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What protects young people from suicide? An umbrella review and proposed conceptual model for youth suicide prevention

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Systematic Review

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Abstract

Background

Research on youth suicide has traditionally focused on risk factors, with growing attention to protective factors. However, existing reviews largely describe *what* protects rather than *how* protection occurs. This umbrella review synthesised evidence on protective factors to develop a mechanism-based framework describing how protection may operate across suicide-related outcomes in young people.

Methods

Five databases were searched from inception to October 2025 for reviews examining protective factors for suicide outcomes among young people aged 10–24 years. Methodological quality was assessed using the Joanna Briggs Institute Critical Appraisal Checklist. Protective factors were inductively synthesised into higher-order mechanisms and contexts.

Results

Forty-nine reviews, representing 522 unique primary studies, were included; 35 (71.4%) were rated high quality. Fifty-six protective factors were inductively synthesised into six higher-order conceptual mechanisms operating across multiple ecological contexts: connection and belonging; cognitive appraisal and meaning-making; emotion regulation; adaptive capacity, agency & help-seeking; behavioural engagement and routine; and enabling environments and systems. Connection and belonging was the most frequently represented mechanism and was consistently supported across multiple ecological contexts.

Conclusions

This review proposes a mechanism-based conceptual model of youth suicide protection, suggesting prevention strategies should strengthen interacting protective mechanisms across ecological contexts rather than targeting isolated factors.

Introduction

Suicide among children and young people is a major global public health concern. In 2021 alone, an estimated 112,900 adolescents and young adults aged 10–24 years died by suicide worldwide, resulting in approximately 7.9 million years of life lost (Yan et al. 2024). Suicide-related behaviours, including suicidal ideation, suicide attempts and self-harm, are considerably more common than suicide deaths and frequently emerge during adolescence (Evans et al. 2005; Lim et al. 2019), a developmental period characterised by rapid biological, psychological and social change (Patton et al. 2016). Beyond the devastating loss of life, suicide has profound and enduring impacts on families, peers and communities (Andriessen 2009; Cerel et al. 2019; Pitman et al. 2014), highlighting the urgent need to better understand how suicide can be prevented among young people. Although substantial research has identified factors associated with suicide risk and protection, considerably less attention has been directed towards understanding the mechanisms through which protection is generated.

Historically, suicide research has been dominated by efforts to identify risk factors associated with suicidal behaviour. Suicide prevention has been largely framed around identifying vulnerability, predicting who might be at greatest risk and intervening to reduce known harms. Decades of research have identified numerous biological, psychological, interpersonal and environmental risk factors associated with suicidal behaviour, including mental illness, previous self-harm, substance use, trauma, bullying and social adversity (Mcevoy et al. 2023; Richardson et al. 2024a). Although this body of evidence has substantially advanced understanding of suicide vulnerability, its contribution to prevention has been more limited. Whilst numerous risk factors have been identified, most are highly prevalent among young people who never experience suicidal behaviour and so risk factors are understood to hold limited predictive utility (Franklin et al. 2017; Nock et al. 2013). Consequently, there has been increasing recognition of the need to complement traditional risk-focused approaches with greater attention to protective factors that may reduce the likelihood of suicidal thoughts and behaviours.

Reflecting this shift, an expanding body of research has examined factors associated with protection against suicide. Rather than focusing solely on vulnerability, this literature seeks to identify the individual, relational and environmental characteristics associated with reduced risk of suicidal ideation, suicide attempts and self-harm. Recent systematic reviews and umbrella reviews have identified a broad range of protective factors operating across multiple ecological levels, including supportive family relationships, school connectedness, positive peer relationships, coping skills, resilience, self-esteem, cultural identity, community connectedness and meaning in life (Prades-Caballero et al. 2025; Richardson et al. 2024b). Collectively, these findings demonstrate that protection against suicide is multifaceted and extends well

beyond the absence of risk, arising through interactions between young people and the families, schools, communities and broader environments in which they develop.

Despite these advances, the protective factor literature remains largely descriptive. Existing reviews have typically focused on specific protective factors or sets of factors and sought to identify which are associated with reduced suicide-related outcomes, with protective factors generally presented as discrete constructs (Gallagher and Miller 2018; Mcevoy et al. 2023; Prades-Caballero et al. 2025; Richardson et al. 2024b). Consequently, the existing evidence is fragmented across reviews examining constructs such as resilience, coping, family support, school connectedness and meaning in life. Yet these factors are unlikely to operate independently; rather, they may represent different manifestations of broader underlying processes through which protection operates (Masten 2001). Bringing this fragmented evidence together therefore provides an opportunity to move beyond identifying *what* protects towards considering how apparently distinct protective factors may interrelate and reflect broader mechanisms of protection. Such a synthesis may provide a more conceptually integrated understanding of youth suicide protection and inform the development of interventions that target underlying protective processes rather than isolated factors.

This limitation reflects a broader evolution occurring across healthcare research. Increasingly, researchers have argued that identifying associations alone is insufficient for understanding complex health problems and that greater attention should instead be directed towards mechanisms - the active processes through which interventions and protective influences produce change (Skivington et al. 2021). Contemporary guidance for developing and evaluating complex interventions emphasises understanding mechanisms of action alongside effectiveness, while realist approaches similarly argue that outcomes arise through mechanisms operating within particular contexts rather than through universal intervention effects (Moore et al. 2015; Skivington et al. 2021; Tilley and Pawson 2000). A mechanism-based perspective therefore offers a more explanatory understanding of complex phenomena and provides a stronger foundation for intervention development, implementation and evaluation than cataloguing individual factors alone.

Current study

To date, several umbrella reviews have synthesised risk and protective factors for suicide and self-harm among young people (Mcevoy et al. 2023; Prades-Caballero et al. 2025; Richardson et al. 2024b, 2024a). However, to our knowledge, no umbrella review has sought to integrate this evidence into a mechanism-based conceptual model describing how protection against suicide operates in young people. Understanding these mechanisms has the potential to move the field beyond descriptive lists of protective factors towards a more explanatory framework capable of informing theory, intervention design and implementation.

Therefore, the aim of this umbrella review was to synthesise review-level evidence on protective factors associated with reduced suicidal ideation, suicide attempts and self-harm among young people in order to identify the underlying mechanisms through which protection operates. Specifically, the review sought to: (1) identify protective factors associated with reduced suicide-related outcomes; (2) synthesise these factors into higher-order protective mechanisms and identify the contexts in which they operate; and (3) develop a conceptual model describing how protective mechanisms interact to protect against suicide-related outcomes in young people.

Method

This study follows the Joanna Briggs Institute Manual for Evidence Synthesis guidance on umbrella reviews (Aromataris E 2020).

Search strategy

A comprehensive search strategy was developed to identify reviews examining protective factors against suicide in young people. The search strategy was developed with assistance from a university librarian. The full search strategies for each database are provided in supplementary material file 1. The search strategy was designed around three core concepts: (1) suicide and self-harm (e.g. suicide*), (2) young people (e.g. adolescen*), and (3) protective or preventive factors (e.g. protective*).

The search strategy was adapted for each database. Searches were conducted from database inception to October 2025 across five electronic databases: MEDLINE, PsycINFO, CINAHL, Web of Science and ProQuest Dissertations and Theses.

Eligibility criteria

This umbrella review considered reviews examining protective factors against suicide and self-harm among young people. The eligibility criteria were developed according to the Population, Concept and Context (PCC) framework.

The population of interest was young people aged approximately 10–24 years, as defined by the review authors. Reviews focusing exclusively on adult populations aged over 25 years or populations outside the youth age range were excluded.

The concept of interest was protective or resilience-related factors associated with reduced risk of suicidal ideation, suicide attempts, suicide, or self-harm. Self-harm was included because the distinction between non-suicidal and suicidal self-harm is not always clear-cut, with suicidal intent varying along a continuum and potentially fluctuating over time (Kapur et al. 2013). Protective factors could include psychological, social, cultural, environmental, behavioural or biological mechanisms associated with protection against suicidality or self-harm. Reviews focusing exclusively on risk factors, correlates of suicidal behaviour, or treatment effectiveness were excluded unless protective factors were also reported.

Reviews conducted in any setting or context were eligible for inclusion, including community, clinical, educational and online settings. No restrictions were placed on country or geographic region.

Eligible evidence sources included systematic reviews, with or without meta-analysis, as well as scoping, realist and integrative reviews where systematic and transparent review methods were reported. Narrative or literature reviews lacking systematic search methods or explicit inclusion criteria were excluded, as were primary studies.

Eligible sources included peer-reviewed journal articles published in English language. Consistent with JBI guidance for umbrella reviews, eligibility was restricted to completed research syntheses employing systematic and transparent review methods; other grey literature sources were therefore excluded (Aromataris E 2020). Conference abstracts, editorials, commentaries and protocols were excluded. No date restrictions were applied to ensure comprehensive capture of the available review literature.

Study screening and selection

All identified records were imported into Covidence for management and screening. Duplicate records were removed automatically prior to screening. Following duplicate removal, titles and abstracts were independently screened in duplicate against the predefined inclusion and exclusion criteria.

Potentially eligible records progressed to full-text review. Full-text articles were independently assessed in duplicate against the eligibility criteria to determine final inclusion in the umbrella review.

Disagreements at both title/abstract and full-text screening stages were resolved through discussion and, where required, adjudication by a third reviewer. Reasons for exclusion at the full-text stage were recorded. Reference lists of included reviews were also screened to identify additional potentially relevant studies.

Assessment of methodological quality / critical appraisal

Methodological quality was assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklist for Systematic Reviews and Research Syntheses. The checklist assesses methodological quality across multiple domains, including the appropriateness of the review question, search strategy, study selection, critical appraisal procedures, methods of synthesis and consideration of publication bias. The JBI checklist was selected in accordance with recommended guidance for umbrella reviews and to accommodate the range of review methodologies included in the synthesis.

Critical appraisal was conducted by a single reviewer in Covidence, with a second author reviewing 20% of records. All included reviews underwent methodological appraisal and no reviews were excluded on the basis of methodological quality. Appraisal findings were used to describe the overall quality and characteristics of the evidence base and to inform interpretation of the review findings.

Data extraction

Data were extracted using a standardised data extraction tool developed specifically for this umbrella review and implemented within Covidence. The extraction form was designed to capture review-level characteristics, methodological information, participant and contextual characteristics, suicide-related outcomes (including suicide ideation, suicide attempts, self-harm, suicide plans, death by suicide), and findings relating to protective factors against suicide and self-harm among young people. Protective factors were included whether they were examined as general correlates of lower suicide-related outcomes, in the context of a specified adversity or risk exposure, or among young people already experiencing suicide-related outcomes. Where reported, the presence of specific adversity or risk contexts was extracted to distinguish general protective associations from evidence of protection operating under conditions of heightened vulnerability. Data extraction was conducted by a single reviewer within Covidence. Extracted data were reviewed for completeness and accuracy prior to finalisation by a different author.

Data summary

Given the methodological and conceptual heterogeneity across included reviews, a meta-analysis was not undertaken (Aromataris 2020). Extracted data were synthesised using a narrative descriptive approach (Campbell et al. 2020; Popay et al. 2006). Findings from quantitative, qualitative and mixed-methods reviews were synthesised together to provide an overarching summary of the evidence relating to protective factors against suicide and self-harm among young people. Review characteristics and extracted data were summarised in tables and accompanying narrative summaries.

Protective factors extracted from the included reviews were coded inductively using thematic synthesis. Initially, factors were recoded to improve consistency in terminology across reviews and to separate conceptually distinct factors where appropriate. The resulting protective factors were then grouped into higher-order mechanisms (how protection operates) and contexts (where protection occurs). Coding was undertaken iteratively through discussion among the review team until consensus was reached.

Overlap between included reviews was assessed using a citation matrix to identify shared primary studies across reviews. Consistency of findings was interpreted descriptively based on the direction and convergence of evidence across included reviews and studies.

Results

Study inclusion

A total of 4,813 studies were identified, with 2,322 removed as duplicates. Of the remaining 2,491 titles and abstracts that were screened, 2,344 were deemed irrelevant. One hundred and forty-seven full texts were assessed for eligibility and of these 98 were excluded. The final total number of included studies in this review is therefore 49. See PRISMA flowchart below (Fig. 1).

Methodological quality

The results of the critical appraisal are summarised in supplementary file 2. Overall, the methodological quality of the 49 included reviews was generally high. Thirty-five reviews (71.4%) were rated as high quality, 11 (22.4%) as medium quality, and three (6.1%) as low quality. Consequently, the evidence synthesised in this umbrella review was derived predominantly from reviews with a low risk of methodological bias.

Several appraisal criteria were met consistently across almost all reviews. All reviews clearly stated their review question (Q1) and provided appropriate recommendations for future research (Q11). Nearly all reviews used appropriate inclusion criteria (48/49), appropriate search strategies (47/49), adequate search sources (46/49), appropriate methods for combining studies (46/49), and recommendations for policy and practice that were supported by the reported findings (47/49).

The most common methodological limitations related to the assessment of publication bias and procedures to minimise reviewer bias. Only five reviews assessed the likelihood of publication bias (Q9), while 44 did not report such an assessment. Similarly, only 26 reviews clearly reported that critical appraisal was conducted independently by two or more reviewers (Q6), with 15 not meeting this criterion and eight providing insufficient information to determine whether this had occurred. Fewer than two-thirds of reviews reported methods to minimise errors in data extraction (29/49), with 16 reviews providing insufficient detail and four not meeting this criterion. In addition, 13 reviews did not report using appropriate criteria to appraise the methodological quality of included studies (Q5).

Although a small number of reviews were rated as medium or low quality, these ratings were generally attributable to deficiencies in reporting reviewer independence, methods to minimise data extraction errors, or assessment of publication bias, rather than fundamental flaws in review design. Importantly, the methodological quality of the original primary studies included within each systematic review varied and is reported separately in the Table of Included Study Characteristics (Table 1). This should be considered when interpreting the strength and certainty of the evidence presented in this umbrella review.

Characteristics of included studies

Characteristics of included studies are detailed in Table 1. The 49 included reviews were published between 2002 and 2026, with over two thirds (k = 34; 69%) published since 2020, highlighting the rapid growth in research on protective factors. The most common review type was systematic review (k = 31); other review types included meta-analyses (k = 7), scoping reviews (k = 4), narrative reviews (k = 3), qualitative syntheses (k = 3) and integrative reviews (k = 1).

The number of distinct protective factors identified within each review ranged from 1 to 7. Nine of the included reviews focused broadly on risk and protective factors, or protective factors alone, in relation so suicide-related outcomes (Astuti et al. 2024; Ati et al. 2021; Etherson et al. 2025; Evans et al. 2004; Gogoescu et al. 2025; Grimmond et al. 2019; Sánchez-Teruel and Robles-Bello 2014; Valencia-Agudo et al. 2018; Webb 2002). Fifteen focused on a single protective factor in relation to suicide outcomes, such as sports / physical activity (Huo et al. 2024; Patel et

al. 2025; Vancampfort et al. 2018; Zuckerman et al. 2021), socioemotional skills (Avanci et al. 2024; Domínguez-García and Fernández-Berrocal 2018), meaning in life (Li et al. 2024; Shahram et al. 2021) connection to school (Borah et al. 2025; Marraccini and Brier 2017; Welty et al. 2024) and to peers (Hall and Melia 2023; Prochnow et al. 2025), religion (Gearing and Alonzo 2018; West et al. 2025) and parenting styles & self-esteem (Shen et al. 2026). Seven focused on protective factors in the context of risk or adversity such as identifying as LGBTQIA+ (Ancheta et al. 2021; Ancin-Nicolas et al. 2024; Rogers and Taliaferro 2020; Wallace et al. 2024; Wang et al. 2023) bullying (Cuesta et al. 2021; Dorol and Mishara 2021; Khaki et al. 2022; Predescu et al. 2024), social media use (Biernesser et al. 2020), homelessness (Flach and Razza 2022) and sleep duration (Chiu et al. 2018). Eight studies focused on young people from specific ethnic, cultural or geographic populations such as Indigenous young people (Henson et al. 2017; Hodgson and DeCoteau 2022; Khan and Ungar 2023), African American (Droege et al. 2017; Rojas-Velasquez et al. 2021), young people living in an LMIC (Aggarwal et al. 2017; Khan and Ungar 2023), Latin American / Hispanic (Bello et al. 2024; Rojas-Velasquez et al. 2021) and Indo-Caribbean (Ruiz Camacho and Sukhram 2024). Four focused specifically on clinical populations including young people with autism (O'halloran et al. 2022; Segers and Rawana 2014), depression (Ling et al. 2025), and a history of self-harm (Abdelraheem et al. 2019).

Search dates in included reviews ranged from database inception to February 2025. Around two-thirds (k = 32) of included reviews conducted quality appraisal of primary studies. Of these, the included primary studies were ranked as high quality (k = 8), medium quality (k = 17) and low quality (k = 1). Five studies conducted quality appraisal but did not report on the results of this.

The most common outcomes included in reviews were suicide ideation (k = 35), suicide attempts (k = 34) and self-harm (k = 21), though a smaller number of reviews explored the outcomes of suicide plans (k = 6) and death by suicide (k = 5). A very small number of reviews explored the impact of protective factors on hopelessness, 'suicidality', suicide risk (k = 2), self-harm ideation and suicidal tendency (k = 1).

The population age ranges (k = 46) within included reviews spanned from birth to 36 years, though the majority (63%; k = 29) fell between 10 and 25 years. Around half of included reviews (k = 23) were not population-specific, instead including studies of young people broadly without restricting eligibility to a particular subgroup. The remaining twenty-six reviews focused on specific populations.

Table 1
Characteristics of included studies

Abdelraheem 2019 (Abdelraheem et al. 2019)	**Review type**	**Search dates**	**Population**	**Age range**	**Suicide outcomes**	**Quality appraisal of primary studies**	**Number of distinct protective factors identified**	**Specific area of focus**
	Systematic review	**Inception – July 2018**	**Young people with experience of self-harm**	**0–20**	**Attempt; Self-harm**	**Medium**	**5**	**Self-harm history**
Aggarwal 2017 (Aggarwal et al. 2017)	Systematic review	Inception – August 2015	Young people living in LMIC's	13–21	Self-harm	Not reported	5	LMIC
Ancheta 2021 (Ancheta et al. 2021)	Systematic review	Inception – June 2020	LGBTQIA+ young people	11–19	Ideation; Attempt	Medium	1	LGBTQIA+
Ancin-Nicolas 2024 (Ancin-Nicolas et al. 2024)	Systematic review	2019–2024	LGBTQIA+ young people	8–32	Ideation; Attempt; Self-harm	Not reported	4	LGBTQIA+
Astuti 2024 (Astuti et al. 2024)	Systematic review	2018–2023	Young people	11–18	Ideation; Attempt; Self-harm; Self-harm ideation	Not reported	3	Risk and protective factors
Ati 2021 (Ati et al. 2021)	Systematic review	Inception – Sept 2019	Young people	10–24	Ideation; Attempt	Not reported	7	Risk and protective factors
Avanci 2024 (Avanci et al. 2024)	Scoping review	Inception – July 2022	Young people	5–29	Ideation; Attempt; Death; Self-harm	Not conducted	1	Socioemotional skills
Bello 2024 (Bello et al. 2024)	Systematic review	2012–2024	Latin American young people	10–36	Ideation; Attempt	Medium	4	Latin American
Biernesser 2020 (Biernesser et al. 2020)	Narrative review	2014–2018	Young people	10–25	Self-harm	High	2	Social media use
Borah 2025 (Borah et al. 2025)	Narrative review	Not reported	Young people	Minimum age 10	Ideation; Attempt; Self-harm	Not conducted	1	Teachers support
Chiu 2018 (Chiu et al. 2018)	Meta-analysis	Inception – April 2017	Young people	14–16	Ideation; Attempt; Plan	Medium	1	Sleep duration
Cuesta 2021 (Cuesta et al. 2021)	Integrative review	2010–2020	Young people with experience of bullying	Not reported	Ideation; Attempt; Self-harm	Not conducted	5	Bullying
Dominguez-Garcia 2018 (Domínguez-García and Fernández-Berrocal 2018)	Systematic review	Inception – April 2017	Young people	7–18+	Ideation; Attempt	Not conducted	1	Emotional intelligence
Dorol-Beauroy-Eustache 2021 (Dorol and Mishara 2021)	Systematic review	Not reported	Young people with experience of bullying	9–18	Ideation; Attempt; Death; Self-harm; Plan	Not conducted	5	Cyberbullying

Abdelraheem 2019 (Abdelraheem et al. 2019)	Review type	Search dates	Population	Age range	Suicide outcomes	Quality appraisal of primary studies	Number of distinct protective factors identified	Specific area of focus
	Systematic review	**Inception – July 2018**	**Young people with experience of self-harm**	**0–20**	**Attempt; Self-harm**	**Medium**	**5**	**Self-harm history**
Droege 2017 (Droege et al. 2017)	Systematic review	Inception – Jan 2015	African American young people	10–24	Ideation; Attempt	Not conducted	5	African American
Etherson 2025 (Etherson et al. 2025)	Systematic review	Inception – April 2024	Young people	13–25	Ideation; Attempt	Medium	4	Risk and protective factors
Evans 2004 (Evans et al. 2004)	Systematic review	1963–2000	Young people	12–20	Ideation; Attempt; Self-harm	Not conducted	3	Risk and protective factors
Flach 2022 (Flach and Razza 2022)	Systematic review	1999–2019	Young people with experience of homelessness	Not reported	Ideation; Attempt	Not conducted	5	Homelessness
Gearing 2018 (Gearing and Alonzo 2018)	Systematic review	2008–2017	Young people	Not reported	Ideation; Attempt	Not conducted	1	Religion
Gogoescu 2025 (Gogoescu et al. 2025)	Qualitative review	Inception – May 2024	Young people with experience of suicide	13–25	Ideation; Attempt	Medium	4	Protective factors
Grimmond 2019 (Grimmond et al. 2019)	Qualitative review	Inception – Oct 2018	Young people with experience of suicide	11–28	Ideation; Attempt	High	5	Experiences and perceptions
Hall 2023 (Hall and Melia 2023)	Qualitative review	Inception – June 2018	Young people	11–19	Self-harm	Medium	1	Friendship
Henson 2017 (Henson et al. 2017)	Narrative review	1970–2015	American Indian and Alaska Native young people	10–21	Ideation; Attempt; Hopelessness	Not conducted	7	American Indian and Alaska Native
Hodgson 2022 (Hodgson and DeCoteau 2022)	Systematic review	Inception – October 2021	American Indian and Alaska Native young people	3–19	Ideation	Medium	4	Indigenous
Huo 2024 (Huo et al. 2024)	Systematic review	Inception – Nov 2022	Young people	11–21	Ideation; Attempt; Plan	High	1	Sports
Khaki 2022 (Khaki et al. 2022)	Systematic review	Not reported	Young people with experience of bullying	10–21	Attempt; Self-harm	Medium	6	Bullying
Khan 2023 (Khan and Ungar 2023)	Scoping review	2000–2020	'Marginalised adolescents' (LMICs, ethnic minorities, indigenous)	10–26	Self-harm	Not conducted	4	Resilience to self-harm in marginalized young people
Li 2024 (Li et al. 2024)	Meta-analysis	Inception – Oct 2022	Young people	13–21	Ideation	High	1	Meaning in life
Ling 2025 (Ling et al.	Systematic review	Inception – Nov	Young people with	Not reported	Self-harm	High	1	Depression

Abdelraheem 2019 (Abdelraheem et al. 2019)	Review type	Search dates	Population	Age range	Suicide outcomes	Quality appraisal of primary studies	Number of distinct protective factors identified	Specific area of focus
	Systematic review	**Inception – July 2018**	**Young people with experience of self-harm**	**0–20**	**Attempt; Self-harm**	**Medium**	**5**	**Self-harm history**
2025)		2024	depression					
Marraccini 2017 (Marraccini and Brier 2017)	Meta-analysis	Inception – July 2016	1) Young people, 2) 'risky' young people (students involved in child welfare, reporting feeling isolated or involvement in bullying, residing in high-risk neighborhoods, and reporting being sexually active) 3) LGBTQIA+ youth	11–18	Ideation; Attempt	Not conducted	1	School connectedness
O'Halloran 2022 (O'halloran et al. 2022)	Meta-analysis	Inception – Nov 2021	Autistic young people	6–21	Ideation; Attempt; Self-harm	Medium	1	Autism
Patel 2025 (Patel et al. 2025)	Systematic review	Inception – Dec 2022	Young people	11–18	Attempt	Medium	1	Physical activity
Predescu 2024 (Predescu et al. 2024)	Systematic review	Not reported	Young people with experience of bullying	10–19	Self-harm	High	3	Cyberbullying
Prochnow 2025 (Prochnow et al. 2025)	Systematic review	Inception – Jan 2024	Young people	11–18	Ideation	Medium	1	Online social connection
Rogers 2020 (Rogers and Taliaferro 2020)	Systematic review	Inception – April 2020	LGBTQIA+ young people	Not reported	Ideation; Attempt; Self-harm; Risk; Plan	Not conducted	5	LGBTQIA+
Rojas-Velasquez 2021 (Rojas-Velasquez et al. 2021)	Systematic review	Inception – Feb 2019	African American and Hispanic young people	13–25	Self-harm	Medium	4	African American & Hispanic
Ruiz Camacho 2024 (Ruiz Camacho and Sukhram 2024)	Systematic review	Inception – Feb 2024	Indo-Caribbean young people	8–20	Ideation; Attempt; Death	Medium	2	Indo-Caribbean
Sanchez-Teruel 2014 (Sánchez-Teruel and Robles-Bello 2014)	Scoping review	1980–2013	Young people	15–25	Ideation; Attempt; Death	Not conducted	7	Protective factors

Abdelraheem 2019 (Abdelraheem et al. 2019)	Review type	Search dates	Population	Age range	Suicide outcomes	Quality appraisal of primary studies	Number of distinct protective factors identified	Specific area of focus
	Systematic review	**Inception – July 2018**	**Young people with experience of self-harm**	**0–20**	**Attempt; Self-harm**	**Medium**	**5**	**Self-harm history**
Segers 2014 (Segers and Rawana 2014)	Systematic review	Inception – Nov 2013	Autistic young people	3–29	Ideation; Attempt	Not conducted	1	Autism
Shahram 2021 (Shahram et al. 2021)	Systematic review	2008–2018	Young people	10–24	Ideation; Attempt; 'Suicidality'	Not conducted	5	Zest for life
Shen 2026 (Shen et al. 2026)	Meta-analysis	Inception – Feb 2025	Young people	9–24	Ideation; Attempt; Self-harm	High	2	Parenting styles & self-esteem
Valencia-Agudo 2018 (Valencia-Agudo et al. 2018)	Systematic review	Inception – Jan 2017	Young people	11–19	Self-harm	Medium	4	Risk and protective factors
Vancampfort 2018 (Vancampfort et al. 2018)	Meta-analysis	Inception – May 2017	Young people	Not reported	Ideation	Medium	1	Physical activity
Wallace 2024 (Wallace et al. 2024)	Scoping review	Not reported	LGBTQIA+ young people from countries with a high global acceptance index	14–25	'Suicidality'	Medium	7	LGBTQIA+
Wang 2023 (Wang et al. 2023)	Systematic review	Not reported	LGBTQIA+ young people	12–30	Attempt	High	4	LGBTQIA+
Webb 2002 (Webb 2002)	Systematic review	1990–2000	Young people with experience of self-harm	Not reported	Self-harm	Not conducted	1	Risk and protective factors
Welty 2024 (Welty et al. 2024)	Systematic review	Inception – Dec 2021	Young people	Not reported	Ideation; Attempt; Plan	Low	1	School connectedness
West 2025 (West et al. 2025)	Systematic review	1998–2023	Young people	10–25	Ideation; Attempt; Death; Plan; Hopelessness; Suicidal tendency; Risk	Medium	1	Religion
Zuckerman 2021	Meta-analysis	1950–2020	Young people	5–25	Ideation	High	1	Team sports

Characteristics of the evidence contributing to the umbrella review

Within the 49 included reviews, the number of eligible primary studies contributed by each review varied considerably, ranging from 1 to 61 studies. The 49 included reviews represented 522 unique eligible primary studies. Overall, overlap between reviews was relatively limited: 439 studies (84%) appeared in only one review, while 82 (16%) appeared in two or more reviews. Of the overlapping studies, 66 appeared in two reviews, 13 in three reviews, and three appeared in four or more reviews. The maximum degree of overlap was seven reviews for a single primary study. The full citation-overlap matrix is provided in supplementary file 3.

The 522 eligible primary studies (Table 2) represented 44 countries, although evidence was heavily concentrated in the USA (k = 245), China (k = 70), Canada (k = 26), the UK (k = 22), Australia (k = 18) and South Korea (k = 17). A further 18 studies included participants from multiple countries or were reported as international samples. Most primary studies were conducted in school settings (k = 287), followed by community (k = 97), clinical (k = 66) and university settings (k = 51). Relatively few were conducted online (k = 8), across multiple settings (k = 4), or in prison settings (k = 1); setting was unclear or not reported for eight studies. The evidence base was dominated by cross-sectional studies (k = 364; 69.7%), followed by longitudinal (k = 90; 17.2%) and qualitative studies (k = 42; 8.0%).

Table 2
Characteristics of the evidence contributing to the umbrella review

Abdelraheem 2019 (Abdelraheem et al. 2019)	**Number of eligible primary studies**	**Countries / regions represented**	**Setting**	**Study design**
	5	**USA (k = 3)** **China, Australia (k = 1)**	**School (k = 2)** **Community, Clinical University (k = 1)**	**Longitudinal (k = 3)** **Prospective (k = 2)**
Aggarwal 2017 (Aggarwal et al. 2017)	4	Hong Kong (k = 2) China, Seychelles (k = 1)	School (k = 3) School / university (k = 1)	Cross-sectional (k = 3) Longitudinal (k = 1)
Ancheta 2021 (Ancheta et al. 2021)	6	USA (k = 4) New Zealand (k = 1)	School (k = 5)	Cross-sectional (k = 6)
Ancin-Nicolas 2024 (Ancin-Nicolas et al. 2024)	21	USA (k = 18) UK, France, USA & India (k = 1)	School (k = 14) Community (k = 4) Clinical (k = 3)	Cross-sectional (k = 17) Longitudinal (k = 3) Qualitative (k = 1)
Astuti 2024 (Astuti et al. 2024)	7	UK (k = 4) Sweden, Belgium, UK & USA (k = 1)	School (k = 4) Community (k = 3)	Longitudinal (k = 7)
Ati 2021 (Ati et al. 2021)	6	USA (k = 2) Africa, Korea, China, International (k = 1)	School (k = 4) Community (k = 2)	Cross-sectional (k = 5) Longitudinal (k = 1)
Avanci 2024 (Avanci et al. 2024)	7	USA (k = 3) Ghana, China, Spain (k = 1)	School (k = 3) Clinical (k = 2) Community, not reported (k = 1)	Cross-sectional (k = 4) Longitudinal, quasi-experimental, review (k = 1)
Bello 2024 (Bello et al. 2024)	5	Colombia (k = 4) Jamaica (k = 1)	School (k = 3) Community, not reported (k = 1)	Cross-sectional (k = 5)
Biernesser 2020 (Biernesser et al. 2020)	8	USA (k = 3) UK, Germany, Israel, China, Australia (k = 1)	Online (k = 6) Community (k = 2)	Content analysis (k = 6) Qualitative, delphi (k = 1)
Borah 2025 (Borah et al. 2025)	13	USA (k = 4) China (k = 3) Spain, Israel (k = 2) Korea, South Korea (k = 1)	School (k = 12) University (k = 1)	Cross-sectional (k = 13)
Chiu 2018 (Chiu et al. 2018)	10	South Korea (k = 5) China (k = 3) USA (k = 2)	School (k = 10)	Cross-sectional (k = 10)
Cuesta 2021 (Cuesta et al. 2021)	3	Spain (k = 2) USA (k = 1)	NA (k = 2) School (k = 1)	Review (k = 2) Cross-sectional (k = 1)

Abdelraheem 2019 (Abdelraheem et al. 2019)	Number of eligible primary studies	Countries / regions represented	Setting	Study design
	5	**USA (k = 3)** **China, Australia (k = 1)**	**School (k = 2)** **Community, Clinical University (k = 1)**	**Longitudinal (k = 3)** **Prospective (k = 2)**
Dominguez-Garcia 2018 (Domínguez-García and Fernández-Berrocal 2018)	11	Iran (k = 3) Spain (k = 2) USA, China, Hong Kong, Egypt, Peru, Mexico (k = 1)	School (k = 5) Clinical (k = 5) University (k = 1)	Cross-sectional (k = 9) Quasi-experimental (k = 2)
Dorol-Beauroy-Eustache 2021 (Dorol and Mishara 2021)	11	USA (k = 6) Spain (k = 2) Hong Kong, Vietnam, Belgium (k = 1)	School (k = 11)	Cross-sectional (k = 9) Longitudinal (k = 2)
Droege 2017 (Droege et al. 2017)	26	USA (k = 25) USA & Canada (k = 1)	School (k = 11) University (k = 8) Community (k = 6) Not reported (k = 1)	Cross-sectional (k = 19) Longitudinal (k = 6) Case control (k = 1)
Etherson 2025 (Etherson et al. 2025)	8	USA (k = 6) Australia, Korea (k = 1)	School (k = 5) Clinical (k = 2) Community (k = 1)	Cross-sectional (k = 7) Longitudinal (k = 1)
Evans 2004 (Evans et al. 2004)	16	USA (k = 9) Australia, Finland, Hong Kong & China, Iceland, Slovenia, Sweden & Turkey, Switzerland (k = 1)	School (k = 16)	Cross-sectional (k = 16)
Flach 2022 (Flach and Razza 2022)	11	USA (k = 6) Canada, USA & Canada (k = 2) Ghana (k = 1)	Community (k = 7) School (k = 3) Clinical (k = 1)	Cross-sectional (k = 10) Longitudinal (k = 1)
Gearing 2018 (Gearing and Alonzo 2018)	3	USA (k = 2) Canada (k = 1)	Clinical, community, school (k = 1)	Cross-sectional, longitudinal, qualitative (k = 1)
Gogoescu 2025 (Gogoescu et al. 2025)	15	Canada, USA, (k = 4) New Zealand (k = 2) China, India South Korea, Turkey, USA & Canada (k = 1)	Clinical (k = 10) Community, university (k = 2) School (k = 1)	Qualitative (k = 15)
Grimmond 2019 (Grimmond et al. 2019)	18	Canada (k = 6) USA (k = 5) Australia, Cambodia, Italy, Korea, New Zealand, Nicaragua, UK (k = 1)	Clinical (k = 11) Community (k = 4) School (k = 2) University (k = 1)	Qualitative (k = 15)
Hall 2023 (Hall and Melia 2023)	9	Australia, China, USA (k = 2) Belgium, New Zealand, Hong Kong & China (k = 1)	School (k = 8) School & clinical (k = 1)	Longitudinal (k = 5) Cross-sectional, qualitative (k = 2)

Abdelraheem 2019 (Abdelraheem et al. 2019)	Number of eligible primary studies	Countries / regions represented	Setting	Study design
	5	**USA (k = 3)** **China, Australia (k = 1)**	**School (k = 2)** **Community, Clinical University (k = 1)**	**Longitudinal (k = 3)** **Prospective (k = 2)**
Henson 2017 (Henson et al. 2017)	4	USA (k = 4)	School (k = 4)	Cross-sectional (k = 4)
Hodgson 2022 (Hodgson and DeCoteau 2022)	4	USA (k = 4)	School (k = 2) Clinical, community (k = 1)	Cross-sectional (k = 4)
Huo 2024 (Huo et al. 2024)	16	USA (k = 14) Canada, Belgium (k = 1)	School (k = 15) Community (k = 1)	Cross-sectional (k = 12) Longitudinal (k = 4)
Khaki 2022 (Khaki et al. 2022)	9	USA (k = 5) China (k = 2) Italy, international (k = 1)	School (k = 8) Community (k = 1)	Cross-sectional (k = 8) Longitudinal (k = 1)
Khan 2023 (Khan and Ungar 2023)	15	China (k = 4) Canada, Hong Kong, USA (k = 2) Ghana, international, New Zealand, South Africa, UK (k = 1)	School (k = 7) University (k = 3) Community (k = 2) Clinical, online, prison (k = 1)	Cross-sectional (k = 12) Qualitative (k = 2) Longitudinal (k = 1)
Li 2024 (Li et al. 2024)	11	Israel (k = 4) USA (k = 3) China (k = 2) Canada, Taiwan (k = 1)	University (k = 6) School (k = 5)	Cross-sectional (k = 9) Longitudinal (k = 2)
Ling 2025 (Ling et al. 2025)	7	China (k = 7)	Clinical (k = 5) NA (k = 2)	Cross-sectional (k = 5) Review (k = 2)
Marraccini 2017 (Marraccini and Brier 2017)	19	USA (k = 13) Canada, UK (k = 2) South Africa, Taiwan (k = 1)	School (k = 17) Community (k = 2)	Cross-sectional (k = 17) Longitudinal (k = 2)
O'Halloran 2022 (O'halloran et al. 2022)	1	Italy (k = 1)	Clinical (k = 1)	Case control (k = 1)
Patel 2025 (Patel et al. 2025)	21	USA (k = 12) International (k = 4) Korea (k = 2) China, Sierra Leone, South Korea (k = 1)	School (k = 21)	Cross-sectional (k = 20) Longitudinal (k = 1)
Predescu 2024 (Predescu et al. 2024)	4	China (k = 4)	School (k = 4)	Cross-sectional (k = 3) Longitudinal (k = 1)
Prochnow 2025 (Prochnow et al. 2025)	1	Hong Kong (k = 1)	Community (k = 1)	Cross-sectional (k = 1)
Rogers 2020 (Rogers and Taliaferro 2020)	19	USA (k = 15)	School (k = 16)	Cross-sectional (k = 16)

Abdelraheem 2019 (Abdelraheem et al. 2019)	Number of eligible primary studies	Countries / regions represented	Setting	Study design
	5	**USA (k = 3)** **China, Australia (k = 1)**	**School (k = 2)** **Community, Clinical University (k = 1)**	**Longitudinal (k = 3)** **Prospective (k = 2)**
		Iceland, Canada, China, UK (k = 1)	Community (k = 3)	Longitudinal (k = 2) Quasi-experimental (k = 1)
Rojas-Velasquez 2021 (Rojas-Velasquez et al. 2021)	6	USA (k = 6)	University (k = 6)	Cross-sectional (k = 5) Case control (k = 1)
Ruiz Camacho 2024 (Ruiz Camacho and Sukhram 2024)	2	Trinidad & Tobago (k = 2)	School, community (k = 1)	Cross-sectional (k = 2)
Sanchez-Teruel 2014 (Sánchez-Teruel and Robles-Bello 2014)	32	USA (k = 14) UK (k = 4) Canada, Mexico (k = 2) Argentina, Australia, Brazil, China, Colombia, Denmark, international, Norway, Spain, Switzerland (k = 1)	School (k = 11) Community (k = 10) University (k = 6) Clinical (k = 4) School & University (k = 1)	Cross-sectional (k = 19) Longitudinal (k = 9) Qualitative (k = 3) Case control (k = 1)
Segers 2014 (Segers and Rawana 2014)	1	USA (k = 1)	Clinical (k = 1)	Case control (k = 1)
Shahram 2021 (Shahram et al. 2021)	37	USA (k = 24) Canada (k = 5) Australia (k = 3) UK (k = 2) New Zealand, UK & Australia, USA & Canada (k = 1)	School (k = 11) University (k = 10) Community (k = 8) Clinical (k = 6) School & University (k = 1)	Cross-sectional (k = 27) Longitudinal (k = 7) Experimental (k = 2) Qualitative (k = 1)
Shen 2026 (Shen et al. 2026)	33	China (k = 22) USA (k = 5) South Korea (k = 2) Honduras, Italy, Taiwan, UK (k = 1)	School (k = 23) Clinical, university (k = 4) Community (k = 2)	Cross-sectional (k = 24) Longitudinal (k = 9)
Valencia-Agudo 2018 (Valencia-Agudo et al. 2018)	17	Australia (k = 5) China & Hong Kong, USA (k = 3) China, Sweden (k = 2) New Zealand, Spain (k = 1)	School (k = 15) Community (k = 2)	Longitudinal (k = 17)
Vancampfort 2018 (Vancampfort et al. 2018)	16	USA (k = 10) China, South Korea (k = 2) Canada, international (k = 1)	School (k = 9) University (k = 5) Community (k = 2)	Cross-sectional (k = 16)
Wallace 2024 (Wallace et al. 2024)	24	USA (k = 19) UK (k = 2) Australia, Netherlands, Canada (k = 1)	School (k = 11) Community (k = 10) Clinical, online, university (k = 1)	Cross-sectional (k = 20) Content analysis, longitudinal, quasi-experimental, qualitative (k = 1)

Abdelraheem 2019 (Abdelraheem et al. 2019)	Number of eligible primary studies	Countries / regions represented	Setting	Study design
	5	**USA (k = 3)** **China, Australia (k = 1)**	**School (k = 2)** **Community, Clinical University (k = 1)**	**Longitudinal (k = 3)** **Prospective (k = 2)**
Wang 2023 (Wang et al. 2023)	6	USA (k = 5) UK (k = 1)	School (k = 4) University, community (k = 1)	Cross-sectional (k = 6)
Webb 2002 (Webb 2002)	2	UK, USA (k = 1)	Clinical, school (k = 1)	Case control, cross-sectional (k = 1)
Welty 2024 (Welty et al. 2024)	34	USA (k = 23) Canada (k = 3) UK (k = 2) Australia, Denmark, Israel, South Korea, Taiwan, Vietnam (k = 1)	School (k = 27) Community (k = 4) Clinical (k = 3)	Cross-sectional (k = 26) Longitudinal (k = 8)
West 2025 (West et al. 2025)	61	USA (k = 24) Canada, Israel, Malaysia (k = 4) Brazil (k = 3) France, India, Iran, Trinidad & Tobago, Turkey (k = 2) Australia, Chile, Colombia, Hong Kong, India & Malaysia, Jordan, Mexico, New Zealand, South Africa, Sweden, UK, Vietnam (k = 1)	School (k = 26) Community (k = 21) Clinical (k = 13) University (k = 1)	Cross-sectional (k = 49) Longitudinal (k = 7) Qualitative (k = 4) Case series (k = 1)
Zuckerman 2021 (Zuckerman et al. 2021)	3	USA (k = 2) Canada (k = 1)	School (k = 2) University (k = 1)	Cross-sectional (k = 2) Longitudinal (k = 1)

Findings of the review

A total of 56 unique protective factors were identified. These protective factors were subsequently organised into six mechanisms describing how protection operates and seven contexts describing where protection occurs (Table 4).

Connection and belonging

Connection and belonging was by far the most frequently reported protective mechanism identified in the review. Thirty-three of the 49 included reviews reported at least one protective factor aligned with this mechanism, contributing a total of 77 reported associations. The connection and belonging mechanism comprised 18 protective factors (Table 3), which operated across five of the seven identified contexts: family, peer, school, spirituality and community. The evidence primarily related to suicidal behaviours (37 associations), although associations were also reported for suicidal ideation (9 associations) and for both suicidal ideation and behaviour (12 associations). It was unclear for 19 associations what the outcome was. Across reviews that included more than one relevant primary study, the evidence was generally consistent, with over two-thirds reporting consistent associations between connection and belonging and reduced suicide-related outcomes.

Table 3
Connection and belonging protective factors

Adult connection	Community connection	Cultural connection
Family activities	Family connection	Family support
Friend support	Number of friends	Online social connection
Parental connection	Parental support	Parental understanding
Parental warmth	Parent-child interactions	Parenting styles
School connection	Social support	Teacher support

Rather than functioning as a single protective factor, the findings suggest that connection represents a core protective foundation operating across interpersonal, institutional and community contexts. Across reviews, young people who experienced a sense of belonging, acceptance and support were consistently less likely to report suicidal thoughts and behaviours, highlighting connection as a foundation for psychological safety and resilience (e.g. (Khaki et al. 2022; Marraccini and Brier 2017; Rogers and Taliaferro 2020; Wang et al. 2023; Welty et al. 2024)

The evidence suggests that protection arises from the quality and perceived availability of supportive relationships, rather than simply the number of social connections. Family warmth, responsive parenting, supportive friendships, trusted teachers and caring adults were repeatedly identified as protective, whereas measures of network size or number of friends received comparatively little support (e.g. (Abdelraheem et al. 2019; Aggarwal et al. 2017; Predescu et al. 2024; Shen et al. 2026; Wang et al. 2023). Several reviews further highlighted that feeling able to seek support, disclose distress and access trusted adults created important pathways to both informal and professional sources of help, including parents, teachers, community members and religious communities (e.g. (Borah et al. 2025; Gogoescu et al. 2025; Marraccini and Brier 2017; Shahram et al. 2021).

The strongest evidence related to the family context, with consistent findings across reviews highlighting family connection, parental support, parental warmth, attachment, positive parenting and family functioning as protective against suicidality (e.g. (Abdelraheem et al. 2019; Astuti et al. 2024; Etherson et al. 2025; Ling et al. 2025; Rogers and Taliaferro 2020; Shen et al. 2026; Wang et al. 2023). Collectively, these findings suggest that families provide a unique source of emotional security and belonging during adolescence.

Evidence relating to peer relationships was more nuanced. High-quality friendships, peer support and social support were frequently associated with reduced suicidality (e.g. (Cuesta et al. 2021; Hall and Melia 2023; Predescu et al. 2024; Valencia-Agudo et al. 2018), although some reviews noted that peer relationships may be context dependent and do not always provide the stability or safety afforded by family relationships, particularly among vulnerable populations (e.g. (Khaki et al. 2022; Rogers and Taliaferro 2020).

Beyond interpersonal relationships, belonging within broader social systems also emerged as an important source of protection. School connectedness was consistently associated with lower suicidality, with evidence supporting the protective role of teacher support, feeling valued at school and attachment to the school community (Ancheta et al. 2021; Borah et al. 2025; Marraccini and Brier 2017; Welty et al. 2024). Similarly, community, cultural and spiritual connectedness contributed to protection by fostering shared identity, social integration and access to supportive networks (Gearing and Alonzo 2018; West et al. 2025). Reviews examining Indigenous, culturally diverse and LGBTQIA+ populations particularly emphasised the importance of cultural belonging, community embeddedness and identity affirmation (e.g. (Henson et al. 2017; Hodgson and DeCoteau 2022; Rojas-Velasquez et al. 2021; Sánchez-Teruel and Robles-Bello 2014), while religious communities were also described as providing social support, opportunities for connection and pathways to care (e.g. (Sánchez-Teruel and Robles-Bello 2014; Shahram et al. 2021).

Table 4
Mechanism findings

Mechanism	Number of reviews	Number of synthesized protective factors	Number of reported associations	Contexts	Outcomes	Consistency
Connection and belonging	33	18	77	Family; Peer; School; Spirituality; Community;	Ideation = 9 Behaviour = 37 Both = 12 Unclear = 19	Single study (n = 22) Consistent (n = 39) Inconsistent (n = 16)
Cognitive appraisal and meaning-making	12	5	20	Individual; Spirituality	Ideation = 3 Behaviour = 7 Both = 2 Unclear = 8	Single study (n = 2) Consistent (n = 11) Inconsistent (n = 1)
Emotion regulation	12	5	15	Individual	Ideation = 0 Behaviour = 9 Both = 1 Unclear = 5	Single study (n = 4) Consistent (n = 10) Inconsistent (n = 1)
Adaptive capacity, agency & help-seeking	20	9	37	Individual; Spirituality	Ideation = 4 Behaviour = 12 Both = 12 Unclear = 9	Single study (n = 9) Consistent (n = 24) Inconsistent (n = 4)
Behavioural engagement and routine	12	9	15	Individual; Family; Peer; School; Spirituality; Community	Ideation = 5 Behaviour = 7 Both = 2 Unclear = 1	Single study (n = 9) Consistent (n = 3) Inconsistent (n = 3)
Enabling environments and systems	14	10	20	Family; School; Spirituality; Community; Structural	Ideation = 2 Behaviour = 9 Both = 2 Unclear = 7	Single study (n = 6) Consistent (n = 14) Inconsistent (n = 0)

Emotion regulation

Emotion regulation and control represented an individual-level protective mechanism. Twelve of the 49 included reviews examined at least one protective factor aligned with this mechanism, contributing a total of 15 reported associations. The mechanism comprised five synthesised protective factors (Table 5), all of which operated within the individual context. The evidence predominantly related to protection against suicidal behaviours (nine associations), with only one association examining both suicidal ideation and behaviour. It was unclear what the outcome was in the remaining five associations. Across reviews including more than one relevant primary study, the evidence was highly consistent, with 10 of the 11 reviews reporting consistent associations between emotion regulation and control and reduced suicide-related outcomes.

Table 5
Emotion regulation protective factors

Anxiety	Emotion regulation	Emotional intelligence
Impulse control	Self-control	

Emotion regulation and control functioned as an individual-level mechanism that enabled young people to regulate emotional and behavioural responses to distress. Across the included reviews, protective factors within this mechanism consistently reflected the ability to recognise, manage and modulate emotions, maintain emotional control during periods of conflict or adversity, and inhibit impulsive responses. Emotional regulation, emotional intelligence, emotional self-control, impulse control and self-control were all associated with reduced suicide-related outcomes, suggesting that the capacity to pause, regulate emotional reactivity and respond deliberately may interrupt the progression from emotional distress to suicidal behaviour (Abdelraheem et al. 2019; Cuesta et al. 2021; Domínguez-García and Fernández-Berrocal 2018; Khaki et al. 2022; Sánchez-Teruel and Robles-Bello 2014; Segers and Rawana 2014).

Rather than preventing adversity itself, emotion regulation appeared to buffer the impact of stressful experiences. Several reviews described emotional regulation as increasing resilience to discrimination, victimisation, family conflict and other adverse life events by reducing vulnerability to external stressors and helping young people process difficult emotions more adaptively (Khan and Ungar 2023; Sánchez-Teruel and Robles-Bello 2014; Wallace et al. 2024). Emotional self-control was identified as a moderator of the relationship between adversity and suicidal behaviour, while emotion regulation reduced the likelihood that stressful experiences would escalate into self-injurious or suicidal behaviours (Khan and Ungar 2023; Sánchez-Teruel and Robles-Bello 2014).

Cognitive appraisal and meaning-making

Cognitive appraisal and meaning-making comprised four synthesised protective factors (Table 6). Twelve of the 49 included reviews examined at least one protective factor aligned with this mechanism, contributing a total of 20 reported associations. Protective factors within this mechanism operated predominantly within the individual context, although spirituality also emerged as an important context through its contribution to meaning-making and purpose. The evidence primarily related to protection against suicidal behaviours (seven associations), with additional associations reported for suicidal ideation (three associations) and both suicidal ideation and behaviour (two associations). It was unclear what the outcome was for the remaining eight associations. Across reviews that included more than one relevant primary study, the evidence was highly consistent, with 11 of 12 reviews reporting consistent associations between cognitive appraisal and meaning-making and reduced suicide-related outcomes.

Table 6
Cognitive appraisal and meaning-making protective factors

Cognitive style	Gratitude	Meaningful life
Personality traits	Self-concept	

Cognitive appraisal and meaning-making functioned as an individual-level mechanism through which young people interpreted themselves, their experiences and their future. Across the included reviews, protective factors within this mechanism consistently reflected the ability to adopt adaptive ways of thinking about adversity, maintain positive self-evaluations and identify reasons for living. Rather than changing the presence of adversity itself, these cognitive processes appeared to influence how threatening, overwhelming or permanent distress was perceived to be, thereby reducing vulnerability to suicide-related outcomes (Sánchez-Teruel and Robles-Bello 2014; Valencia-Agudo et al. 2018; Wallace et al. 2024).

The strongest evidence related to meaning in life, purpose and reasons for living. Multiple reviews identified having a sense of purpose, life meaning or a "will to live" as protective against suicidal ideation and behaviour (Ati et al. 2021; Droege et al. 2017; Gogoescu et al. 2025; Li et al. 2024; Sánchez-Teruel and Robles-Bello 2014; Shahram et al. 2021). These findings suggest that meaning-making counteracts hopelessness by providing motivation to persist despite distress. Several reviews further highlighted that purpose could be derived from multiple sources, including future aspirations, personal values, important relationships, spirituality and caring responsibilities, all of which strengthened reasons for living and reduced suicide risk (Gogoescu et al. 2025; Shahram et al. 2021).

A second recurring theme concerned adaptive cognitive styles and positive self-appraisal. Positive attributional style, cognitive reappraisal, optimism, self-concept, self-esteem and self-efficacy were consistently associated with reduced suicidality, suggesting that how young people interpret themselves and their experiences influences their response to adversity (Cuesta et al. 2021; Sánchez-Teruel and Robles-Bello 2014; Valencia-Agudo et al. 2018; Wallace et al. 2024). Rather than denying difficult experiences, these protective factors appeared to promote more

balanced and hopeful interpretations of stressful events, reducing negative cognitive bias and increasing resilience during periods of psychological distress.

Although spirituality emerged as a contextual influence within this mechanism, the findings suggest that its protective role was primarily through the provision of meaning and explanatory frameworks, rather than religion itself. Reviews described how spiritual beliefs and existential purpose helped young people make sense of suffering, reinforced reasons for living and fostered hope during periods of suicidality. However, evidence relating to religion was less extensive than evidence for broader meaning-making processes, indicating that purpose and positive cognitive appraisal may be the more fundamental protective mechanisms (Gogoescu et al. 2025; Sánchez-Teruel and Robles-Bello 2014; Shahram et al. 2021)

Adaptive capacity, agency & help-seeking

Adaptive capacity, agency and help-seeking comprised 9 synthesised protective factors (Table 7). Twenty of the 49 included reviews examined at least one protective factor aligned with this mechanism, contributing a total of 37 reported associations. All protective factors within this mechanism operated primarily within the individual context, although spirituality also contributed through strengthening personal agency and self-belief. The evidence was relatively evenly distributed across suicidal behaviours (12 associations), suicidal ideation (4 associations) and both suicidal ideation and behaviour (12 associations). For the remaining nine associations the outcome was unclear. Across reviews that included more than one relevant primary study, the evidence was generally consistent, with 24 of the 28 reported associations showing consistent associations between adaptive capacity and reduced suicide-related outcomes.

Table 7
Adaptive capacity, agency & help-seeking protective factors

Academic achievement	**Coping skills**	**Help-seeking**
Positive youth development	Resilience	Self-compassion
Self-efficacy	Self-esteem	Wellbeing

Adaptive capacity, agency and help-seeking functioned as an individual-level mechanism reflecting a young person's capacity to draw on internal and external resources to respond and adapt to adversity. Across the included reviews, protective factors within this mechanism consistently centred on resilience, self-efficacy, self-esteem, self-compassion and wellbeing, suggesting that greater perceived capacity to cope with challenges, recover from setbacks and influence one's circumstances is associated with lower levels of suicide-related outcomes (Cuesta et al. 2021; Hodgson and DeCoteau 2022; Predescu et al. 2024; Sánchez-Teruel and Robles-Bello 2014; Wallace et al. 2024).

The strongest recurring theme was positive self-appraisal and perceived capability. Reviews consistently identified self-esteem, self-efficacy and resilience as protective, highlighting the importance of believing in one's ability to overcome adversity, solve problems and recover following difficult experiences. Positive self-appraisal was the most frequently reported protective asset, encompassing self-determination, confidence, agency and perceived competence, while resilience reflected the belief that challenges could be managed rather than being overwhelming or insurmountable (Hodgson and DeCoteau 2022; Predescu et al. 2024; Sánchez-Teruel and Robles-Bello 2014).

Adaptive capacity, agency and help-seeking also reflected the ability to translate psychological resources into effective adaptation. Reviews linked higher adaptive capacity with more effective coping, greater psychological wellbeing, improved functioning and successful adjustment following stressful life events. Self-compassion, subjective wellbeing and resilience consistently buffered the relationship between victimisation, cyberbullying and other adversities and suicide-related outcomes, indicating that adaptive capacity reduces the impact of stress rather than preventing adversity itself (Cuesta et al. 2021; Predescu et al. 2024; Wallace et al. 2024).

Behavioural engagement and routine

Behavioural engagement and routine comprised nine synthesised protective factors (Table 8). Twelve of the 49 included reviews examined at least one protective factor aligned with this mechanism, contributing a total of 15 reported associations. Protective factors within this mechanism operated across six of the seven identified contexts: individual, family, peer, school, spirituality and community. The evidence predominantly related to protection against suicidal behaviours (seven associations), although associations were also reported for suicidal ideation (five associations) and both suicidal ideation and behaviour (two associations). For the remaining association it was not clear what the suicide outcome was. Across reviews that included more than one relevant primary study, the evidence was mixed, with three reviews reporting consistent findings and three reporting inconsistent findings.

Table 8
Behavioural engagement and routine protective factors

Diet	Exercise	Hobbies
Parental modelling	Physical health	Prosocial behaviour
Sleep	Sports	Treatment adherence

Behavioural engagement and routine represented a mechanism through which active participation in everyday life may contribute to reduced vulnerability to suicide-related outcomes. Across the included reviews, protective factors consistently reflected engagement in meaningful activities, structured routines and valued life roles, including participation in education, sport, hobbies, family activities and community involvement (Cuesta et al. 2021; Rogers and Taliaferro 2020; Valencia-Agudo et al. 2018; Welty et al. 2024).

A recurring theme was the protective role of structure and routine. Regular participation in school, extracurricular activities, organised sport and other structured pursuits was consistently associated with reduced suicide-related outcomes, which may partly reflect the predictability and organisation provided by structured engagement (Cuesta et al. 2021; Marraccini and Brier 2017; Welty et al. 2024). Beyond occupying time, these activities appeared to reduce opportunities for behavioural withdrawal, isolation and rumination while creating environments in which young people could maintain everyday functioning and wellbeing.

Unlike the preceding mechanisms, which operated primarily within the individual context, behavioural engagement extended across multiple settings. Evidence supported the protective role of engagement within school (academic engagement and attendance), community (sport, clubs and organised activities), family (shared family activities) and peer contexts (shared recreational and social activities). This suggests that behavioural engagement is less about any single activity than about maintaining participation in the everyday environments and roles that support healthy development.

Enabling environments and systems

Enabling environments and systems comprised 10 synthesised protective factors (Table 9). Fourteen of the 49 included reviews examined at least one protective factor aligned with this mechanism, contributing a total of 20 reported associations. Protective factors within this mechanism operated across five contexts: family, school, spirituality, community and structural environments. The evidence predominantly related to protection against suicidal behaviours (nine associations), with additional associations reported for suicidal ideation (two associations) and both suicidal ideation and behaviour (two associations), with remaining associations not specifying an outcome (seven associations). Across reviews that included more than one relevant primary study, the evidence was highly consistent, with all 14 reviews reporting consistent associations between enabling environments and systems and reduced suicide-related outcomes.

Table 9
– Enabling environments and systems protective factors

Bullying prevention	Culturally inclusive environment	Family functioning
Family structure	Geographical location	Housing
Policy	School climate	School environment
Socioeconomic status		

Enabling environments and systems functioned as the contextual mechanism through which stable, predictable and supportive environments reduced vulnerability to suicide-related outcomes. Across the included reviews, protective factors consistently reflected environments characterised by safety, stability, low levels of conflict and supportive social climates, including within families, schools, communities and broader structural settings (Hodgson and DeCoteau 2022; Marraccini and Brier 2017; Rogers and Taliaferro 2020; Welty et al. 2024). Unlike the preceding mechanisms, which primarily described individual or interpersonal processes, enabling environments and systems reflects the conditions in which protective processes are more likely to develop and be sustained.

A recurring theme was that safe environments reduce exposure to chronic stressors and adverse experiences. Reviews consistently identified low family conflict, safe school climates, neighbourhood safety, stable housing, freedom from bullying and supportive community environments as protective against suicide-related outcomes (Cuesta et al. 2021; Henson et al. 2017; Hodgson and DeCoteau 2022; Predescu et al. 2024; Valencia-Agudo et al. 2018). Rather than acting directly on suicidal behaviour, these environments appeared to reduce the cumulative burden of stress and adversity that young people were required to navigate.

The findings also suggest that environmental safety operates through external regulation and containment. Several reviews highlighted the protective role of parental monitoring, consistent supervision, clear expectations and supportive school environments, indicating that external

structures may help regulate behaviour and provide security during periods when young people's own regulatory capacities are still developing (Marraccini and Brier 2017; Rogers and Taliaferro 2020; Welty et al. 2024).

Importantly, enabling environments and systems spanned multiple levels of young people's lives. Within the family, protection was associated with low conflict, stable caregiving and parental monitoring; within schools, safe and supportive climates consistently emerged as protective; and at the community and structural level, neighbourhood safety, stable housing and broader environmental conditions were identified as important influences on suicide-related outcomes (Cuesta et al. 2021; Henson et al. 2017; Hodgson and DeCoteau 2022; Welty et al. 2024).

The overall model of protective mechanisms against suicide in young people

Although six distinct protective mechanisms were identified, the literature findings suggest that these mechanisms are unlikely to operate independently. Drawing on the findings of this review, we propose an integrated conceptual model in which the six mechanisms form an interconnected system through which protection may operate (Fig. 2). The model conceptualises protection against suicide as arising not from any single protective factor, but from interactions between individual psychological processes, relationships, behaviours and environments.

The model is organised according to how protection operates. The mechanisms positioned on the left represent predominantly **individual** processes. **Emotion regulation** concerns how young people manage emotional responses to distress, whereas **cognitive appraisal and meaning-making** concern how they interpret themselves, their experiences and their future. Together, these mechanisms influence whether adversity is experienced as overwhelming or manageable.

These internal processes support the development of **adaptive capacity, agency & help-seeking**, reflecting the psychological resources required to cope with adversity, recover from setbacks and believe that challenges can be successfully managed. This mechanism bridges **individual and relational** processes; adaptive psychological resources and agency operate at the individual level, while help-seeking connects young people with resources and support within their social environment. Adaptive capacity, in turn, enables **behavioural engagement and routine**, through which young people translate psychological resources into action by participating in meaningful activities, maintaining healthy routines and engaging with valued life roles. Behavioural engagement similarly bridges **individual and community** processes, as individual action and participation are embedded within the schools, families, peer groups, cultural settings and communities in which young people live.

Positioned centrally within the model, the **relational** mechanism of **connection and belonging** intersects with each of the other mechanisms. Unlike the predominantly individual mechanisms, connection operates across interpersonal, institutional and community contexts and appears to strengthen multiple aspects of psychological functioning. Supportive relationships provide opportunities for emotional regulation, foster hope and positive self-evaluation, reinforce adaptive coping and encourage participation in meaningful activities. Rather than representing one protective factor among many, connection and belonging appears to provide the relational foundation through which many other protective processes are strengthened.

Surrounding all mechanisms is **enabling environments and systems**, which reflects the broader **structural** contexts in which young people live. Stable, predictable and supportive family, school, community and structural environments create the conditions under which the remaining mechanisms can develop and operate effectively. Conversely, environments characterised by conflict, instability or chronic adversity may undermine multiple protective processes simultaneously. Enabling environments and systems therefore functions as the contextual foundation of the model, shaping the extent to which young people are able to regulate emotions, develop adaptive cognitive styles, build relationships, engage with everyday life and respond effectively to adversity.

The model in its entirety therefore details six interacting mechanisms representing complementary levels through which protection against suicide may operate, spanning internal psychological processes, interpersonal relationships, everyday behaviours and the broader environments and systems in which young people live. Together, these mechanisms may contribute to nearer-term outcomes, including belonging, trusted support, agency, help-seeking and participation, which may in turn contribute to longer-term reductions in suicide-related distress, thoughts and behaviours.

Discussion

Key findings

This umbrella review synthesised evidence from 49 reviews, representing over 500 unique primary studies, to develop a mechanism-based framework describing how protection may operate across suicide-related outcomes in young people. Rather than identifying a disparate collection of protective factors, the findings converged around six interconnected mechanisms: connection and belonging, emotion regulation, cognitive appraisal and meaning-making, adaptive capacity, agency & help-seeking, behavioural engagement and routine, and enabling

environments and systems. Together, these findings suggest that protection against suicide is best understood not as the presence of individual protective factors, but as the interaction of complementary psychological, relational, behavioural and environmental processes.

The most consistent finding was the central role of connection and belonging. Previous research has consistently identified social connectedness as one of the strongest protective factors against suicide in young people. Longitudinal studies have consistently shown that stronger family and school connectedness are associated with lower suicidal ideation and suicide attempts, while emerging evidence suggests these associations may operate through pathways including greater help-seeking, improved emotion regulation and enhanced personal mastery or self-worth (Arango et al. 2024; Gunn III et al. 2018). Suicide theories similarly position belonging as central to suicidal behaviour, most notably the Interpersonal Theory of Suicide (Joiner 2005), the Integrated Motivational–Volitional Model (O'Connor and Kirtley 2018) and the Three-Step Theory (Klonsky and May 2015). The present review extends this literature by suggesting that family, peer, school, community and cultural connectedness are not distinct protective factors, but contextual expressions of a common underlying mechanism. Rather than acting independently, connection and belonging appear to provide a foundation that enables other protective mechanisms - including adaptive capacity, emotion regulation, cognitive appraisal and behavioural engagement - to develop and interact.

A second important contribution of this review is the proposed mechanism-based model of protection. Existing literature has largely focused on identifying individual protective factors, often treating resilience, coping, family support and school connectedness as distinct constructs (Mcevoy et al. 2023; Richardson et al. 2024b). The present review instead suggests that many of these factors reflect broader mechanisms through which protection operates. Three mechanisms - emotion regulation, cognitive appraisal & meaning-making, and adaptive capacity - primarily reflected intrapersonal processes that influence how young people experience, interpret and respond to adversity. Behavioural engagement translated these internal resources into meaningful participation in everyday life, while environmental safety represented the broader contexts that enable or constrain these protective processes. This perspective shifts the focus from asking *which* protective factors matter towards understanding *how* protection is generated and sustained. Importantly, however, the evidence underpinning these mechanisms reflects different conceptualisations of protection. Some studies identified factors associated with lower suicide-related outcomes in general populations, others examined protection in the context of specific adversities or risk exposures, and others examined factors associated with outcomes among young people already experiencing suicidal distress or behaviour. These forms of evidence provide complementary but distinct insights into protection and should not be interpreted as equivalent evidence that a factor buffers the effects of adversity.

The proposed model also contributes to existing theoretical understandings of suicide prevention. Ecological models have long recognised that suicide is influenced by interactions between individuals and their environments (Bronfenbrenner 1979; Gallagher and Miller 2018), while resilience science increasingly conceptualises resilience as a dynamic process arising through interactions between psychological resources, supportive relationships and environmental conditions rather than as a fixed personal trait (Masten 2001; Ungar 2011). The present review integrates these perspectives by distinguishing between contexts, which provide opportunities for protection, and mechanisms, which explain how protection is achieved. In doing so, the model offers a framework that may help integrate previously fragmented protective factor literature into a more coherent understanding of youth suicide prevention.

Finally, an important contribution of this review is the shift from identifying protective factors towards understanding protective mechanisms. To date, much of the suicide prevention literature has focused on identifying individual factors associated with reduced suicide risk, such as resilience, coping skills, family support and school connectedness (Richardson et al. 2024b). While this work has been invaluable in establishing *what* is associated with protection, it provides less insight into *how* these factors exert their effects, *for whom* they are most effective, and *under what circumstances* they are likely to promote positive outcomes. This challenge is increasingly recognised across healthcare and implementation science, where there has been a broader shift towards understanding the mechanisms - or "active ingredients" - through which interventions and protective processes produce change (Skivington et al. 2021; Tilley and Pawson 2000). The present review aligns with this broader conceptual shift by suggesting that many commonly reported protective factors are better understood as manifestations of a smaller number of interacting protective mechanisms. Rather than viewing family support, school connectedness or resilience as independent constructs, the proposed framework conceptualises them as different ways of activating broader psychological, relational and environmental processes that protect against suicide. This mechanism-based perspective provides a more explanatory understanding of suicide protection and offers a stronger theoretical foundation for future intervention development, implementation and evaluation.

Implications for research, policy and practice

The findings have important implications for the design of suicide prevention strategies. First, they suggest that interventions focusing on isolated protective factors may overlook the interconnected nature of protection. Programmes that seek to improve emotional regulation, resilience or help-seeking in isolation may have limited impact if young people remain socially disconnected or continue to experience unsafe or unstable environments. Conversely, interventions that strengthen supportive relationships or improve environmental conditions may simultaneously enhance several protective mechanisms. These findings therefore support whole-of-system approaches that strengthen

multiple mechanisms concurrently across families, schools, communities and health services. Translating such approaches into practice will require enabling implementation conditions, including local leadership, meaningful youth involvement, cross-sector partnerships, workforce capacity, safeguarding, accessible services and sustained resourcing. Importantly, individual programmes may realistically strengthen nearer-term outcomes such as belonging, trusted support, agency, help-seeking and participation, while sustained action across systems may be required to alter enduring protective conditions and ultimately reduce suicide-related distress, thoughts and behaviours.

The review also highlights the importance of shifting from deficit-focused approaches towards strengthening protective systems. While much suicide prevention research has concentrated on identifying risk factors, the present findings suggest equal attention should be directed towards creating environments that promote belonging, foster adaptive psychological development and facilitate meaningful engagement with everyday life. This requires an explicit focus on equity and responsiveness: the potential protective value of help-seeking, for example, depends on trusted, culturally safe, accessible and responsive support being available when young people seek it. Protective systems must therefore account for barriers that may limit access to such resources, including geographical, financial, transport, digital and service-access barriers, as well as experiences of discrimination and exclusion. Such an approach aligns closely with contemporary public health models of suicide prevention, which increasingly emphasise prevention, social determinants of health and the creation of supportive communities (National Suicide Prevention Office 2025; Pirkis et al. 2024).

For clinicians, the findings reinforce the importance of moving beyond symptom reduction alone. Assessment and intervention may benefit from considering not only whether risk factors are present, but also whether young people have access to supportive relationships, opportunities for meaningful participation, adaptive psychological resources and safe environments. Importantly, identifying an absence of these resources should not place responsibility on young people to develop them individually; consideration should also be given to whether appropriate, trusted and accessible opportunities and supports exist within their environments. Similarly, schools and community organisations may play a central role in suicide prevention by fostering belonging, creating psychologically safe environments and facilitating participation in activities that strengthen multiple protective mechanisms simultaneously. However, prevention strategies must also extend beyond schools to reach young people who are disengaged from or outside education systems.

The proposed framework also provides several directions for future research. Rather than continuing to investigate isolated protective factors, future studies should examine how protective mechanisms interact across development, whether strengthening one mechanism produces downstream effects on others, and how these processes unfold over time. This is particularly important given that the underlying evidence base was dominated by cross-sectional studies (364/522; 69.7%), limiting conclusions about the temporal and potentially causal relationships between protective mechanisms and suicide-related outcomes. Longitudinal and implementation research is therefore needed to understand how protective systems develop, interact and change over time, and how they can be effectively strengthened through intervention. Implementation research should also examine which system conditions enable protective approaches to be implemented equitably, sustained over time and accessed by young people experiencing different forms of disadvantage. The evidence was also geographically and contextually concentrated, with almost half of primary studies conducted in the USA (245/522; 46.9%) and more than half in school settings (287/522; 55.0%). Future research should therefore prioritise populations currently underrepresented in the evidence base, including young people outside education systems, those transitioning into adulthood, and young people from culturally diverse and low- and middle-income contexts. Greater attention is also needed to young people experiencing rurality, socioeconomic disadvantage, discrimination, digital exclusion and barriers to accessing services. This will be important for determining whether the protective mechanisms identified here operate similarly across developmental, cultural and social contexts, or whether their relative importance and accessibility vary between populations.

Strengths and limitations

To our knowledge, this is the first umbrella review to synthesise protective factors against suicide in young people through the development of a mechanism-based conceptual framework. By integrating evidence from 49 reviews, the review moves beyond cataloguing protective factors to identify common processes underlying protection. Distinguishing between mechanisms and contexts also provides a novel framework that may assist future intervention development, implementation research and theory refinement.

Several limitations should also be acknowledged. As with all umbrella reviews, the findings are dependent upon the quality and reporting of included reviews. Although most reviews were methodologically robust, deficiencies relating to publication bias, reviewer independence and reporting transparency were common. Considerable heterogeneity in populations, outcomes and protective factor terminology precluded quantitative synthesis and required an interpretive narrative approach. While the mechanisms were developed through systematic inductive coding and iterative discussion among the review team, alternative conceptual groupings are possible. Finally, because this review synthesised review-level evidence, it cannot determine causal relationships between mechanisms or establish the temporal ordering through which protective processes influence suicide-related outcomes. The review was not designed to compare the effectiveness of single-component programmes, multi-component interventions or whole-of-system approaches. It therefore cannot determine which combinations of protective mechanisms are most important, for whom, or under what implementation and community conditions they can be strengthened.

Conclusion

Protection against suicide in young people is frequently conceptualised as a collection of individual protective factors. The present review suggests that this perspective may be overly simplistic. Instead, protection may emerge through interactions between siz complementary mechanisms, operating across individual, relational, community and structural contexts. By shifting attention from *what* protective factors exist to *how* protection operates, this review provides a novel conceptual framework for understanding youth suicide prevention. This mechanism-based perspective has the potential to inform future theory, research and intervention development by encouraging approaches that strengthen multiple interacting protective processes rather than isolated factors alone.

Declarations

Conflict of interest:

The authors declare that they have no conflict of interest.

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Figures

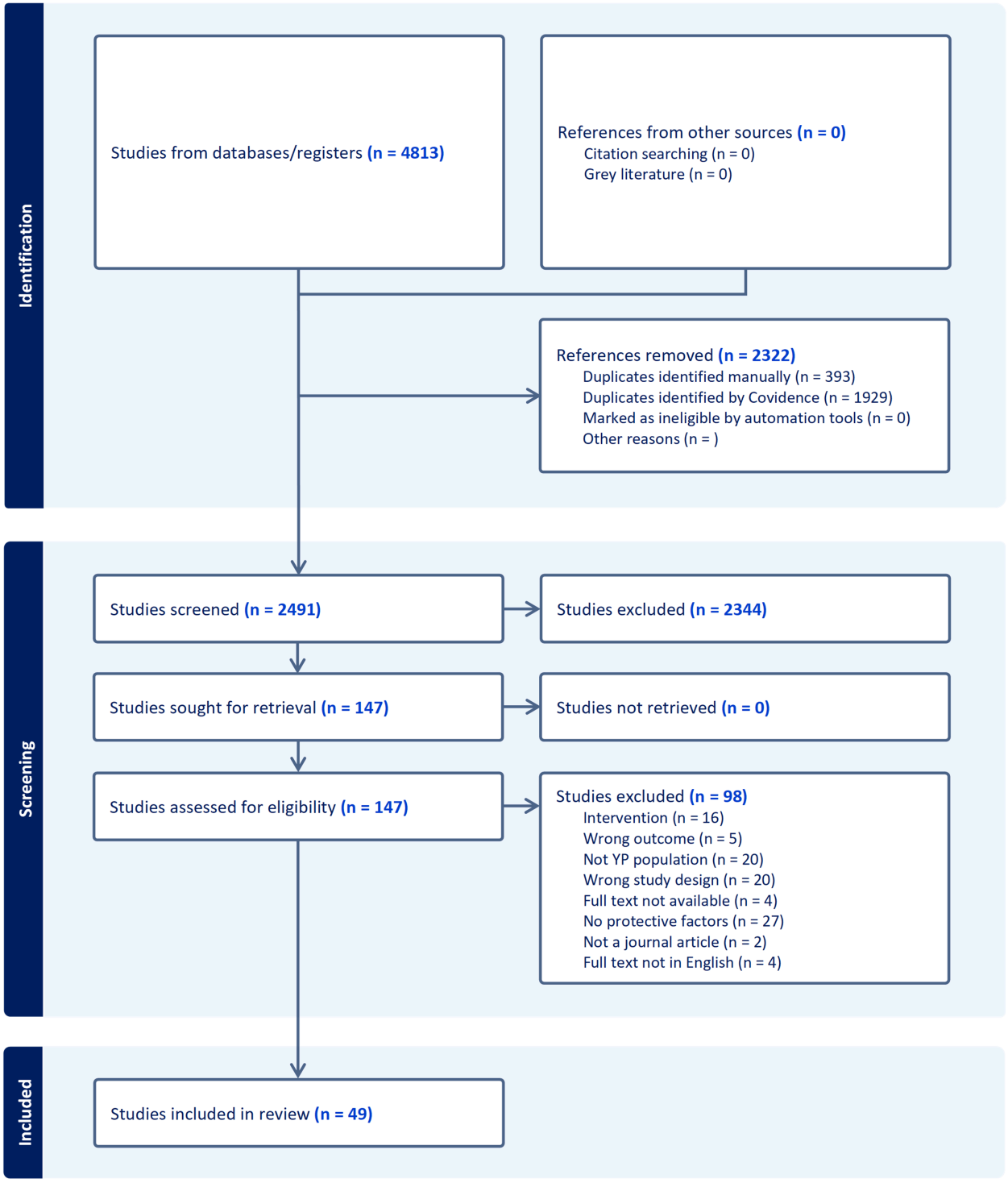


Figure 1

PRISMA flowchart

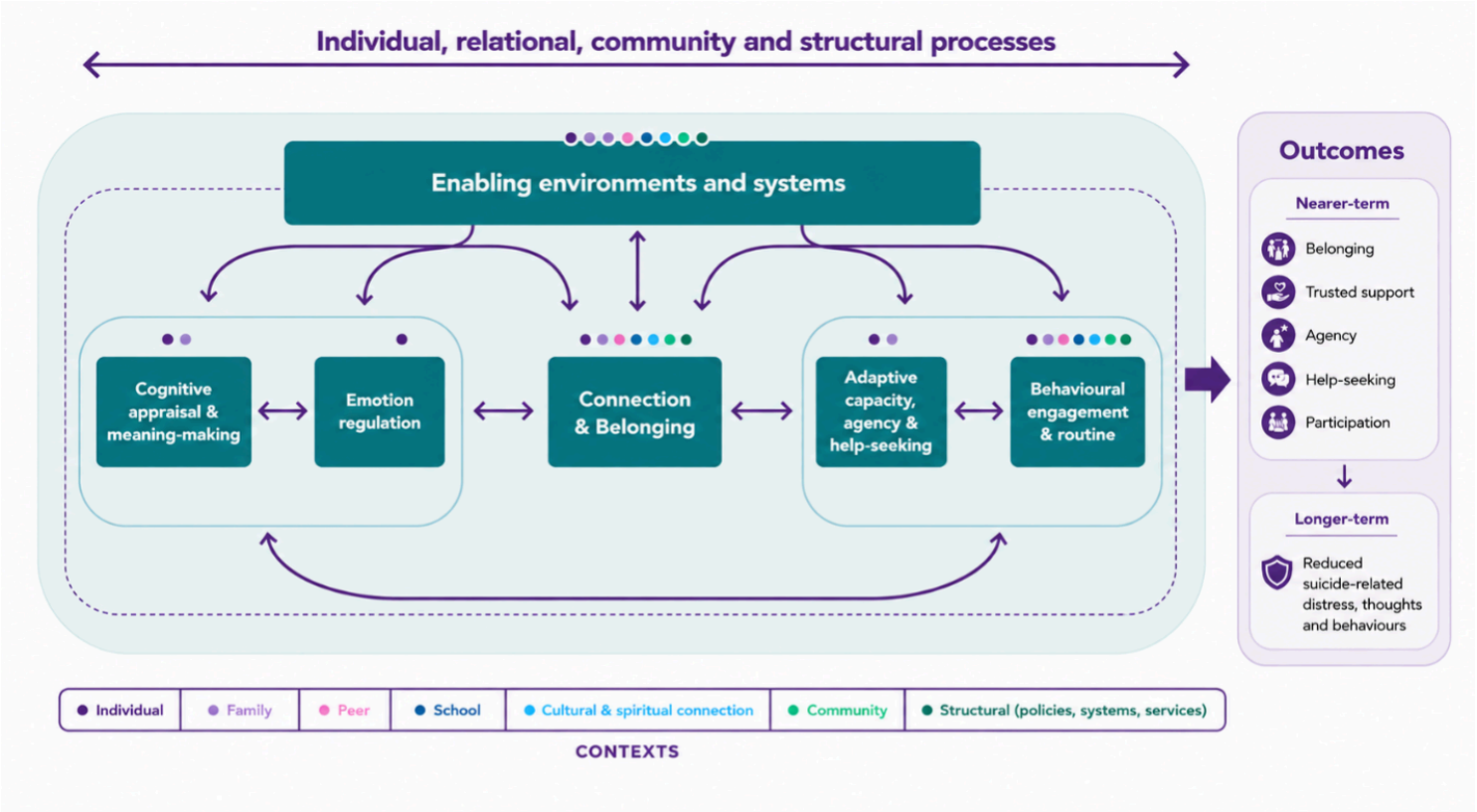


Figure 2

Model of protective mechanisms against suicide in young people