. (2023) [30] | Conceptual and measurement overlap between coping and emotion regulation. | Shows where the two regulatory traditions converge and differ.                 | Does not map their separate relationships with resilience in university students under adversity.                  |

The present scoping review addresses this gap by jointly mapping emotion regulation, social support, and positive or adaptive coping in university students exposed to identifiable adversity or sustained demand. It separates

study-level inclusion, study-by-domain membership, and focal relationship evidence; preserves instrument and subscale direction; distinguishes resilience orientation from analytical role; and requires pair-specific source

verification before a result is interpreted. The framework supports construct clarification and an auditable evidence map. It does not presuppose that any resource has a uniform effect or that the three domains form a validated causal chain.

### 3. MATERIALS AND METHODS

#### 3.1. Review Design, Protocol and Reporting

A scoping review was selected to characterize how psychological resilience has been examined in relation to emotion regulation, social support, and positive/adaptive coping under conditions of adversity among university students. The objective was to map the available evidence rather than estimate a common intervention effect or pooled association. The review was conducted with reference to established scoping-review frameworks and methodological guidance on review conduct, data charting, analysis, and presentation [57]–[62].

Reporting was aligned with PRISMA-ScR. PRISMA 2020 terminology was applied to the study-selection flow, while PRISMA-S items guided reporting of the search process [63]–[65]. This approach provided a structured basis for documenting study identification, screening, eligibility assessment, and evidence synthesis.

The protocol for the public rebuilds was frozen on 13 August 2026, after the search architecture had been specified and before the subsequent verification audit. It prespecified the Population–Concept–Context (PCC)

criteria, the January 2010–June 2026 coverage window, information sources, record-linkage and deduplication rules, staged screening procedures, report-retrieval routes, charting fields, and descriptive synthesis. The protocol was not prospectively registered, and the search strategy did not undergo independent PRESS review [66]. Post-freeze changes are date-stamped in Supplementary Table S8 and reported as amendments, consistent with protocol-transparency guidance [67]. Formal critical appraisal was not undertaken because the review was designed for evidence mapping rather than pooled effect estimation or certainty grading.

#### 3.2. Eligibility Criteria

Eligibility was determined independently of the direction or statistical significance of focal results. Studies were included when they involved tertiary-education students, documented identifiable adversity or sustained adaptation demand, measured or explicitly investigated resilience, and assessed at least one focal domain. Eligibility did not require the focal construct–resilience relationship to be the primary analysis, because analytical evidence states were classified separately. Positive/adaptive coping was defined according to the original construct label and the meaning of the instrument or subscale, rather than the observed association. Support seeking within coping inventories was therefore retained as coping, not reclassified as external social support [30].

**Table 5.** PCC eligibility criteria and operational boundaries.

| Dimension            | Inclusion criterion                                                                                                          | Operational exclusion/boundary                                                                                                                     |
|----------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Population           | Tertiary-education students; mixed samples if student data were separable.                                                   | School students, non-student adults, or mixed samples without separable student data.                                                              |
| Adversity            | Explicit stressor, crisis, transition, academic/clinical demand, marginalization, violence/conflict, or laboratory stressor. | General well-being studies without a defined adversity or adaptation demand.                                                                       |
| Resilience           | Named resilience measure or explicitly defined resilience/adaptation construct.                                              | Unrelated positive-psychology constructs used as proxies for resilience.                                                                           |
| Focal domains        | Emotion regulation, social support, or positive/adaptive coping, based on the measured construct.                            | Domains inferred indirectly; support-seeking within coping scales remained classified as coping.                                                   |
| Context and evidence | Peer-reviewed quantitative, qualitative, or mixed-methods journal articles; English; 1 Jan 2010–30 Jun 2026.                 | Reviews, protocols, editorials, conference abstracts, theses/dissertations, non-journal publications, or records outside the date/language limits. |

#### 3.3. Sources and Search Strategy

On 13 August 2026, PubMed/MEDLINE was searched through NCBI E-utilities, OpenAlex through the Works API, and ERIC through the Institute of Education Sciences API. The search architecture combined terms for tertiary students, resilience, and one or more focal domains: emotion regulation, social support, or coping. Eligible publication dates extended from 1 January 2010 through 30 June 2026. PubMed used Title/Abstract terms with

English-language and Journal Article limits; OpenAlex used title-and-abstract searching with English, article, journal-source, and date filters; and ERIC used indexed fields with peer-reviewed Journal Article and year limits. Crossref was used solely to verify DOI metadata and did not contribute additional search records. The search expressions or documented query logic and source yields are presented in Supplementary Table S1.

**Table 6.** Information sources, limits, and raw yields (13 August 2026).

| Source             | Field/record limits                              | Coverage               | Rows retrieved   | Reproducibility notes                                                                                                                   |
|--------------------|--------------------------------------------------|------------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| PubMed/MEDLINE     | Title/Abstract; English; Journal Article         | 1 Jan 2010–30 Jun 2026 | 981              | Executable expression preserved.                                                                                                        |
| OpenAlex Works API | Title/abstract; English; article; journal source | 1 Jan 2010–30 Jun 2026 | 2,280            | Boolean logic/filters preserved; full historical URL-encoded request and version lock unavailable. Two cursor-repeat rows were removed. |
| ERIC API           | Indexed fields; peer reviewed; Journal Article   | 2010–Jun 2026          | 388              | Boolean logic/filters preserved; full historical URL-encoded request and version lock unavailable.                                      |
| Crossref           | DOI and bibliographic metadata                   | As required            | 0 search records | Verification source only.                                                                                                               |

Records were exported in XML, JSON, CSV, or RIS-compatible formats according to platform capability. The complete URL-encoded OpenAlex and ERIC request strings had not been preserved and were not reconstructed retrospectively. Web of Science, Scopus, and PsycINFO were not searched in the public rebuild. These omissions define the review's coverage boundary and are treated as limitations; they do not support a claim of exhaustive retrieval.

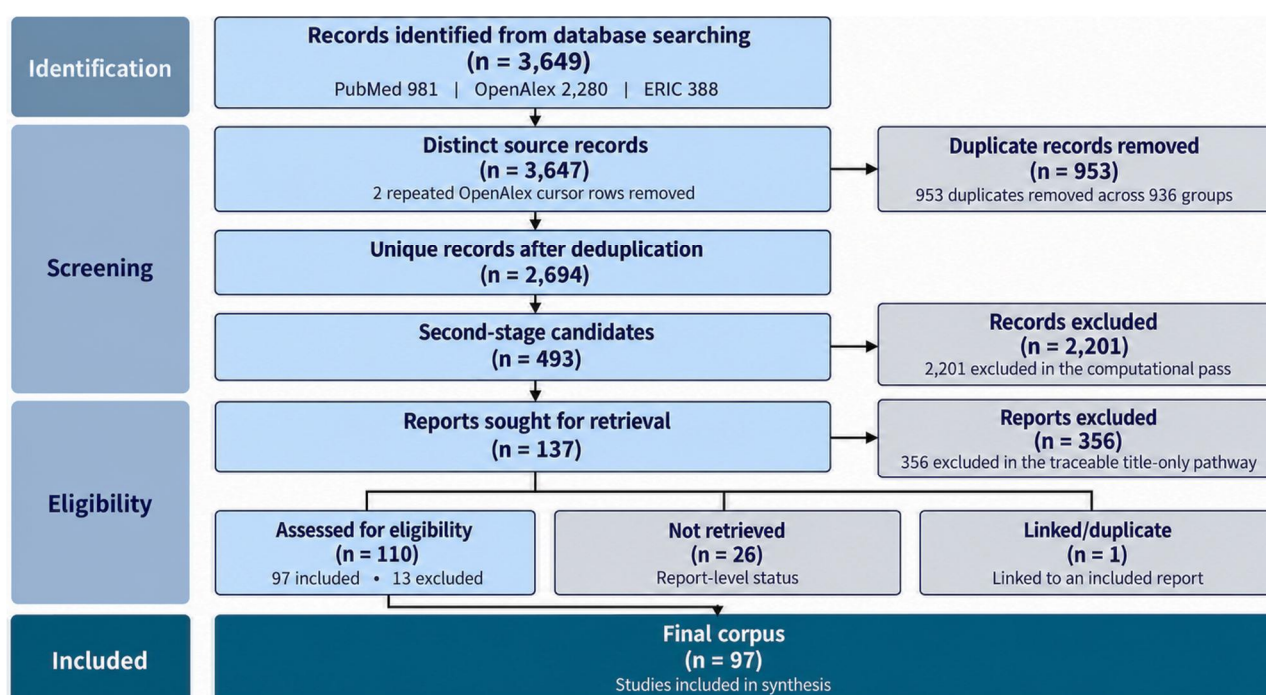
### 3.4. Records and Deduplication

The three APIs returned 3,649 rows. Two repeated OpenAlex rows generated during cursor pagination were removed before cross-source comparison, leaving 3,647 distinct source records. Record linkage was then applied hierarchically using DOI, PMID, source-specific identifier, and normalized title plus publication year within the documented union-find procedure. Cross-database deduplication removed 953 records distributed across 936 duplicate groups and produced 2,694 unique records. The matching audit attributed linkage edges to DOI ( $n =$

858), PMID ( $n = 3$ ), normalized title/year ( $n = 92$ ), and repeated OpenAlex identifiers ( $n = 2$ ). The record counts were reconciled before synthesis:  $(3,647 = 953 + 2,694)$ .

### 3.5. Screening, Report and Adjudication

Screening comprised a traceable computational pass followed by the preserved title-only decision pathway. The computational pass excluded 2,201 records and retained 493 second-stage candidates; 137 of these advanced to report retrieval, whereas 356 were excluded. A later AI-assisted title/abstract sensitivity audit produced an aggregate statement that 153 of the 356 excluded records would advance. That audit, however, did not preserve the identities of the 153 records, their titles or DOIs, or a record-level decision table. Because the aggregate count could not be linked to individual records, the post-hoc reclassification was removed from the final study-flow accounting and retained only as a provenance limitation. AI support was not treated as an independent human assessment or as evidence of screening accuracy.

**Figure 2.** PRISMA-aligned selection flow for the verification-bounded review.

Of the 137 reports sought, 85 were initially retrieved and assessed; seven were excluded and 78 were retained, while 52 remained unretrieved at that stage. A targeted re-check on 11 September 2026 used DOI and title searches, publisher pages, PubMed Central, institutional repositories, and scholarly repositories. This process located 24 journal reports and one dissertation and identified one linked duplicate. Nineteen of the 24 journal reports met the fixed PCC criteria, five were excluded under the adversity criterion, and the dissertation was excluded by publication type; 26 reports remained unretrieved. Extraction of the 19 newly retained reports was completed on 14 September 2026. The source-level extraction for these 19 reports, including adversity context, measures, analytical role, model, and source location, is provided in Supplementary Table S3.

3.6. Analytical Units and Data Charting

Data were charted at three nested analytical levels in accordance with scoping-review guidance [62]. The study served as the unit for sample, setting, design, adversity context, and instrument characteristics. A study-domain unit represented independent measurement of emotion regulation, social support, or positive/adaptive coping, allowing a single study to contribute to more than one domain. A focal-relationship unit required a named focal construct or subscale paired with a named resilience construct and an extractable quantitative or qualitative result. This hierarchy preserves the distinction between non-exclusive domain membership and independent effect estimates.

Table 7. Unit hierarchy and denominators used for charting and synthesis.

| Level              | Denominator                         | Variables / decision rule                                                                                                                 | Permitted inference                                                                               |
|--------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Study              | N = 97                              | Bibliographic record, sample, setting, design, adversity, resilience orientation/measure.                                                 | Corpus characteristics; each study counted once within mutually exclusive study-level categories. |
| Study-domain       | N = 103                             | Independent measurement of emotion regulation (22), social support (50), or positive/adaptive coping (31). Memberships are non-exclusive. | Domain coverage and evidence state; not independent effect sizes.                                 |
| Focal relationship | N = 21 source-verified direct units | Explicit focal-domain-resilience pair with a recoverable estimate or source-attributed qualitative linkage.                               | Metric-specific result only; no cross-metric ranking or pooled estimate.                          |

The charting form recorded study identifier, bibliographic record, population, setting, sample size, study design, adversity context, resilience orientation and measure, focal-domain measure, analytical role, named variable pair, effect metric and estimate, 95% confidence interval or standard error, p-value, model or covariates, extraction source, exact source location, and verification status. Values not reported in the source were coded NR and were not imputed. The first author conducted review administration, data curation, and verification; the second author provided methodological supervision and validation. Duplicate independent human extraction was not documented for every legacy row.

Before synthesis, cross-table reconciliation confirmed 97 unique study identifiers and 103 unique study-domain pairs. Two malformed domain/status entries (PS03 and PS07) were reconciled against the study master and codebook, and one non-data header row was removed from the analytical denominator. After these corrections, evidence-state and domain totals reconciled exactly. The corrections addressed data structure and coding integrity only; they did not alter study eligibility or any numerical effect estimate.

3.7. Evidence Classification and Synthesis

Each qualifying study-domain unit was assigned to one mutually exclusive state: (i) source-verified direct focal evidence; (ii) the focal pair was analyzed but no pair-specific estimate/source location was recoverable; (iii)

focal constructs were co-measured without pair-specific analysis; or (iv) the result/source was unavailable or represented only by a non-result excerpt. “Construct not measured” was excluded from the study-domain denominator; “report not retrieved” remained report-level. Missing pair-specific evidence was not treated as evidence of no association.

Synthesis followed synthesis-without-meta-analysis principles [68], [69], using counts, percentages, and metric-specific reporting rather than cross-model effect ranking. Meta-analysis was not undertaken because measures, contexts, time frames, and analytic specifications were insufficiently comparable. Cross-sectional mediation/path estimates were interpreted as associations, given their potential to misrepresent longitudinal processes [70]. Qualitative findings remained source-attributed processes or comparisons, without direction coding or de novo thematic synthesis [71].

4. RESULTS

4.1. Study Selection and Corpus Boundary

The public rebuild yielded 3,647 distinct source records after removal of two repeated OpenAlex cursor rows. Deduplication removed 953 records, leaving 2,694 unique records. The computational pass excluded 2,201 records and retained 493 second-stage candidates; the traceable title-only pathway advanced 137 reports and excluded

356. Within the 137-report pathway, 110 reports were assessed, 26 remained unretrieved, and one was linked/duplicated. Of the assessed reports, 97 met the eligibility criteria and 13 were excluded. Thus, all reports in the counted pathway end in one mutually exclusive

status and all 97 eligible studies contribute to the final synthesis (Figure 2). The characteristics of all 97 included studies, including setting, design, focal domain, and primary adversity, are listed in Supplementary Table S2.

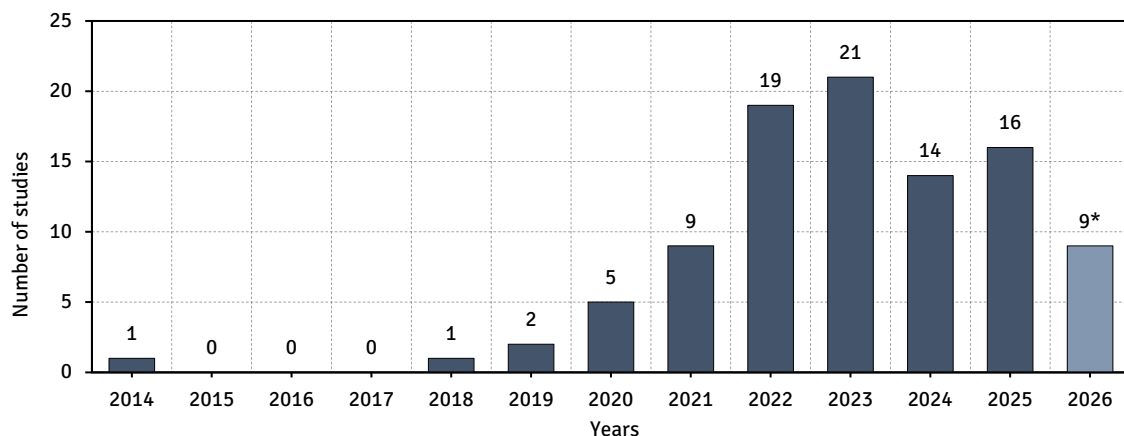
**Table 8.** Reconciled study-selection accounting.

| Stage               | Retained / final status     | Excluded / removed                                | Arithmetic check           |
|---------------------|-----------------------------|---------------------------------------------------|----------------------------|
| Raw API retrieval   | 3,647 distinct records      | 2 OpenAlex cursor repeats                         | $(3,649 - 2 = 3,647)$      |
| Deduplication       | 2,694 unique records        | 953 duplicates                                    | $(3,647 - 953 = 2,694)$    |
| Computational pass  | 493 second-stage candidates | 2,201 records                                     | $(2,694 - 2,201 = 493)$    |
| Traceable screening | 137 reports sought          | 356 title-only exclusions                         | $(493 - 356 = 137)$        |
| Final report status | 97 included                 | 13 excluded; 26 not retrieved; 1 linked/duplicate | $(97 + 13 + 26 + 1 = 137)$ |

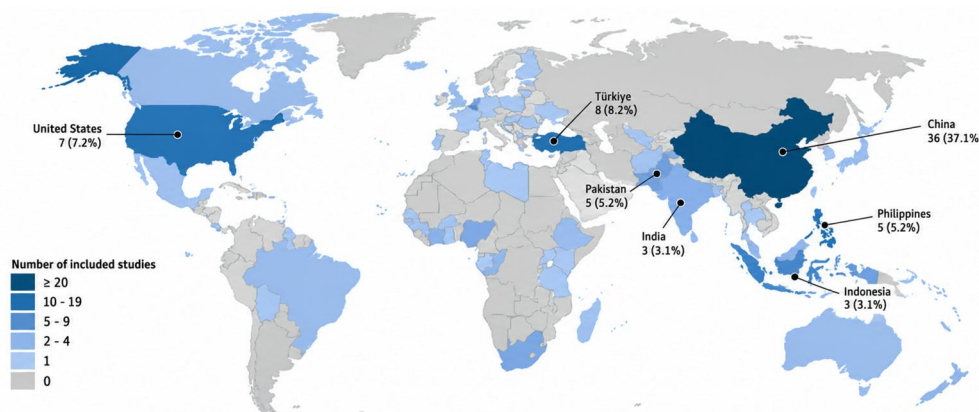
#### 4.2. Publication Trend

The 97 included studies spanned 2014 through June 2026, but publication activity was strongly concentrated after 2020. Only 9 studies (9.3%) were published during 2014-2020, with no eligible studies identified in 2015, 2016, or 2017. Annual output increased to 9 studies in 2021, 19 in 2022, and a maximum of 21 in 2023; the 2022-2023 interval alone contributed 40/97 studies (41.2%). Publication volume remained high in 2024 ( $n = 14$ ) and

2025 ( $n = 16$ ). A further 9 studies were published from January through June 2026, so the 2026 count represents only a half-year observation and should not be compared directly with complete calendar years. Overall, 88/97 studies (90.7%) were published from 2021 onward, and 39/97 (40.2%) appeared from 2024 onward. This distribution shows that the mapped evidence base is predominantly recent, while the sparse pre-2021 record limits interpretation of longer-term publication trends (Figure 3).



**Figure 3.** Annual publication counts of the 97 included studies, 2014-June 2026. Zero-count years are shown explicitly. (\*January-June 2026 only).



**Figure 4.** Geographic distribution of the included studies ( $N = 97$ ).

### 4.3. Geographic Distribution

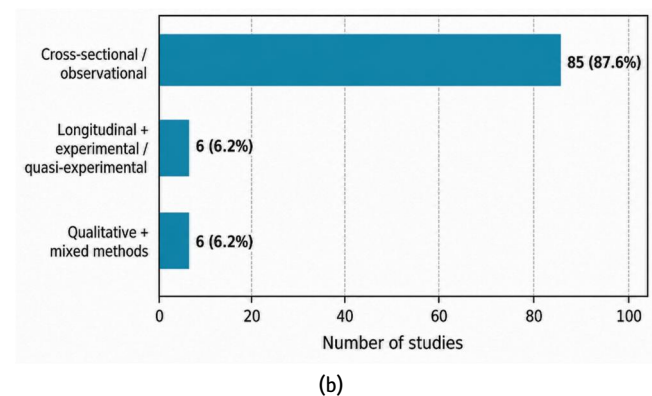
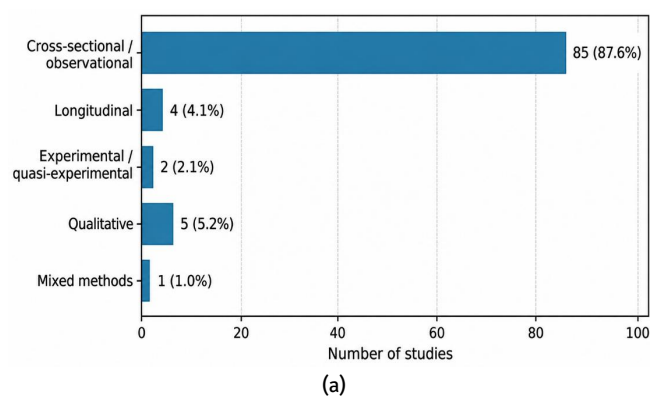
The 97 included studies represented 31 distinct setting labels, indicating broad geographic coverage but a clearly uneven distribution across locations (Figure 4). China contributed the largest share of the evidence base (36 studies; 37.1%), followed by Türkiye ( $n = 8$ ; 8.2%), the United States ( $n = 7$ ; 7.2%), Pakistan ( $n = 5$ ; 5.2%), and the Philippines ( $n = 5$ ; 5.2%). Together, these five settings accounted for 61 of the 97 studies (62.9%), demonstrating that a substantial proportion of the available literature was concentrated in a relatively small number of countries.

Beyond these major contributors, the remaining evidence was more widely dispersed. India and Indonesia each contributed three studies, while six additional settings were represented by two studies each. A further 18 settings contributed only one study each. This pattern shows that the corpus achieved considerable geographic breadth, but most settings outside the leading contributors were represented by relatively small numbers of studies. The evidence base should therefore

be understood as geographically diverse, yet imbalanced in terms of study volume across settings.

### 4.4. Study-design Profile

The methodological profile was dominated by cross-sectional or observational designs, which accounted for 85/97 studies (87.6%). Only four studies were longitudinal (4.1%), two were experimental or quasi-experimental (2.1%), five were qualitative (5.2%), and one used mixed method (1.0%). Thus, only 6/97 studies (6.2%) used longitudinal or experimental/quasi-experimental structures capable of directly addressing temporal ordering, change over time, or controlled exposure more strongly than a single-time-point observational design. Qualitative and mixed-methods studies together represented another 6/97 studies (6.2%). The strong design imbalance means that the corpus-level evidence is driven primarily by contemporaneous associations and observational descriptions rather than by prospective or intervention-based estimates (Figure 5).



**Figure 5.** Study-design profile of the included studies. (a) Distribution of the 97 studies according to primary methodological design; (b) Aggregated methodological orientation highlighting the predominance of observational evidence and the limited representation of designs capable of evaluating temporal change or controlled exposure.

### 4.5. Primary Adversity Profile

Primary adversity contexts were also unevenly distributed. Pandemic or lockdown conditions were the most frequent category (41/97; 42.3%), followed by academic or clinical demands (28/97; 28.9%). Together, these two contexts accounted for 69/97 studies (71.1%). Trauma or adverse life events contributed 10 studies (10.3%), while marginalization/transition and psychological/health crisis each contributed six (6.2%). Bullying/violence/conflict was represented in three studies (3.1%), general

university demand in two (2.1%), and a standardized laboratory stressor in one (1.0%). All six categories outside pandemic/lockdown and academic/clinical demand collectively accounted for 28/97 studies (28.9%), fewer than the pandemic/lockdown category alone. The adversity map therefore reflects a literature concentrated in acute public-health disruption and education-specific stress, with substantially smaller representation of trauma, marginalization, violence/conflict, generalized university demands, and controlled laboratory stressors (Table 9).

**Table 9.** Characteristics of the final 97-study corpus.

| Characteristic     | Category      | Study (n) | Percentage (%) |
|--------------------|---------------|-----------|----------------|
| Publication period | 2014–2020     | 9         | 9.30           |
|                    | 2021–2023     | 49        | 50.50          |
|                    | 2024–Jun 2026 | 39        | 40.20          |
| Setting            | China         | 36        | 37.10          |

| Characteristic    | Category                              | Study (n) | Percentage (%) |
|-------------------|---------------------------------------|-----------|----------------|
| Aggregated design | Türkiye                               | 8         | 8.20           |
|                   | United States                         | 7         | 7.20           |
|                   | Pakistan                              | 5         | 5.20           |
|                   | Philippines                           | 5         | 5.20           |
|                   | India                                 | 3         | 3.10           |
|                   | Indonesia                             | 3         | 3.10           |
|                   | Six settings with two studies each    | 12        | 12.40          |
|                   | Eighteen settings with one study each | 18        | 18.60          |
|                   | Cross-sectional/observational         | 85        | 87.60          |
|                   | Longitudinal                          | 4         | 4.10           |
|                   | Experimental/quasi-experimental       | 2         | 2.10           |
|                   | Qualitative                           | 5         | 5.20           |
|                   | Mixed methods                         | 1         | 1.00           |
| Primary adversity | Pandemic/lockdown                     | 41        | 42.30          |
|                   | Academic/clinical demand              | 28        | 28.90          |
|                   | Trauma/adverse life events            | 10        | 10.30          |
|                   | Marginalization/transition            | 6         | 6.20           |
|                   | Psychological/health crisis           | 6         | 6.20           |
|                   | Bullying/violence/conflict            | 3         | 3.10           |
|                   | General university demand             | 2         | 2.10           |
|                   | Standardized laboratory stressor      | 1         | 1.00           |
| Focal domain*     | Emotion regulation                    | 22        | 21.40          |
|                   | Social support                        | 50        | 48.50          |
|                   | Positive/adaptive coping              | 31        | 30.10          |

Note. \*Domain memberships are non-exclusive and total 103.

#### 4.6. Construct Operationalization and Measurement Documentation

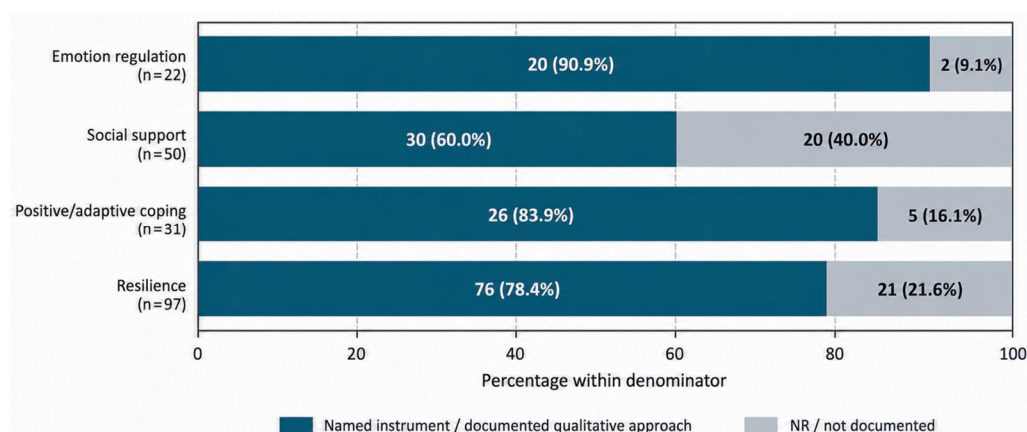
Across the 97 studies, the three focal domains generated 103 memberships: 22 emotion-regulation, 50 social-support, and 31 positive/adaptive-coping units. Resilience was treated variously as perceived capacity or trait-like resilience, academic adaptation, process/recovery, outcome residual, or multiple orientations. Frequently named families included the Emotion Regulation Questionnaire [36] and Difficulties in Emotion Regulation Scale [21]; the Multidimensional Scale of Perceived Social Support [25]; COPE/Brief COPE

instruments [29]; and the CD-RISC, CD-RISC-10, Brief Resilience Scale, and Academic Resilience Scale [14]–[16], [33]. Instrument families were not collapsed when their constructs or scale directions differed.

A named focal instrument or an explicitly documented qualitative approach was available for 20/22 emotion-regulation units (90.9%), 30/50 social-support units (60.0%), and 26/31 coping units (83.9%). A named resilience instrument or qualitative operationalization was documented in 76/97 studies (78.4%). The remaining fields were retained as NR/not documented; no instrument family was imputed from a construct label or study title.

**Table 10.** Measurement documentation by construct.

| Construct                | Denominator           | Named/documented | NR/not documented | Common named families / operational forms                                                     |
|--------------------------|-----------------------|------------------|-------------------|-----------------------------------------------------------------------------------------------|
| Emotion regulation       | 22 study-domain units | 20 (90.9%)       | 2 (9.1%)          | ERQ; DERS; cognitive-emotion-regulation and task-based measures.                              |
| Social support           | 50 study-domain units | 30 (60.0%)       | 20 (40.0%)        | MSPSS; MOS-SSS; source-specific perceived-support scales; qualitative connectedness.          |
| Positive/adaptive coping | 31 study-domain units | 26 (83.9%)       | 5 (16.1%)         | COPE/Brief COPE; coping-style scales; Coping Reservoir Model; source-defined adaptive coping. |
| Resilience               | 97 studies            | 76 (78.4%)       | 21 (21.6%)        | CD-RISC variants; BRS; ARS-30; recovery/outcome-residual measures; qualitative resilience.    |



**Figure 6.** Measurement-documentation completeness.

#### 4.7. Evidence-state Map

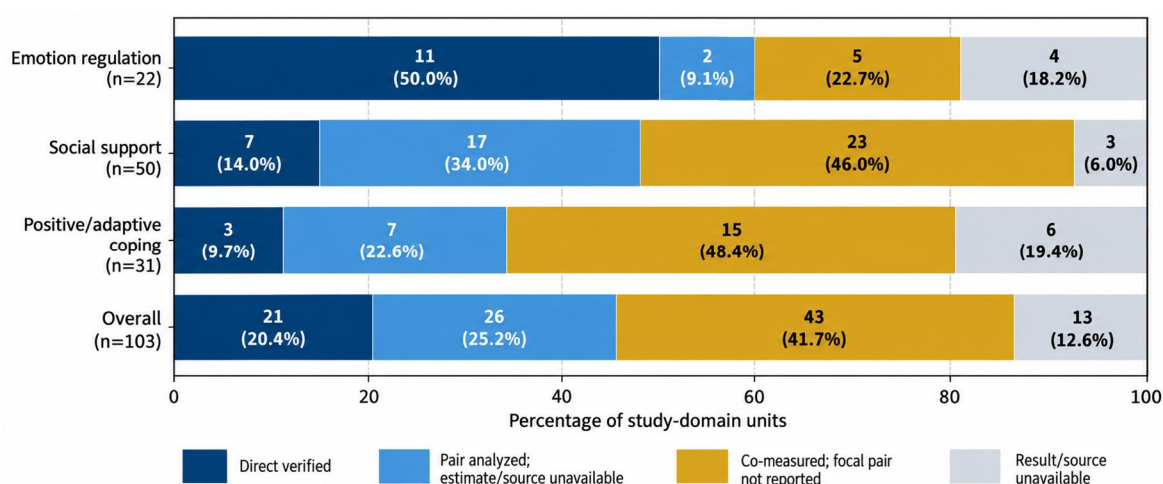
Only 21/103 study-domain units (20.4%) contained a source-verified direct focal result. A further 26 units (25.2%) indicated that the focal pair was analyzed or reported but lacked a recoverable pair-specific estimate and/or source location. In 43 units (41.7%), the focal domain and resilience were co-measured but the direct pair was not reported, while 13 units (12.6%) remained in a result/source-unavailable state. Accordingly, 82/103 units (79.6%) could not support a source-verified, pair-

specific effect statement; this is an evidence-availability finding, not evidence of null association.

The proportion of source-verified direct results differed sharply by domain: 11/22 emotion-regulation units (50.0%), 7/50 social-support units (14.0%), and 3/31 coping units (9.7%). Social support had the largest absolute literature volume but also the largest number of co-measured/non-reported pairs (23 units). This distinction changes the interpretation from a simple vote count to an audit of what each study actually reported.

**Table 11.** Evidence state by focal domain, n (row %).

| Domain                   | Direct, verified | Pair analyzed; estimate/<br>source unavailable | Co-measured; focal pair<br>not reported | Result/source<br>unavailable |
|--------------------------|------------------|------------------------------------------------|-----------------------------------------|------------------------------|
| Emotion regulation       | 11 (50.0)        | 2 (9.1)                                        | 5 (22.7)                                | 4 (18.2)                     |
| Social support           | 7 (14.0)         | 17 (34.0)                                      | 23 (46.0)                               | 3 (6.0)                      |
| Positive/adaptive coping | 3 (9.7)          | 7 (22.6)                                       | 15 (48.4)                               | 6 (19.4)                     |
| Overall                  | 21 (20.4)        | 26 (25.2)                                      | 43 (41.7)                               | 13 (12.6)                    |



**Figure 7.** Evidence-state distribution across 103 study-domain units.

#### 4.8. Emotion Regulation

Verified findings differentiated regulation strategies and scale direction. In a large cross-sectional model,

reappraisal was positively associated with resilience ( $r = 0.366$ ; standardized  $\beta = 0.331$ ), whereas suppression was nearly uncorrelated at the bivariate level ( $r = -0.007$ ) but had a small negative adjusted path ( $\beta = -0.062$ ; Ye et al.,

[39]). Across newly integrated studies, reappraisal showed small positive correlations with dimensions of resilience ( $r = 0.120-0.222$ ), while suppression showed negative correlations ( $r = -0.221$  to  $-0.376$ ; Brites et al., [37]). Higher emotion-regulation difficulty was inversely associated with resilience ( $r = -0.389$ ;  $B = -0.33$ ,  $SE = 0.05$ ; Tanacioğlu Aydın & Pekşen Süslü, [41]; and  $r = -0.57$ ; Rufino et al., [40]), while limited access to regulation strategies predicted low-resilience scores ( $\beta = 0.59$ ,  $SE = 0.02$ , 95% CI  $0.55-0.64$ ; Guérin-Marion et al., [72]). These estimates use differently oriented scales and cannot be compared as if they indexed one homogeneous construct.

A controlled laboratory-session study linked reappraisal tendency to recovery during the laboratory

stressor ( $\beta = 0.20$ , 95% CI  $0.02-0.38$ ), but not to outcome-residual resilience ( $\beta = 0.04$ , 95% CI  $-0.18-0.25$ ; Razak et al., [43]). The source also reported a significant path to trait BRS resilience, but the printed coefficient conflicts with its accompanying test statistic/confidence interval; the magnitude was therefore not recoded here. In another model, reappraisal predicted resilience ( $\beta = 0.23$ , 95% CI  $0.13-0.33$ ), while the suppression result was not synthesized because its source significance label conflicted with the reported approximate interval (Ma et al., [73]). These source-level inconsistencies do not justify choosing the more favorable statistic.

**Table 12.** Selected source-verified emotion-regulation–resilience results.

| ID Study | Sample/design                       | Named focal pair                                                          | Estimate                                                                                                       | Bounded interpretation                                                                       |
|----------|-------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| PS39     | n=2,423; cross-sectional            | ERQ reappraisal/suppression $\leftrightarrow$ resilience                  | Reappraisal $r=0.366$ , $\beta=0.331$ ; suppression $r=-0.007$ (NS), $\beta=-0.062$ ; adjusted paths $p<0.001$ | Strategy-specific associations; adjusted suppression path was small.                         |
| PS62     | n=113; controlled stressor sessions | Reappraisal tendency $\rightarrow$ laboratory recovery / outcome residual | $\beta=0.20$ , 95% CI $[0.02,0.38]$ ; $\beta=0.04$ , 95% CI $[-0.18,0.25]$                                     | Individual-difference paths, not an intervention-effect estimate.                            |
| U1010    | n=426; cross-sectional              | ERQ strategies $\leftrightarrow$ RSA dimensions                           | Reappraisal $r=0.120-0.222$ ; suppression $r=-0.221$ to $-0.376$                                               | Dimension-specific bivariate associations.                                                   |
| U1110    | n=404; cross-sectional              | DERS $\leftrightarrow$ CD-RISC                                            | $r=-0.389$ ; $B=-0.33$ , $SE=0.05$ ; $p<0.001$ for B                                                           | Greater regulation difficulty associated with lower resilience.                              |
| U1127    | n=321; cross-sectional              | DERS $\leftrightarrow$ resilience                                         | $r=-0.57$ , $p<0.001$                                                                                          | Moderate-to-large inverse bivariate association.                                             |
| U1278    | n=400; cross-sectional              | ERQ reappraisal $\rightarrow$ BRS                                         | $\beta=0.23$ , 95% CI $[0.13,0.33]$ , $p<0.001$                                                                | Positive adjusted association; suppression inference withheld owing to source inconsistency. |
| U1453    | n=922; cross-sectional              | Limited access to ER strategies $\rightarrow$ low resilience              | $\beta=0.59$ , $SE=0.02$ , 95% CI $[0.55,0.64]$                                                                | Scale direction means higher predictor and outcome scores both indicate difficulty.          |
| U1617    | n=117; cross-sectional              | ERQ strategies $\leftrightarrow$ CD-RISC                                  | Reappraisal $r=0.46$ , $p<0.01$ ; suppression $r=0.19$ , $p<0.05$                                              | Both associations were positive in this post-flood sample.                                   |

#### 4.9. Social-support and Coping

Verified social-support results were consistently reported as associations or statistical paths rather than experimental effects. Perceived support correlated with resilience at  $r = 0.523$  ( $n = 532$ ; Wang & Zhang, [46]) and  $r = 0.571$  ( $n = 807$ ), with the latter model also reporting a standardized path of ( $\beta = 0.562$ ; Liu & Cao, [48]). Smaller adjusted paths were observed in international students ( $\beta = 0.15$ ; Parlak et al., [47]) and for parental support in a large pandemic-era model ( $r = 0.327$ ;  $\beta = 0.253$ ; Ye et al., [39]). Newly integrated studies reported social support to resilience paths of  $a = 0.201$  ( $SE = 0.018$ ; Gianjacomio et al., [49]) and standardized  $\beta = 0.38$  (unstandardized  $B = 4.76$ ,  $SE = 0.46$ ) for academic resilience (Samoy et al., [50]). These results do not by themselves demonstrate

stress buffering, which would require a stress-by-support interaction or an explicitly tested buffering design [23].

For positive/adaptive coping, one small quasi-experimental course study found strong concurrent correlations between resilience and self-confident coping ( $r = 0.560$ ) and helpless coping ( $r = -0.550$ ), but resilience did not change significantly from pre- to post-course (24.34 to 25.00;  $p = 0.397$ ; Pehlivan Sarbudak, [55]). Optimistic coping increased ( $p = 0.024$ ), yet the absence of a comparator prevents attribution to the course. Another observational study reported a strong adaptive-coping–resilience correlation ( $r = 0.83$ , 95% CI  $0.75-0.89$ ;  $n = 85$ ; Anderson et al. [54]). The effect may be sample- and measure-specific and should not be generalized as a pooled estimate.

**Table 13.** Selected source-verified social-support and coping results.

| ID/domain       | Sample/design                     | Named focal pair                   | Estimate / finding                                                               | Bounded interpretation                                                       |
|-----------------|-----------------------------------|------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| PS08 / support  | n=532; cross-sectional            | Perceived support ↔ resilience     | $r=0.523, p<0.01$                                                                | Moderate positive bivariate association.                                     |
| PS09 / support  | n=343; cross-sectional            | Perceived support → resilience     | $\beta=0.15, p<0.05$                                                             | Small positive adjusted path.                                                |
| PS13 / support  | 300 survey + 12 interviews; mixed | Connectedness by resilience level  | Lower-resilience students reported greater difficulty forming social connections | Source-attributed mixed-methods comparison; not an effect size.              |
| PS36 / support  | n=807; cross-sectional            | Perceived support ↔ / → resilience | $r=0.571; \beta=0.562; \text{both } p<0.01$                                      | Positive correlation and model path in the same study.                       |
| PS39 / support  | n=2,423; cross-sectional          | Parental support ↔ / → resilience  | $r=0.327; \beta=0.253; \text{both } p<0.001$                                     | Positive bivariate and adjusted associations.                                |
| U1142 / support | n=2,817; cross-sectional          | MOS-SSS → CD-RISC-10               | $a=0.201, SE=.018, p<0.001$                                                      | Positive path within a mediation model.                                      |
| U1232 / support | n=641; cross-sectional            | MSPSS → ARS-30                     | $B=4.76, \beta=0.38; SE=0.46 \text{ for } B; p<0.001$                            | Positive prediction of academic resilience.                                  |
| PS57 / coping   | n=67; one-group course            | Coping ↔ resilience; pre-post      | Self-confident $r=0.560$ ; helpless $r=-0.550$ ; resilience $p=0.397$            | Concurrent associations; no significant resilience change and no comparator. |
| PS69 / coping   | n=85; cross-sectional             | Adaptive coping ↔ resilience       | $r=0.83, 95\% \text{ CI } [0.75, 0.89]$                                          | Strong sample-specific bivariate association.                                |

#### 4.10. Source-verified Focal Findings

##### 4.10.1. Cross-sectional and observational evidence

Cross-sectional/observational studies contributed 85/97 studies and most verified focal estimates. Their correlations and regression/path coefficients support contemporaneous covariation after the stated model adjustments; they do not establish temporal ordering, mediation as a mechanism, or resilience change. Common-method variance, reverse causality, unmeasured confounding, and scale-direction differences remain plausible explanations. The concentration of direct results in this design stratum is therefore evidence of analytical availability rather than causal strength.

##### 4.10.2. Longitudinal evidence

Four studies were classified as longitudinal [38], [42], [52], [53]. The master extraction verified their longitudinal labels, samples, focal domains, and adversity contexts,

but complete source-verified timing, comparator, follow-up, and focal-estimand fields were not available for every study. They were therefore retained with NR fields rather than used to infer prospective effects. Renati et al. [38] reported 339 participants at baseline and 64 at follow-up, underscoring that attrition and analysis-set information are essential before interpreting temporal findings.

##### 4.10.3. Experimental and quasi-experimental evidence

Two studies used experimental or quasi-experimental structures. The 14-week stress-management course (PS57) lacked a comparison group and showed no significant resilience change [55]. The controlled stressor-session study (PS62) estimated individual-difference associations between reappraisal tendency and multiple resilience outcomes rather than the causal effect of assigning a regulation strategy [43]. Consequently, neither study establishes intervention effectiveness for increasing resilience.

**Table 14.** Longitudinal and experimental/quasi-experimental evidence.

| ID Study | Sample                       | Domain / adversity                     | Design information                 | Focal result available for synthesis                                                               |
|----------|------------------------------|----------------------------------------|------------------------------------|----------------------------------------------------------------------------------------------------|
| PS02     | n=2,609                      | Support / academic-clinical            | Longitudinal                       | NR: complete timing and pair-specific prospective estimate not available in the master extraction. |
| PS04     | n=2,326                      | Support / academic-clinical transition | Longitudinal                       | NR: complete timing and pair-specific prospective estimate not available in the master extraction. |
| PS05     | n=711                        | Emotion regulation / training demand   | Longitudinal                       | NR: complete timing and pair-specific prospective estimate not available in the master extraction. |
| PS26     | n=339 baseline; 64 follow-up | Emotion regulation / pandemic          | Longitudinal                       | Longitudinal status verified; complete focal estimand retained as NR in the reconciled table.      |
| PS57     | n=67                         | Coping / academic-clinical             | 14-week one-group quasi-experiment | Resilience $24.34 \rightarrow 25.00, p=0.397$ ; optimistic coping $p=0.024$ . No comparator.       |

| ID Study | Sample | Domain / adversity                       | Design information                             | Focal result available for synthesis                                                             |
|----------|--------|------------------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------|
| PS62     | n=113  | Emotion regulation / laboratory stressor | Controlled sessions plus cross-sectional paths | Recovery $\beta=0.20$ , 95% CI [0.02,0.38]; outcome residual $\beta=0.04$ , 95% CI [-0.18,0.25]. |

The map identifies six principal limitations in the available evidence. First, 26/137 sought reports (19.0%) remained unretrieved. Second, cross-sectional/observational designs accounted for 87.6% of included studies. Third, China alone contributed 37.1% of the corpus, while pandemic/lockdown and academic/clinical contexts together accounted for 71.1%. Fourth, instrument documentation was incomplete, particularly for social support (20/50 units). Fifth, only 20.4% of study-domain units supported a source-verified pair-specific result, and uncertainty/model details were inconsistently reported. Sixth, duplicate independent human screening/extraction was not documented for all legacy rows. These limitations constrain causal, cross-cultural, and comparative interpretation even though the final 97-study corpus is arithmetically auditable.

The withdrawal of the untraceable 153-record sensitivity reclassification improves provenance clarity but defines the review as verification-bounded rather than exhaustive. Future updates should archive complete record-level exports and decisions, peer review the search strategy, preserve executable queries and software/version information, retrieve or transparently account for unavailable reports, and preregister a prospective update protocol. Primary studies should prioritize longitudinal or controlled designs, preregister focal domain-resilience estimands, report scale direction and model specification, and provide pair-specific estimates with confidence intervals.

## 5. DISCUSSION

This scoping review identified 97 studies examining psychological resilience alongside emotion regulation, social support, or positive/adaptive coping among university students facing identifiable adversity or sustained adaptation demands. Its principal contribution is to distinguish the presence of these constructs in a study from evidence about their direct relationship. The studies generated 103 study-domain units, of which 21 (20.4%) contained a source-verified, pair-specific result. In 26 units, the focal pair had been analyzed but a pair-specific estimate or source location could not be recovered; in another 43, the constructs were co-measured without a reported direct analysis. These classifications describe the evidence available for synthesis. An unavailable or unreported result cannot be interpreted as a null association.

Social support appeared in 50 study-domain units, compared with 31 for positive/adaptive coping and 22 for emotion regulation. The numbers containing verified direct results followed a different pattern: seven, three,

and 11 units, respectively. This contrast identifies a reporting and verification gap. It does not establish that emotion regulation has a stronger relationship with resilience than social support or coping, because the domains were measured in different studies, contexts, and ways.

The corpus was concentrated in two adversity contexts: pandemic or lockdown conditions (41/97 studies; 42.3%) and academic or clinical demands (28/97; 28.9%). Findings from these settings provide a limited basis for interpreting resilience under less frequently represented conditions, including marginalization, violence, and other sustained difficulties. Although publication activity was concentrated after 2020, the descriptive distribution cannot determine whether the pandemic, changes in research priorities, or features of the search and eligibility criteria produced that pattern.

The studies represented 31 setting labels, but 36 of the 97 studies (37.1%) were conducted in China. The availability and meaning of family, peer, and institutional support may vary across educational and social contexts. Accordingly, the geographic spread of the corpus should not be taken to imply that any observed association generalizes uniformly across university populations. Simons et al. [74] provide a methodological basis for specifying the populations and situations to which empirical findings are expected to apply.

Verified findings concerning emotion regulation differed by strategy and resilience measure. Cognitive reappraisal was positively associated with resilience in several observational analyses. Expressive suppression showed less consistent results: it was nearly uncorrelated with resilience before adjustment and had a small negative adjusted path in one large study [39], whereas a post-flood Indonesian sample showed a small positive correlation [75]. These differences may reflect context, sampling, measurement, or model specification; the mapped studies do not isolate their respective contributions.

The distinction between resilience measures was consequential even within a single study. Reappraisal tendency was associated with recovery during controlled stressor sessions, but not with an outcome-residual measure of resilience [43]. A finding concerning one operational definition therefore cannot be transferred without qualification to another. Regulatory-flexibility theory offers a plausible account of why the usefulness of a response may depend on context, available strategies, and feedback [76]. That account remains an interpretation of the mapped findings rather than a mechanism demonstrated by this review.

The verified quantitative social-support findings generally reported positive associations or statistical

paths involving resilience [46], [49], [50]. Their substantive interpretation depends on the source and form of support measured. Perceived availability, assistance received, and support attributed to parents, peers, teachers, or institutions are related but distinct constructs. Nor does a positive support-resilience association establish a buffering effect: the stress-buffering hypothesis requires evidence that support modifies the relationship between stress and an outcome [23].

Direct coping evidence was more limited. A strong adaptive-coping-resilience correlation was reported in a sample of 85 Black male osteopathic medical students [54], but its magnitude should not be generalized across populations or coping measures. In a one-group stress-management course, optimistic coping changed, whereas the reported change in resilience was not statistically significant ( $p = 0.397$ ); without a comparison group, neither finding can be attributed to the course [55]. The available studies thus warrant analysis of specific coping responses and conditions of use, rather than a single claim about the effectiveness of “adaptive coping.”

Resilience was measured or described as perceived capacity, recovery tendency, academic adaptation, process, or an outcome-related construct. These operationalizations do not estimate an identical phenomenon. Differences also arise within focal domains: a high score for emotion-regulation difficulty has a different direction and meaning from a high score for reappraisal. Consequently, coefficients from unlike instruments and models cannot be ranked as though they represented comparable effects. Measurement research further cautions that the interpretation of scale totals depends on assumptions about the items and the underlying construct [77].

The predominance of cross-sectional or observational studies (85/97; 87.6%) further limits interpretation. Correlations and adjusted paths establish relationships within the reported data and models; they do not establish which variable preceded another. A resilience score positioned as a mediator in a cross-sectional model cannot, on that basis alone, demonstrate an adaptation process unfolding over time. Reverse direction, common causes, and inappropriate adjustment remain possible explanations. Causal interpretation of observational findings requires substantive assumptions about these relationships, while measures collected from the same respondents at one time point may also be susceptible to method-related bias [78], [79]. Neither concern proves that a particular estimate in the corpus is biased.

## 6. IMPLICATIONS AND LIMITATIONS

Future studies should specify the adversity, adaptation criterion, and assessment interval; use prospective designs where feasible; and report support sources,

regulation and coping subscales, scale direction, and pair-specific estimates with uncertainty intervals. These choices would clarify relationships that this review could only classify as analyzed, co-measured, or unavailable.

University support and skills programs require evaluation against defined outcomes, with follow-up and an appropriate comparator before effects on resilience can be inferred. Correlates measured at one time point may have limited predictive value, although this caution derives from trauma research rather than the university samples reviewed here [80].

The review's coverage and verification were limited. Twenty-six of 137 sought reports remained unretrieved. The search covered English-language journal articles in PubMed/MEDLINE, OpenAlex, and ERIC, but not Web of Science, Scopus, or PsycINFO. Historical request strings were unavailable for two APIs; independent duplicate screening or extraction was not documented for every legacy record; and formal critical appraisal was not undertaken. An unrecovered pair-specific estimate may therefore reflect incomplete reporting or verification. Within this documented corpus, verifiable direct findings were substantially fewer than studies measuring the focal constructs.

## 7. CONCLUSION

This scoping review mapped 97 studies examining psychological resilience alongside emotion regulation, social support, or positive/adaptive coping among university students facing identifiable adversity or sustained adaptation demands. The studies generated 103 study-domain units, but only 21 contained a source-verified, pair-specific result. Findings involving emotion regulation varied by strategy and resilience measure, while verified social-support results generally indicated positive associations and direct coping evidence remained limited. The presence of two constructs in a study therefore should not be treated as evidence of a reported relationship between them.

Interpretation is constrained by heterogeneous measures and adversity contexts, the predominance of cross-sectional designs, and incomplete retrieval and verification. The available evidence does not establish that any of the three domains causes greater resilience or that related interventions are effective. Future research should define adversity and adaptation explicitly, examine functioning over time, and report pair-specific estimates with sufficient measurement and model detail to support comparison and synthesis.

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## CONFLICTS OF INTEREST

The authors declare that no conflicts of interest are associated with this study. All aspects of the research were conducted with the utmost integrity and transparency.

## DATA AVAILABILITY

The datasets utilized and analyzed during this research are available from the corresponding author upon reasonable request.

## ETHICAL STATEMENTS

Not applicable. This study did not involve any human participants or animals, and no personal or sensitive data were collected, used, or analyzed at any stage of the research.

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## GENERATIVE AI DISCLOSURE

The authors used OpenAI ChatGPT (GPT-5.6 Sol) to improve language clarity and check data structure. All AI-assisted outputs were reviewed and verified by the authors, who take full responsibility for the final content.

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## SUPPLEMENTARY

**Table S1.** Search strategies and PRISMA-S audit

| Source/platform                     | Search expression or documented query logic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Yield                                             |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| PubMed/MEDLINE via NCBI E-utilities | resilient"[Title/Abstract] AND ("university student"[Title/Abstract] OR "university students"[Title/Abstract] OR "college student"[Title/Abstract] OR "college students"[Title/Abstract] OR undergraduate*[Title/Abstract] OR postgraduate"[Title/Abstract] OR "graduate student"[Title/Abstract] OR "graduate students"[Title/Abstract] OR "higher education student"[Title/Abstract] OR "higher education students"[Title/Abstract] OR "tertiary student"[Title/Abstract] OR "tertiary students"[Title/Abstract] OR "medical student"[Title/Abstract] OR "medical students"[Title/Abstract] OR "nursing student"[Title/Abstract] OR "nursing students"[Title/Abstract] OR "health professions student"[Title/Abstract] OR "health professions students"[Title/Abstract]) AND ("emotion regulation"[Title/Abstract] OR "emotional regulation"[Title/Abstract] OR emotion dysregulate*[Title/Abstract] OR "social support"[Title/Abstract] OR coping[Title/Abstract] OR "coping style"[Title/Abstract] OR "coping styles"[Title/Abstract]) AND english[Language] AND journal article[Publication Type] AND ("2010/01/01"[Date - Publication] : "2026/06/30"[Date - Publication]) | 981                                               |
| OpenAlex Works API                  | Documented logic (full URL-encoded request unavailable): from_publication_date:2010-01-01; to_publication_date:2026-06-30; type:article; language:en; primary_location.source.type:journal; title_and_abstract.search combines (resilience OR resiliency), university/college/tertiary/medical/nursing student terms, and emotion regulation/dysregulation OR social support OR coping terms.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2,278 distinct (2,280 rows; 2 pagination repeats) |
| ERIC API                            | Documented logic (exact API request unavailable): (resilience OR resiliency) AND university/college/undergraduate/postgraduate/graduate/higher-education/tertiary/medical/nursing/health-professions student terms AND emotion regulation/dysregulation OR social support OR coping terms; peerreviewed:T; publicationtype:Journal Articles; years 2010-2026.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 388                                               |

*Note.* Search expressions or preserved query logic and source yields (13 August 2026).

**Table S2.** Final 97-study included-study master

| ID   | Author(s) & Year              | Setting (n)                                | Design                      | Domain(s)                | Primary adversity          |
|------|-------------------------------|--------------------------------------------|-----------------------------|--------------------------|----------------------------|
| PS01 | Feng et al. (2026) [81]       | China (n = 2,560)                          | Cross-sectional             | Positive/adaptive coping | Bullying/violence/conflict |
| PS02 | Yu et al. (2026) [53]         | China (n = 2,609)                          | Longitudinal                | Social support           | Academic/clinical demand   |
| PS03 | Temiz et al. (2026) [82]      | Türkiye (n = 352)                          | Cross-sectional             | Positive/adaptive coping | Academic/clinical demand   |
| PS04 | Han et al. (2026) [52]        | China (n = 2,326)                          | Longitudinal                | Social support           | Academic/clinical demand   |
| PS05 | Tan et al. (2026) [42]        | China (n = 711)                            | Longitudinal                | Emotion regulation       | Academic/clinical demand   |
| PS06 | Ni et al. (2025) [83]         | China (n = 1,392)                          | Cross-sectional             | Emotion regulation       | Trauma/adverse life events |
| PS07 | Toper et al. (2025) [84]      | Türkiye (n = 769)                          | Cross-sectional/model-based | Social support           | Trauma/adverse life events |
| PS08 | Wang & Zhang (2025) [46]      | China (n = 532)                            | Cross-sectional/model-based | Social support           | Academic/clinical demand   |
| PS09 | Parlak et al. (2025) [47]     | United Kingdom (n = 343)                   | Cross-sectional             | Social support           | Marginalization/transition |
| PS10 | Salameh et al. (2025) [85]    | Palestine (n = 141)                        | Cross-sectional             | Positive/adaptive coping | Academic/clinical demand   |
| PS11 | Huai et al. (2025) [86]       | China (n = 1,948)                          | Cross-sectional             | Emotion regulation       | Academic/clinical demand   |
| PS12 | Zhu et al. (2025) [87]        | China (n = 407)                            | Cross-sectional             | Emotion regulation       | Trauma/adverse life events |
| PS13 | Saad & Ali (2025) [51]        | Pakistan (n = 300 survey; 12 interviewees) | Mixed-methods               | Social support           | Academic/clinical demand   |
| PS14 | Yuan et al. (2025) [88]       | China (n = 1,549)                          | Cross-sectional/model-based | Social support           | Marginalization/transition |
| PS15 | Zhou & Chen (2024) [89]       | China (n = 528)                            | Cross-sectional/model-based | Positive/adaptive coping | Marginalization/transition |
| PS16 | Li et al. (2024) [90]         | China (n = 595)                            | Cross-sectional             | Social support           | Pandemic/lockdown          |
| PS17 | Cassaretto et al. (2024) [91] | Peru (n = 3,147)                           | Cross-sectional             | Social support           | Pandemic/lockdown          |
| PS18 | Selak et al. (2024) [92]      | Slovenia (n = 4,645)                       | Cross-sectional             | Social support           | Pandemic/lockdown          |

| ID   | Author(s) & Year                  | Setting (n)                                  | Design                      | Domain(s)                                | Primary adversity                      |
|------|-----------------------------------|----------------------------------------------|-----------------------------|------------------------------------------|----------------------------------------|
| PS19 | Yang et al. (2024) [93]           | China (n = 500)                              | Cross-sectional/model-based | Positive/adaptive coping                 | Psychological/health crisis            |
| PS20 | Xie et al. (2024) [94]            | China (n = 510)                              | Cross-sectional             | Social support                           | Pandemic/lockdown                      |
| PS21 | van der Merwe et al. (2023) [95]  | South Africa (n = 60)                        | Cross-sectional             | Positive/adaptive coping                 | Pandemic/lockdown                      |
| PS22 | Hirai et al. (2023) [96]          | United States (n = 664)                      | Observational               | Social support                           | Pandemic/lockdown                      |
| PS23 | Zeng et al. (2023) [97]           | China (n = 12,397)                           | Cross-sectional/model-based | Social support                           | Pandemic/lockdown                      |
| PS24 | Zhang et al. (2023) [98]          | China (n = 966)                              | Cross-sectional             | Social support                           | Pandemic/lockdown                      |
| PS25 | Kim & Lee (2023) [99]             | South Korea (n = 231)                        | Observational               | Emotion regulation                       | Pandemic/lockdown                      |
| PS26 | Renati et al. (2023) [38]         | Italy (n = 339 at baseline; 64 at follow-up) | Longitudinal                | Emotion regulation                       | Pandemic/lockdown                      |
| PS27 | Xu & Yang (2023) [100]            | China (n = 910)                              | Cross-sectional/model-based | Positive/adaptive coping                 | Pandemic/lockdown                      |
| PS28 | He et al. (2022) [101]            | China (n = 2,251)                            | Cross-sectional/model-based | Social support                           | Pandemic/lockdown                      |
| PS29 | Huang et al. (2022) [102]         | China (n = 683)                              | Cross-sectional             | Positive/adaptive coping                 | Academic/clinical demand               |
| PS30 | Gong et al. (2022) [103]          | China (n = 975)                              | Observational               | Social support                           | Pandemic/lockdown                      |
| PS31 | Haider et al. (2022) [104]        | Pakistan (n = 351)                           | Cross-sectional             | Positive/adaptive coping                 | Pandemic/lockdown                      |
| PS32 | Esparza-Reig et al. (2022) [105]  | Spain (n = 570)                              | Observational               | Social support                           | Pandemic/lockdown                      |
| PS33 | Zhang et al. (2022) [106]         | China (n = 955)                              | Cross-sectional/model-based | Social support                           | Pandemic/lockdown                      |
| PS34 | Cao et al. (2022) [107]           | China (n = 740)                              | Cross-sectional             | Positive/adaptive coping                 | Trauma/adverse life events             |
| PS35 | Pineda et al. (2022) [108]        | Philippines (n = 550)                        | Cross-sectional/model-based | Social support                           | Pandemic/lockdown                      |
| PS36 | Liu & Cao (2022) [48]             | China (n = 807 analyzed [817 collected])     | Cross-sectional/model-based | Social support                           | Pandemic/lockdown                      |
| PS37 | Shu et al. (2022) [109]           | China (n = 2,734)                            | Observational               | Social support                           | Pandemic/lockdown                      |
| PS38 | Xue et al. (2022) [110]           | China (n = 313)                              | Cross-sectional/model-based | Social support                           | Pandemic/lockdown                      |
| PS39 | Ye et al. (2023) [39]             | China (n = 2,423)                            | Cross-sectional/model-based | Emotion regulation; Social support       | Pandemic/lockdown                      |
| PS40 | Hassan et al. (2022) [111]        | Iraq (n = 819)                               | Cross-sectional             | Positive/adaptive coping                 | Pandemic/lockdown                      |
| PS41 | Ramadiano et al. (2022) [112]     | Indonesia (n = 532)                          | Cross-sectional             | Positive/adaptive coping                 | Academic/clinical demand               |
| PS42 | Warshawski (2022) [113]           | Israel (n = 222)                             | Cross-sectional             | Social support                           | Pandemic/lockdown                      |
| PS43 | Öztürk & Kundakçı (2021) [114]    | Türkiye (n = 1,028)                          | Cross-sectional             | Social support                           | General demands/adversity not explicit |
| PS44 | Zhao et al. (2021) [115]          | China (n = 666)                              | Cross-sectional             | Positive/adaptive coping                 | Pandemic/lockdown                      |
| PS45 | Zhang et al. (2021) [116]         | China (n = 4,534)                            | Cross-sectional             | Social support                           | Pandemic/lockdown                      |
| PS46 | Fullerton et al. (2021) [117]     | Australia (n = 306)                          | Cross-sectional/model-based | Social support; Positive/adaptive coping | Academic/clinical demand               |
| PS47 | van der Merwe et al. (2020) [118] | South Africa (n = 270)                       | Cross-sectional             | Positive/adaptive coping                 | Academic/clinical demand               |
| PS48 | Wu et al. (2020) [119]            | China (n = 1,743)                            | Cross-sectional             | Positive/adaptive coping                 | Psychological/health crisis            |

| ID   | Author(s) & Year                          | Setting (n)                                             | Design                                             | Domain(s)                                   | Primary adversity                      |
|------|-------------------------------------------|---------------------------------------------------------|----------------------------------------------------|---------------------------------------------|----------------------------------------|
| PS49 | Ye et al. (2020) [120]                    | China (n = 7,800)                                       | Cross-sectional/model-based                        | Social support;<br>Positive/adaptive coping | Pandemic/lockdown                      |
| PS50 | Lin et al. (2020) [121]                   | China; Germany (n = 7,847 [5,912 China; 1,935 Germany]) | Observational                                      | Social support                              | Bullying/violence/conflict             |
| PS51 | Rahimi et al. (2014) [122]                | Canada (n = 155)                                        | Cross-sectional                                    | Positive/adaptive coping                    | Academic/clinical demand               |
| PS52 | Thomas & Zolkoski (2020) [123]            | United States (n = 277)                                 | Cross-sectional/model-based                        | Emotion regulation                          | Psychological/health crisis            |
| PS53 | Ozsaban et al. (2019) [124]               | Türkiye (n = 322)                                       | Observational                                      | Social support                              | Academic/clinical demand               |
| PS54 | Hamaideh et al. (2024) [125]              | Jordan (n = 150)                                        | Cross-sectional                                    | Social support                              | Academic/clinical demand               |
| PS55 | Valladolid (2021) [126]                   | Philippines (n = 243)                                   | Observational                                      | Positive/adaptive coping                    | Pandemic/lockdown                      |
| PS56 | Gonçalves et al. (2024) [127]             | Portugal (n = 385)                                      | Observational                                      | Emotion regulation                          | Psychological/health crisis            |
| PS57 | Pehlivan Saribudak (2024) [55]            | Türkiye (n = 67)                                        | Quasi-experimental                                 | Positive/adaptive coping                    | Academic/clinical demand               |
| PS58 | Song et al. (2023) [128]                  | China (n = 1,457)                                       | Observational                                      | Positive/adaptive coping                    | Academic/clinical demand               |
| PS59 | Bidadi Veerabhadraiah et al. (2023) [129] | India (n = 1,017)                                       | Cross-sectional/model-based                        | Social support;<br>Positive/adaptive coping | Pandemic/lockdown                      |
| PS60 | Dezhkam et al. (2023) [130]               | Iran (n = 314)                                          | Cross-sectional/model-based                        | Emotion regulation                          | General demands/adversity not explicit |
| PS61 | Saleem & Zia (2024) [131]                 | Pakistan (n = 600)                                      | Observational                                      | Social support                              | Academic/clinical demand               |
| PS62 | Razak et al. (2025) [43]                  | Australia (n = 113)                                     | Experimental-session / cross-sectional association | Emotion regulation                          | Standardized laboratory stressor       |
| PS63 | Condori Meléndez et al. (2022) [132]      | Peru (n = 128)                                          | Cross-sectional                                    | Positive/adaptive coping                    | Pandemic/lockdown                      |
| PS64 | De Lorenzo et al. (2024) [133]            | Italy; Spain (n = 287)                                  | Observational                                      | Social support                              | Pandemic/lockdown                      |
| PS65 | Jiang et al. (2023)[134]                  | China (n = 12)                                          | Qualitative                                        | Social support;<br>Positive/adaptive coping | Marginalization/transition             |
| PS66 | Ikpeama & Okoye (2024) [135]              | Nigeria (n = 16)                                        | Qualitative                                        | Social support                              | Academic/clinical demand               |
| PS67 | Jalali et al. (2020) [136]                | Iran (n = 150)                                          | Observational                                      | Emotion regulation                          | Psychological/health crisis            |
| PS68 | Akçay (2021) [137]                        | Türkiye (n = 367)                                       | Cross-sectional/model-based                        | Social support                              | Pandemic/lockdown                      |
| PS69 | Anderson et al. (2025) [54]               | United States (n = 85)                                  | Cross-sectional survey                             | Positive/adaptive coping                    | Academic/clinical demand               |
| PS70 | Byra & Boczkowska (2022) [138]            | Poland (n = 453)                                        | Observational                                      | Positive/adaptive coping                    | Pandemic/lockdown                      |
| PS71 | Ndone (2024) [139]                        | Kenya; United States (n = 394)                          | Cross-sectional/model-based                        | Social support                              | Pandemic/lockdown                      |
| PS72 | Pinki et al. (2022)[140]                  | India (n = 100)                                         | Cross-sectional/model-based                        | Social support                              | Pandemic/lockdown                      |
| PS73 | Ning et al. (2024) [141]                  | China (n = 586)                                         | Cross-sectional/model-based                        | Social support                              | Pandemic/lockdown                      |
| PS74 | Fu (2025) [142]                           | China (n = 30)                                          | Qualitative                                        | Positive/adaptive coping                    | Academic/clinical demand               |
| PS75 | Sturgess & Conner (2026) [143]            | United States (n = 3,181)                               | Observational                                      | Emotion regulation                          | Trauma/adverse life events             |

| ID    | Author(s) & Year                            | Setting (n)             | Design                      | Domain(s)                                | Primary adversity           |
|-------|---------------------------------------------|-------------------------|-----------------------------|------------------------------------------|-----------------------------|
| PS76  | Qi et al. (2021) [144]                      | Malaysia (n = 300)      | Cross-sectional             | Social support                           | Marginalization/transition  |
| PS77  | Hu et al. (2026) [145]                      | China (n = 275)         | Cross-sectional             | Social support                           | Academic/clinical demand    |
| PS78  | Aqsa (2026) [146]                           | Pakistan (n = 100)      | Observational               | Social support                           | Marginalization/transition  |
| U0384 | Güleç (2025) [147]                          | Türkiye (n = 651)       | Cross-sectional/model-based | Emotion regulation                       | Trauma/adverse life events  |
| U0552 | Berdida et al. (2023) [148]                 | Philippines (n = 776)   | Cross-sectional/model-based | Social support                           | Academic/clinical demand    |
| U0782 | Labrague et al. (2021) [149]                | Philippines (n = 303)   | Cross-sectional             | Social support; Positive/adaptive coping | Pandemic/lockdown           |
| U0892 | Boumans & Dorant (2018) [150]               | Netherlands (n = 297)   | Cross-sectional             | Positive/adaptive coping                 | Trauma/adverse life events  |
| U1010 | Brites et al. (2024) [37]                   | Portugal (n = 426)      | Cross-sectional/model-based | Emotion regulation                       | Pandemic/lockdown           |
| U1066 | El-Awaisi et al. (2024) [56]                | Qatar (n = 43)          | Qualitative                 | Positive/adaptive coping                 | Pandemic/lockdown           |
| U1110 | Tanacioğlu Aydın & Pekşen Süslü (2023) [41] | Türkiye (n = 404)       | Cross-sectional/model-based | Emotion regulation                       | Trauma/adverse life events  |
| U1116 | Ensz & Mohiyeddini (2023) [151]             | United States (n = 82)  | Cross-sectional/model-based | Emotion regulation                       | Academic/clinical demand    |
| U1127 | Rufino et al. (2022) [40]                   | United States (n = 321) | Cross-sectional/model-based | Emotion regulation                       | Pandemic/lockdown           |
| U1142 | Gianjacomo et al. (2025) [49]               | Brazil (n = 2,817)      | Cross-sectional/model-based | Social support                           | Academic/clinical demand    |
| U1232 | Samoy et al. (2025) [50]                    | Philippines (n = 641)   | Cross-sectional/model-based | Social support                           | Pandemic/lockdown           |
| U1278 | Ma et al. (2023) [73]                       | China (n = 400)         | Cross-sectional/model-based | Emotion regulation                       | Pandemic/lockdown           |
| U1309 | Lee (2025) [152]                            | United States (n = 790) | Cross-sectional/model-based | Social support                           | Trauma/adverse life events  |
| U1448 | Silaen (2025) [153]                         | Indonesia (n = 15)      | Qualitative                 | Emotion regulation                       | Academic/clinical demand    |
| U1453 | Guérin-Marion et al. (2023) [72]            | Canada (n = 922)        | Cross-sectional/model-based | Emotion regulation                       | Psychological/health crisis |
| U1462 | Chen et al. (2023) [154]                    | China (n = 788)         | Cross-sectional/model-based | Social support                           | Academic/clinical demand    |
| U1601 | Lacharwar et al. (2021) [155]               | India (n = 300)         | Observational               | Social support                           | Academic/clinical demand    |
| U1617 | Firmawati et al. (2026) [75]                | Indonesia (n = 117)     | Cross-sectional             | Emotion regulation                       | Trauma/adverse life events  |
| U1618 | Ali (2022) [156]                            | Pakistan (n = 387)      | Cross-sectional             | Positive/adaptive coping                 | Bullying/violence/conflict  |

**Table S3.** Extraction for the 19 newly retained reports

| Record | Population / setting / sample / design                                             | Adversity                              | Measures       | Analytical role                                       | Model                         | Source location                                                       |
|--------|------------------------------------------------------------------------------------|----------------------------------------|----------------|-------------------------------------------------------|-------------------------------|-----------------------------------------------------------------------|
| U0384  | Türkiye; university earthquake survivors; n=651; cross-sectional online survey/SEM | Earthquake survival                    | BRS; BEDS      | Emotion dysregulation and resilience in SEM/mediation | SEM + mediation               | Full text<br>Methods/Results;<br>DOI:<br>10.1016/j.actpsy.2025.104755 |
| U0552  | Philippines; nursing students from 5 schools; n=776; cross-sectional correlational | Late COVID-19 period; perceived stress | CD-RISC; MSPSS | Social support/resilience paths and mediation in SEM  | SEM, mediation, path analysis | Full text/abstract;<br>DOI:<br>10.1111/inm.13179                      |

| Record | Population / setting / sample / design                                                          | Adversity                                            | Measures                                                                                | Analytical role                                                                          | Model                                                    | Source location                                                      |
|--------|-------------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------|
| U0782  | Central Philippines; college students; n=303; cross-sectional online survey                     | COVID-19 mandatory lockdown                          | Personal resilience scale; standardized social support and coping scales (source study) | Resilience, coping and social support as predictors of loneliness                        | Cross-sectional regression/correlation                   | Full text/Results; DOI: 10.1111/ppc.12721                            |
| U0892  | Netherlands; healthcare students; n=297 (56 carers, 241 noncarers); cross-sectional comparative | Young-adult informal caregiving                      | Resilience measure; coping measure (problem/emotion focused)                            | Group comparison of resilience and coping                                                | ANCOVA/group comparison                                  | Full text Results; DOI: 10.1111/scs.12586                            |
| U1010  | Portugal; university students from 2 universities; n=426; cross-sectional                       | COVID-19 pandemic/restrictions                       | Multidimensional resilience measure; emotion-regulation strategies                      | Resilience dimensions as mediators between emotion regulation and mental-health outcomes | Mediation models                                         | Full text Methods/Results; DOI: 10.1002/pits.23055                   |
| U1066  | Qatar; health-profession students; n=43 in 8 focus groups; qualitative                          | COVID-19 academic/personal/social stress and burnout | Qualitative resilience/coping processes using Coping Reservoir Model                    | Qualitative coping/resilience process                                                    | Framework Analysis                                       | Full text Findings; DOI: 10.1080/10401334.2023.2209073               |
| U1110  | Türkiye; university students; n=404; cross-sectional mediation                                  | Childhood trauma/adverse childhood experiences       | CD-RISC; DERS Brief Form                                                                | Emotion-regulation difficulty as mediator of trauma-resilience relationship              | Mediation analysis                                       | Full text Results; DOI: 10.17066/tpdrd.1265528.4                     |
| U1116  | USA; medical students; final n=82; cross-sectional                                              | Sustained medical-training stress/burnout            | BRS; DERS                                                                               | DERS as mediator between resilience and burnout                                          | Pearson correlations + hierarchical mediation regression | Full text Table 1/Table 2 and Results; DOI: 10.21926/obm.icm.2303038 |
| U1127  | USA; college students; n=321; cross-sectional with retrospective pre-pandemic anchor            | COVID-19 pandemic                                    | Resilience scale; emotion-dysregulation measure                                         | Moderation/correlation                                                                   | Correlations + moderation analyses                       | Full text/Results; DOI: 10.1177/14779714221099609                    |
| U1142  | Brazil; public-university undergraduates; N=2,817; cross-sectional                              | Academic exhaustion/burnout                          | CD-RISC-10; MOS-SSS                                                                     | Resilience mediator of social support-burnout relationship                               | EFA/CFA + mediation in Mplus; 95% CI                     | Full text Tables/model; DOI 10.1590/0102-469852443-t                 |
| U1232  | Philippines; public-university college students; n=641; cross-sectional online survey           | Forced online classes during COVID-19                | Academic resilience; social support (study scales)                                      | Social support predictor of academic resilience                                          | Hierarchical regression                                  | Full text Results; DOI 10.13189/ujer.2025.130201                     |
| U1278  | China; college students; n=400; cross-sectional                                                 | COVID-19 pandemic-related negative emotions          | BRS; ERQ                                                                                | Resilience mediator; ER strategies moderators/predictors                                 | PROCESS moderated mediation                              | Full text Table 3/Results; DOI: 10.1177/21676968231186022            |
| U1309  | USA; college students from 4 universities; n=790; cross-sectional                               | Polyvictimization                                    | CD-RISC-10; MSPSS                                                                       | Resilience mediator; social support moderator                                            | PROCESS models 4 and 5; 5,000 bootstrap samples          | Full text Methods/Results; DOI: 10.36922/ghes.3737                   |
| U1448  | Indonesia; undergraduates with ≥1 academic year digital                                         | Digital-learning strain                              | Academic resilience as qualitative process; emotion-regulation strategies               | Qualitative ER-resilience process                                                        | Semi-structured interviews + thematic analysis           | Full text Methods/Results; DOI: 10.37899/journallaledusci.v6i3.2437  |

| Record | Population / setting / sample / design                                                                              | Adversity                                      | Measures                                                                              | Analytical role                                                                          | Model                                             | Source location                                                     |
|--------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------------------------|
| U1453  | learning; n=15; qualitative<br>Canada; university students with lifetime NSSI; n=922; cross-sectional path analysis | Lifetime NSSI / recent NSSI risk               | Self-perceived resilience; DERS limited-access-to-strategies subscale                 | Resilience mediator between ER difficulty and recent NSSI                                | Path analysis controlling anxiety/depression      | Full text Results/Figure 1; DOI: 10.1080/23311908.2023.2276862      |
| U1462  | China; nursing interns; n=788; cross-sectional                                                                      | Post-COVID clinical training/negative emotions | Psychological Resilience Scale; Social Support Scale                                  | Resilience mediator of social support-negative emotion relationship                      | SEM mediation                                     | Full text/abstract Results; DOI: 10.1002/pits.22874                 |
| U1601  | India; nursing students; n=300; descriptive/correlational                                                           | Academic stress                                | Psychological resilience/mental strength; academic-stress and social-support measures | Descriptive/correlation objectives                                                       | Descriptive statistics/correlation                | Full article pp.379-383; DOI: 10.9734/jpri/2021/v33i60B34631        |
| U1617  | Indonesia (Aceh); post-flood university students; n=117; correlational-predictive                                   | Confirmed flood exposure, ~1-month post-flood  | CD-RISC; ERQ                                                                          | Emotion regulation and resilience as predictors; direct ER-resilience correlation        | Pearson correlations + simple/multiple regression | Full text Tables 3-5; DOI: 10.12928/jehcp.vi.31997                  |
| U1618  | Pakistan; University of Karachi students; n=387; cross-sectional                                                    | Concerns about terrorism/conflict              | Brief Resilience Scale; COPE inventory                                                | Resilience and coping measured under terrorism concerns; focal pair not clearly reported | Correlations, regression, MANOVA                  | Full text Results/Tables; DOI: 10.29052/2412-3188.v9.i2.2022.95-105 |

Note. Completed source extraction incorporated into the final N = 97 corpus on 14 September 2026. NR values were not inferred.