REVIEW ARTICLE

Development of the Individual and Environmental Resilience Model among children, adolescents and young adults using the empirical evidence: An integrative systematic review

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Abstract

To create a new conceptual model of resilience based on evidence, this integrative systematic review aims to identify the evidence-based protective factors related to resilience among children, adolescents and young adults at-risk of several exposures. An Integrative Systematic review was conducted by using systematic principles according to PRISMA statement. Searching strategy was conducted through MEDLINE, CINAHL, Web of Science (ISI) and PsycINFO during July 2021(1991–2021). Keywords were related to resilience, self-esteem, hardiness, ego-resilience, risk factors, vulnerability, protective factors, ecological model and theoretical model. Those statiscally significant protective factors found in individual studies conducted with young populations (from 7 to 24 years old) exposed to violence, trauma or socio-economic instability were included in the qualitative synthesis. Of 15,235 peer-reviewed articles initially identified, 93 articles were screened and met the inclusion criteria; finally, 31 articles were included for the quality synthesis. More than 60 protective factors were found. They were classified in 10 different domains and two dimensions of resilience (Individual skills and Environmental), developing a new model of resilience: The Individual and Environmental Resilience Model (IERM). The Environmental dimension includes the domains: Family, School, Peers, Cultural and Community and The Individual skills dimension: Biological, Behaviour, Communications, Cognitive and Emotional domains. These domains and their specific protective factors have been set up as protective factors that significantly buffer negative outcomes in the face of adverse events. Compared with other models currently available, the new IERM model is potentially a more comprehensive approach that may facilitate the development of effective interventions to promote resilience in children, adolescents and young adults.

KEYWORDS
adolescent, integrative systematic reviews, people at risk, protective factors, resilience

1 | INTRODUCTION

Resilience is a dynamic and complex construct (Masten, 2001; Masten & Coatsworth, 1998) that has had several definitions. Two of the most accepted definitions are those stated by Ungar (Ungar, 2008, p. 225) and Masten (2011, p. 494): Ungar, defined it as 'the capacity of individuals to navigate their way to the psychological, social, cultural and physical resources that sustain their well-being, and their capacity individually and in groups to negotiate for these resources to be provided in culturally meaningful ways', and Masten (Masten, 2011, p. 494) as 'the capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability viability or development'.

Although several definitions of resilience have been proposed, most of them have in common to define resilience as a phenomenon observed in contexts of high risk, overcoming, adapting and adjusting in the face of adversity and attaining good mental health despite difficulties (Aburn et al., 2016). In this regard, Wright and Masten (2005) stated that risk factors can be located within the individual or the environment that can negatively impact adjustment outcomes.

Several works have reviewed the dynamic construct of resilience and tried to identify its dimensions (Aburn et al., 2016; Fleming & Ledogar, 2008; Luthar & Zigler, 1991; Vanderbilt-Adriance & Shaw, 2008). As a dynamic process, different models have been proposed, trying to explain the mechanisms of these resilient processes, such as Fleming and Ledogar (2008) who identified three models of resilience (Fleming & Ledogar, 2008): (a) Compensatory model: defined when a contractual protection factor operates in a direction opposite to a risk factor. (b) Protective model: used when a quality or a resource moderates or reduces the effects of a risk on a negative result. (c) Challenge model: a curvilinear model based on the association between the risk factor and the outcome. However, these models were developed in indigenous or aboriginal population, being non-generalizable to other populations.

Another theory for resilience assessement was the Social Ecological model proposed by Bronfenbrenner (1979) which is defined as the development of the child within the system of interactions between him/herself and his/her immediate environment (family, peers, wide social: community and culture). Based on this model, Ungar and his collaborators carried out 'The International Resilience Project' study to examine the global, cultural and contextual dimensions of resilience in young populations (Ungar, 2008; Ungar & Liebenberg, 2009). This study recruited 1500 children, adolescents and young adults from 11 countries and 14 communities around the world. The results of this work led to a description of 32 resilient domains grouped into four dimensions (Ungar, 2008; Ungar & Liebenberg, 2011): Culture, Community, Relationships and Individual. In this study, the authors highlighted the difficulty of synthesising the data analiysis, due to different communication and cultural barriers (Ungar & Liebenberg, 2005).

On the other hand, in the neurobiology model (Cicchetti & Blender, 2006; Feder et al., 2009), resilience was described as a

What is known about this topic?

- Resilience is the capacity to cope with adversity in contexts of high risk or difficulties. There are many different models of resilience which try to identify its dimensions. For instance, the ecological model (Ungar, 2004) includes cultural, community, relationship and individual dimensions. Individual dimension takes into account self-esteem as a factor and relationship dimension considers social support as a point. However, there are few systematic reviews on dimensions of resilience in younger populations (children, adolescents and young adults).

What this paper adds?

- This integrative systematic review based on evidence provides a new model of resilience (Individual and Environmental Resilience Model—IERM) intended for young populations at risk. IERM includes two dimensions (individual and environmental). The individual dimension comprises the biological, behaviour, communication skills, cognitive and emotional factors, and the environmental dimension considers the family, school, peers, cultural and community factors.
- This work clarifies the different dimensions of resilience and identifies the protective factors related to resilience with additional scientific evidence. Furthermore, it provides a strong professional basis for the development of future intervention programs on resilience towards young populations at risk.

property of the biological system, which operates in the different organisational systems of living beings, both at the molecular and cellular level, as well as at the social and environmental adaptation level. However, no other protective factors related to resilience, such as environmental (community, culture, school...) or family, were taken into account in this model.

Nonetheless, these conceptual models have been developed using a theoretical framework or empirical studies. Only a few systematic reviews of the dimensions of resilience in young populations have been conducted. There is one meta-analysis of children exposed to violence as a single exposure, with no other risk exposures included (Yule et al., 2019).

Therefore, all these models addressed resillience in a non-dynamic way, taking into account only few risk and protective factors. Furhter, the populations addressed where non-generalizable with the exception of Ungar's model. Thus, the purpose of the current research is to carry out an intregrative systematic review to develop a new model of resilience, based in empirical research in many contexts of risk and adversities.

If we consider resilience as a dynamic process, the conceptual models to explain and understand it should not be static. In this

study, we propose a new dynamic, non-closed and empirical model (based on current evidence), that allows the integration of new additional factors.

1.1 | Aim

Our integrative systematic review aims to identify resilience factors that are significantly associated with buffering negative outcomes for children, adolescents and young adults at risk, to create a new conceptual, dynamic and evidence based model of resilience.

2 | METHOD

2.1 | Design

The integrative review method provided us with the opportunity to incorporate diverse methodologies (i.e. quantitative and qualitatives studies) to capture the context and the processes of resilience and create a new model of resilience (Whittemore & Knafl, 2005). Our review was carried out through six steps: (1) Once the review question was established, (2) the sample of materials was selected (after passing the quality assessment of supplementary material) and (3) analysed; (4) content analysis was carried out with the support of the Nvivo 11 for Windows software; (5) dimensions or variables of resilience were categorised and analysed to interpret the results and (6) developed the synthesis of knowledge.

Given the nature of the integrative review that increases the risk of bias, we decided to additionally include a systematic process. For this reason, and due to most of the studies found in our systematic review being exclusively quantitative (77.4%), the integrative systematic review of the literature was reported (Furlan et al., 2009) according to the Preferred Reporting Items Systematic Reviews and Meta-Analyses statement (PRISMA) guideline (Moher et al., 2009).

2.2 | Search methods

MEDLINE, CINAHL, Web of Science (ISI) and PsycINF databases were used in July 2021 to perform a structured literature search.

The search strategies were carried out using a combination of the following keywords: resilience, self-esteem, hardiness, ego-resilience, risk factors, vulnerability, protective factors, ecological model and theoretical model. The keywords were reviewed by a committee of experts and an expert librarian. Keywords were translated to MeSH terms, using 'Entry term' to check the synonyms and 'equivalence relations' for the extension of the search. Interactive European Union Terminology (IATE) was consulted to adapt the keywords.

The search strategy used included these MeSH terms (MEDLINE): ('Models, Theoretical'[Mesh]) OR 'Protective Factors'[Mesh]) OR 'Empirical Research'[Mesh]) OR 'Self Concept'[Mesh]) OR 'Risk Factors'[Mesh]) OR (hardiness OR vulnerability OR ego resilience OR Ecological model)) AND ('Resilience, Psychological'[Mesh] OR resilience) Filters: Child: 6–12 years, Adolescent: 13–18 years, Young Adult: 19–24 years, from 1991–2020. Sort by: Most Recent. The search strategy for the other databases is presented in Supporting Information S1.

2.3 | Inclusion/exclusion criteria

Both qualitative and quantitative empirical studies were considered for inclusion if published in English or Spanish from 1991 to July 2021, including assessment of patterns of resilience in the young population (from 7 to 24 years old) in the context of risk of violence, trauma or socioeconomic instability. The risk context was defined as the exposure to the following situations: traumatic experiences; being a victim of any interpersonal violence; poverty; family problems; substance abuse, mental problems or criminal behaviour by parents; context of war; natural disasters and being an immigrant (Ungar & Liebenberg, 2009). We added addtitional risk exposures such as pandemics and economic crises.

Pandemics and economical crises were also included in this review as risk factors given the psychological impact for the younger population (Gracia et al., 2021; Hermosillo-de-la-Torre et al., 2021; Zhang, Ye, et al., 2020). In Spain, a recent study shows that suicide attempts among adolescents were increased 25% (Gracia et al., 2021) during COVID-19 pandemic. Additionally, in México, results from a cross-sectional study show that approximately 21% of all students reported a suicidal behaviour (Hermosillo-de-la-Torre et al., 2021). In another study conducted in Wuhan, the authors found statistically significant differences in anxiety symptoms between participants who were from Wuhan (lockdown) compared with other urban areas (no lockdown; Chen et al., 2020).

Zozaya and Vallejo (2020) evaluated the effect of the economic crisis on adolescents through a multilevel analysis. The results showed that raising unemployment was linked to a higher risk of poorer health and poor habits in adolescents (Zozaya & Vallejo, 2020).

Publications aproaching resilience in a context of pathology (e.g. somatic [cancer, chronic illness] or serious mental disease [as a schizophrenia]) were excluded. Studies that evaluate efficacy of interventions, validation of psychometric scales or not providing any significant protective factor were also excluded.

2.4 | Screening

All documents identified were downloaded into RefWorks and duplicates were removed. Grey literature using Google and Google Scholar was also searched to identify additional relevant publications.

After deleting duplicates, two reviewers (P.C., M.L.L.) independently sorted and selected articles, first by title, and then by

abstract. Disagreements with the selections were resolved by discussion or by referral to a third author (T.G.).

2.5 | Quality appraisal

Articles were screened according to the inclusion and exclusion criteria by independent researchers. Retained articles were reviewed against quality criteria. Quality of included studies were assessed with an adapted version of the Handbook for Systematic Reviews of Interventions version 5.1.0 (Higgins & Green, 2011) for quantative studies and the Qualitative Research Checklist 31.05.13 (Critical Appraisal Skills Programme, 2017) for qualitative studies.

Supporting Information S2 shows the quality criteria scale composed of four items (participants, measures, outcomes and design). Both qualitative and quantitative publications were assessed according to three values positive (2 points), intermediate (1 point), or no information (0 point)) for each item, depending on the level of information provided. The maximal score was 8 points (i.e. positive rating for all properties). The differences between scores were debated and agreed upon by the reviewers.

2.6 | Data extraction

The integrative method described by Whittemore and Knafl (2005) was used to extract and synthesise data. This method includes data reduction, visualisation, comparison and drawing conclusions.

First, a matrix to extract the main characteristics of each article was developed including the following information: author and year of publication; sample and population description; study design and timing; risk context description; definition of resilience used; the measures of resilience and the risk context; the significant domains of resilience and their protective factors significantly associated.

Data related to the aim of this review were then extracted from each of the included studies, specifically: (1) how the authors defined resilience and how resilience was measured and (2) which resilience factors (resilience domains and their protective factors) were significantly associated to reduce the negative effects of adversity in the child, adolescent and/or youth population. Data were extracted for each of the review objectives. Target-related content was compared item-by-item, then categorised (using the software Nvivo 11 for Windows) and synthesised.

2.7 | Synthesis

The goal of the data synthesis was on one hand, to classify the resilience dimensions of 31 articles in two categories and their protective factors into several domains. On the other hand, we aimed to identify common themes or relationships between those domains

(Whittemore & Knafl, 2005). For this process, theoretical coding was used based on the protective factors identified in the ecological model of resilience (Birks & Mills, 2011). Two key categories (dimensions) were identified: (1) Environmental Dimension, which includes five domains related tp the individual's ecosystem (Family, School, Peers, Cultural, Community) and (2) Individual Dimension, which includes those five domains related with the individual him/herself (Biological, Behavioural, Communication, Cognitive and Emotional).

3 | FINDINGS

3.1 | Search outcome

The search strategy resulted in a total of 15,235 publications after excluding duplicates. Then, they were screened according to the inclusion/exclusion criteria resulting in 950 publications. Of those 950 publications, 93 articles were included (Supporting Information S2). Twenty-one articles were excluded for the following reasons: Age of participants (6); No context of risk (6); Reviews (3); Scale validation (1); No full text found (1); Intervention study (1); Protective factors against crime violence (1); effect of resilience over time (1) and language (1). The PRISMA flow chart was used in this process (Figure 1).

3.2 | Quality of included studies

Once the quality criteria scores (Supporting Information S2) were assigned to each publication, publications with <6 points (56.94%) were excluded and have been added only to the Supporting Information S3. Thirty-one studies with ≥6 points (43.0%) were included in the qualitative synthesis (Table 1).

Out of 31 articles, 8 articles obtained the maximum score (8 points) in the quality assessment scale; 14 articles scored 7 points, and 9 articles scored 6 points. For the different dimensions assessed (Participants, Measures, Outcomes and Design), the percentage of maximum scores for each one of them (2 points), were respectively 74.19%, 77.40%; 87.09%; 61.02%.

3.3 | Overview of the literature

From the 31 articles included in the review, 24 (77.4%) were quantative (16 and 8 had a cross-sectional and a longitudinal design, respectively), 5 (16.12%) qualitative and 2 (6.4%) used mixed methods.

Population groups included *young population* (from age 7 to 24) and *their families*; populations were from 15 countries: 13 from the United States, two from, South-Africa and Spain, and one from Australia, Brazil, Canada, China (3), Gaza, Germany, Haiti, Israel, New Zealand, Uganda, United Kingdom (UK) and Romania. In nine (2.9%) studies, the same sample was used in more than one article.

Risk exposures represented in the review include the following contexts: poverty or low socioeconomic status (7); maltreatment
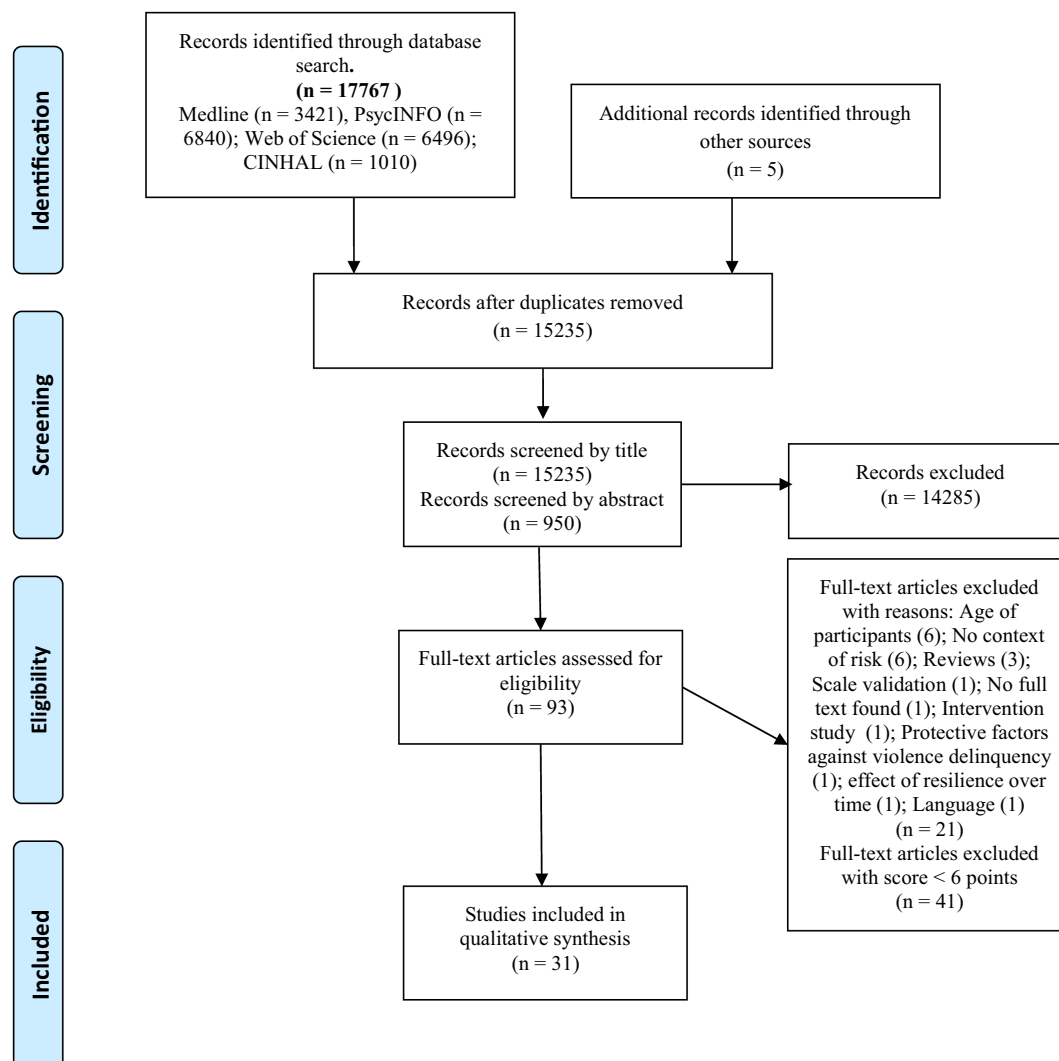
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FIGURE 1 PRISMA 2009. Search flow chart.

and sexual abuse (6); low-quality family environment (5); negative life events (5); parents with mental disorders (5); ethnic minority (4); exposure to violence and victimisation (3); substance abuse (3); homeless (2); risk of social exclusion (2); COVID -19 pandemic context (2); armed conflict (1); facing terror (1) and refugee camps (1). Seven articles included more than one risk context (see Table 2).

3.3.1 | Definitions of resilience

Authors defined resilience as: personal competence and acceptance of self and life (Cénat et al., 2018); emotional resilience (Jain et al., 2012; Zhang, Zhou, et al., 2020); positive adaptation (Li et al., 2017; Masten et al., 1999); no victimisation (Beaver et al., 2011); 'the ability to cope with stress and adversity' (Artuch-Garde et al., 2017; Nussbaum et al., 2017); absence of substance abuse (Fergusson & Lynskey, 1996); good mental health (Collishaw et al., 2016; Kidd & Shahar, 2008; Klasen et al., 2010); psychological well-being (Zhang et al., 2021) or good psychosocial functioning

(Buckner et al., 2003; Hopkins et al., 2014; Williams & Nelson-Gardell, 2012; see Table 2).

3.3.2 | Resilience scales

Various scales were used to assess resilience. Some scales were adapted or designed for research and were in accordance with previously established definitions. Some authors related resilience with mental health and they used mental health scales to assess resilience such as The Child Behaviour Checklist (Buckner et al., 2003; Fergusson & Lynskey, 1996; Williams & Nelson-Gardell, 2012) or The Children's Depression Inventory (Aitcheson et al., 2017; Buckner et al., 2003; Luthar, 1991) among others. General scales of resilience were identified (15 scales) in other studies with the most common being the Strengths and Difficulties Questionnaire (SDQ-CA, SDQ-G; Collishaw et al., 2016; Hildebrand et al., 2019; Wille et al., 2008) and the Connor-Davidson Resilience Scale (CD-RISC; Klasen et al., 2010; Nussbaum et al., 2017; Schaefer

TABLE 1 Articles assessed for eligibility (scores >6 points)

Reference	Participants	Measures	Outcomes	Design	Total score
Hiller et al. (2017)	2	2	2	2	8
DiClemente et al. (2018)	2	2	2	2	8
Burt and Simons (2015)	2	2	2	2	8
Collishaw et al. (2016)	2	2	2	2	8
Hopkins et al. (2014)	2	2	2	2	8
Zhang et al. (2021)	2	2	2	2	8
Zhang, Zhou, et al. (2020)	2	2	2	2	8
Williams and Nelson-Gardell (2012)	2	2	2	2	8
Theron and van Rensburg (2018)	2	1	2	2	7
Schaefer et al. (2018)	2	2	2	1	7
Nussbaum et al. (2017)	2	2	2	1	7
Pérez-González et al. (2017)	2	2	2	1	7
Hildebrand et al. (2019)	2	2	2	1	7
Cénat et al. (2018)	2	2	2	1	7
Artuch-Garde et al. (2017)	2	2	2	1	7
Masten et al. (1999)	1	2	2	2	7
Beaver et al. (2011)	1	2	2	2	7
Forres-Bank et al. (2015)	2	1	2	2	7
Fergusson and Lynskey (1996)	2	1	2	2	7
Moreno et al. (2016)	2	2	1	2	7
Wexler et al. (2014)	1	2	2	2	7
Aitcheson et al. (2017)	1	2	2	2	7
Yablon (2019)	2	1	2	1	6
Liu et al. (2020)	2	2	1	1	6
Li et al. (2017)	1	2	2	1	6
Buckner et al. (2003)	2	2	1	1	6
Kidd and Shahar (2008)	1	2	1	2	6
Klasen et al. (2010)	1	1	2	2	6
Luthar (1991)	2	1	2	1	6
Jain et al. (2012)	2	1	2	1	6
Wille et al. (2008)	1	1	2	2	6

Note: 2 = positive rating, 1 = intermediate rating, 0 = no clear description/not reported.

et al., 2018). In the case of individual factors, the studies used different scales (a total of 30, see Table 3 for more details): (a) Scales where more than one individual protective factor was assessed, included the Tridimensional Personality Questionnaire (Fergusson & Lynskey, 1996; Masten et al., 1999) and The Sentence Completion Test, Form 81 (Luthar, 1991); (b) Specific scales (only one protective factor was assessed): *Emotional*: The Short Self-Regulation Questionnaire (SSRQ; Aitcheson et al., 2017; Artuch-Garde et al., 2017; Collishaw et al., 2016) or Perceived Social Support Scale (Collishaw et al., 2016; Moreno et al., 2016); *Cognitive*: The Kaufman Brief Intelligence Test; (Buckner et al., 2003; Williams &

Nelson-Gardell, 2012) or Wechsler Intelligence Scale for Children-Revised (Fergusson & Lynskey, 1996; Masten et al., 1999); *Behaviours*: Frequency of exercise: adolescent questionnaire (Collishaw et al., 2016) or Curiosity and Exploratory Inventory-II; Body Investment Scale (Moreno et al., 2016).

For environmental factors, a total of 44 scales were found (see Table 3 for detailed information of the scales): (a) Scales (where more than one environment factor was assessed) such as the Scale from the International Health Behaviour in School-Aged Children study (Wille et al., 2008) or The California Child Q-Sort and Haan Q-Sort; My Family and Friends (Buckner et al., 2003); (b) Specific scales:

TABLE 2 Studies included. Data extraction

Reference	Data sample/population	Study design/timing	Risk context	Definition of resilience
Zhang et al. (2021)	Data from the Survey of Life Circumstances of Students in Shaanxi (Chine) during COVID-19. 10,255 urban and rural middle and high school students. Average = 15.22 DS (1.6). 4 groups: Urban Non-migrant; Migrant; Rural non-migrant and Left-Behind Children	Cross-sectional design	COVID-19 Pandemic	Resilience = psychological well-being
Liu et al. (2020)	30.668 children ages 12–17 from the 2011–2012 National Survey of Children's Health (NSCH). USA	Cross-sectional and national representative sample	Having one or more of these risk factors: Financial hardship; Parental divorce/separation; Parental death; Parental imprisonment; Witness to domestic violence; Victim or witness of neighbourhood violence; Lived with mentally ill/suicidal person; Lived with someone with alcohol/drug problem; Treated unfairly because of race/ethnicity	The capacity of a dynamic system to adapt successfully to disturbances that threaten system function, viability, or development
Zhang, Zhou, et al. (2020)	896 students at a middle school in Jiangsu (Chine) Ages 12–14	Cross-sectional design	COVID-19 Pandemic	Emotional resilience = The ability to generate positive emotions and recover quickly from emotional experiences
Yablon (2019)	609 from 9th to 12th students from state-run Jewish schools in Israel	Cross-sectional study	Students Facing Terror	The ability to prevent PTSD in those who are exposed to war and terror
Cénat et al. (2018)	A sample of 176 children and adolescents aged 7–18	Mixed-methods	Children and adolescents living on the streets of Port-au-Prince (Haiti)	Personal Competence and Acceptance of Self and Life
DiClemente et al. (2018)	269 Black American adolescents recruited from six public schools in USA	Cohort study design. 3-year longitudinal study aimed at examining students' ETV from sixth grade to eighth grade	Black American adolescents located in low-income, urban Chicago neighbourhoods	Neighbourhood, family and social cohesion
Hildebrand et al. (2019)	Children and Adolescents from Brazil (age 9–16; n = 166) and their guardians	A cross-sectional design	Victims of domestic violence, neglect of care or physical, psychological or sexual violence	A phenomenon with a transitional character mediated by individual capacities and associated with the subject's socio-cultural-history context, emphasising the importance of sharing and redefining experiences
Schaefer et al. (2018)	161 emerging adult college students ranging in aged 18–24. USA	Cross-sectional study	Children and adolescents exposed to physical and/or sexual assault (e.g., untoward physical violence or nonconsensual sexual contact) before the age of 18	Individual's ability to bounce back in the context of adverse life events
Theron and van Rensburg (2018)	140 township-dwelling, school-attending, South African adolescents. Mean age: 13.8 years [Time 1]; 15.8 years [Time 2])	Longitudinal qualitative study. 2 waves at 2 years of follow-up	School-attending adolescents living in conditions of structural inequality	Do well in life

(Continues)

TABLE 2 (Continued)

Reference	Data sample/population	Study design/timing	Risk context	Definition of resilience
Artuch-Garde et al. (2017)	Adolescents from Spain (age 14–21; n = 365)	A cross-sectional design. Data collected from Western Australian Aboriginal Child Health Survey (WAACHS 2000–2002). Parent-report and self-report data	Youth at Risk of Social Exclusion	Resilience = The ability to cope with adversity
Burt and Simons (2015)	African American families living in Georgia and Iowa with a child in the 5th grade	Data from the Family and Community Health Study (FACHS), a longitudinal, multisite study of roughly 700 African American youth and their primary caregivers followed from late childhood to early adulthood	African American families	Preparation for bias (making children aware of prejudice and discrimination and giving them tools and tips to deal with its various manifestations) and Cultural socialisation (emphasise racial heritage and promote cultural customs and traditions, thereby fostering children's racial pride and sense of belonging)
Hiller et al. (2017)	25 young people, age 13–17 years, who had experienced trauma in an urban township of South-Africa	Qualitative study: Semi structured qualitative interviews analysed using thematic analysis	Young people who had experienced trauma	The ability to seek support networks and coping strategies of young people who experience trauma
Li et al. (2017)	31 students as part of a larger mixed methods study (N = 636) examining the resilience of Chinese adolescents	Qualitative study: 'life story' approach using semi-structured interviews. Initial questions could be modified in light of the participant's responses	Having one or more of these risk factors: poor parental supervision, family conflict, low school commitment, attitude condoning problem behaviour or individual conflict orientation	Successful adaptation despite risk/adversity
Nussbaum et al. (2017)	Children and adolescents aged 10–19 years (Romania), who were offspring of psychotic parents:75 children with a parent suffering of schizophrenia and 70 children of parents with bipolar disorder	Longitudinal prospective study. 10 years	75 children with a schizophrenic parent and 70 children with a parent with bipolar disorder	The ability to cope with stress and adversity
Pérez-González et al. (2017)	Children and adolescents recruited from seven secondary schools in northeastern Spain aged between 12–17	Cross-sectional design	Children and adolescents exposed to sexual victimisation	The phenomenon or mechanism through which some individuals present relatively good adaptation despite suffering risk experiences that would be expected to have serious squeal
Aitcheson et al. (2017)	Adolescents from refugee camps in Gaza (age 17–19; n = 335)	A cross-sectional design	Refugee camps	Resilient = minimal to no depression and anxiety symptoms
Collishaw et al. (2016)	Families n = 331/n = 262 completed from South Wales, UK Parents/co-parents Child-Adolescent (age 9–17)	Prospective longitudinal study 4 years. Assessed: 3 Times	Parents with recurrent depression	Good mental health

TABLE 2 (Continued)

Reference	Data sample/population	Study design/timing	Risk context	Definition of resilience
Moreno et al. (2016)	Adolescents from Spain (age 13–16; $n = 1753$)	A cross-sectional design. Data collected from Health Behaviour in School-age Children (HBSC)	Low-quality family environment	Good global health despite having a low-quality family environment
Forres-Bank et al. (2015)	Adolescents and young adults (age 14–20; $n = 17$) from the USA	Qualitative research methods: focus group and in-depth interviews	Living in 4 urban public housing neighbourhoods and involved in a risk-and PYD (Positive Young Development)-based program (academic and social support in the form of technology training, literacy science, math education, tutoring, social and emotional learning)	The ability to overcome adverse conditions and to function normatively despite exposure to risk
Hopkins et al. (2014)	Western Australian Aboriginal youth (age 12–17; $n = 1021$)	A cross-sectional design. Data collected from Western Australian Aboriginal Child Health Survey (WAACHS 2000–2002). Parent-report and self-report data	High (2 or >5 risks) and low family risks (sole parent family status; unemployed; harsh parenting; low reported nurturing parenting and exposure to violence)	To have good psychosocial functioning relative to risk exposure (Goodman's Strengths and Difficulties Questionnaire)
Wexler et al. (2014)	50 Alaska Native youth (age 11–18)	Qualitative research methods. A cross-sectional design. Cross-site research protocol: audio-record interviews	Ethnic minority: Alaskan native (poverty, high prevalence of substance abuse and suicide; face discrimination and geographical isolation, limited scholarship etc.)	Resilience = the strategies used to overcome acute and ongoing difficulties
Williams and Nelson-Gardell (2012)	Adolescents (age 11–16; $n = 237$) USA	A cross-sectional design. Using data collected from National Survey of Child and Adolescent Well-Being Wave I (NASCW, Dowd et al., 2002)	Childhood sexual abuse	Absence of psychological symptoms (overall behavioural difficulties and general distress symptoms
Jain et al. (2012)	Young people (age 11–16; $n = 1166$) in 78 Chicago neighbourhoods	Mixed-methods. Prospective longitudinal study, data from the project on Human Development in Chicago Neighbourhoods, (1994–2002). 3 waves	Exposure to community violence	Emotional resilience = positive adaptation in the context of risk
Beaver et al. (2011)	Adolescents from the Add Health study in the USA. Wave 1 ($n = 313$); wave 2 ($n = 289$); wave 3 ($n = 311$)	Longitudinal study, data from Add Health study (following a community sample during 6 years, 3 waves (Harris et al., 2003)	Youths with high risk of victimisation: serious delinquency, low self-control; delinquent peers; maternal disengagement; poor social support	Resilience = no victimisation experience
Klasen et al. (2010)	Children and adolescents from Ugandan child soldiers. (age11-17; $n = 330$)	A cross-sectional design	Children in armed conflict	*Post-traumatic resilience = the absence of clinically significant psychopathology in the aftermath of severe trauma exposure*

(Continues)

TABLE 2 (Continued)

Reference	Data sample/population	Study design/timing	Risk context	Definition of resilience
Wille et al. (2008)	2863 German families with adolescent children (age 7–17)	A cross-sectional design. Data from the Bella study (the mental health module of the German National Health Interview and Examination Survey among Children and Adolescents (KiGGS)	One parent with: mental disorders or chronic diseases; unemployment; conflicts in family; single parent; unwanted pregnancy; low social support; early parenthood; high alcohol consumption; low socioeconomic status; parental strain; low parental health-related quality of life and high parental psychiatric symptom. Different level of risk: five groups: zero, one, two, three and four or more risk factor	Availability of resources in different risk groups: low medium or high resources decrease mental health problems
Kidd and Shahar (2008)	Homeless young people from New York city and Toronto (age 14–24; n = 208)	A cross-sectional design	Homeless youth (abuse and neglect in childhood, throwaway status, sexual orientation, bullied in school, friends committing/attempting suicide, sex trade involvement, insecure attachment)	Resilience = protective factors = to be related to better mental and physical health and lower levels of substance use
Buckner et al. (2003)	Youths from Worcester, USA (age 8–17; n = 155)	A cross-sectional design. Sample from The Worcester Family Research Project	Low-income families	Good overall adaptive functioning, the absence of behaviour problems and significant psychiatric symptomatology
Masten et al. (1999)	Urban community sample (age 8–12; n = 205). Groups: Resilient, Competent and Maladaptive	Longitudinal study, following a community sample (court) over 10years. 2 times, 7years after	Index of adolescent adversity based on life events and experiences likely to be stressful to children or adolescents	Successful adaptation in the context of significant threats to development (Masten, 1994) Resilient (adequate competence, high adversity)
Fergusson and Lynskey (1996)	New Zealand adolescents (age 16; n = 940)	Longitudinal study, data collected from a birth cohort to 16years	Exposure to high-risk family environments (family social and economic disadvantage, parent–child interaction, marital conflict and parental separation). The family Adversity Index	Resilience = Absence of substance abuse, juvenile offending and school problems despite the high exposure to family adversity
Luthar (1991)	Inner-city adolescents from public school in Connecticut (age 14–17; n = 144)	A cross-sectional design	Stress: negative life events (The Life Events Checklist), sociodemographic factors	Maintain socially competent behaviours despite stress

TABLE 3 Protective factors extracted from the review

Reference	Measures (risk/resilience)	Significant domains of resilience (protective factors)*
Zhang et al. (2021)	Achenbach Youth Self-report; Questions about parent–child relationships: 'How close was your relationship with your father/mother before the pandemic?' 'How close is your relationship with your father/mother during the pandemic?' 'How often did you talk to your father/mother before the pandemic?' and 'How often do you talk to your father/ mother during the pandemic?'; Family economic status: 'What was the overall economic status of your family before the pandemic?' and 'How has the pandemic affected your family's economic situation?'	Family resources: social and economic; Parent–child relationships
Liu et al. (2020)	Resilience was assessed on the following items: Family-centered care; Family meals together; Low parenting stress; Neighbourhood safety; Parent–child communication; Participation in community activities; Participation in service work; Presence of an adult mentor in the child's life; School engagement; School safety	Family-centered care; Family meals together; Good parent–child communication; Low parent stress; Neighbourhood safety; Presence of an adult mentor in the child's life; Participation in community activities; Participation in service work; School engagement; School safety
Zhang, Zhou, et al. (2020)	Adolescent's emotional resilience questionnaire; Learning management skills questionnaire (skill level, meta-cognitive skills, cognitive process skill, learning process skills and learning management skills	Learning management skills
Yablon (2019)	The California School Climate and Safety Survey (CSCSS): School safety; The School Connectedness Scale (SCS): School connectedness	School safety; School connectedness only among boys
Cénat et al. (2018)	Quantitative: The Resilience Scale (Resilience); Qualitative: Traumas experienced (Reasons and events explaining their presence on the streets, traumas experienced on the streets and the earthquake and other natural disasters experiences); Perpetrated traumas (Acts of delinquency, banditry or crime); Strategies for coping, survival and resilience (the street as a space for survival, social resources and supports and personal resources developed)	Quantitative: Resilience; Qualitative: Social resources and support (Medical aid, New clothes and foods, Support from population members, Literacy programs and learning a profession, High feeling of satisfaction, Mutual assistance in street children), Personal resources (Maturity, Solidarity, Spirituality, Faith and hope, Altruism, Humour, Self-awareness of strengths and weakness, Reveries and aspirations, Self-determination, Personal efficacy, Social skills), Coping, survival and resilient strategies, Street as a survival space (Way to scape death, Feeling of belongingness, Feeling of freedom offered by the streets, Self-determination)
DiClemente et al. (2018)	The 22-item Neighbourhood Youth Inventory (NYI; Neighbourhood cohesion); The Family Environment Scale (FES; Family cohesion); Adapted version of the Sense of School as a Community questionnaire (Social cohesion)	Neighbourhood and family cohesion
Hildebrand et al. (2019)	Strengths and Difficulties Questionnaire (SDQ-CA, SDQ-G); Resiliency Scales for Children and Adolescents (RSCA); Social Support Appraisals (SSA); Semi-structured questionnaire; The Home Environment Resources Scale (HERS)	Low resilience = low perception of social support from teacher and other people in the community. Rules or routine in their lives; emotional reactivity (ability to manage or regulate emotions (girls)
Schaefer et al. (2018)	Connor-Davidson Resilience Scale (CD-RISC): Resilience (Personal competence; Tolerance of negative affect; Positive acceptance of change; Trust in one's instincts; Sense of social support; Spiritual faith; An action-oriented approach to problem solving); The Brief RCOPE: Religious coping (Seeking spiritual support; Seeking a spiritual connection; Collaboration with God in problem-solving; Religious forgiveness; Benevolent religious appraisals of the event); The Lubben Social Network Scale-Revised (LSNS-R): Social support (Perceived family support; Perceived friend support)	Greater family support; Optimism; Positive religious coping

TABLE 3 (Continued)

Reference	Measures (risk/resilience)	Significant domains of resilience (protective factors)*
Theron and van Rensburg (2018)	Do the same (or different) resilience-enabling resources inform township-dwelling, school-attending adolescents' resilience accounts when they are invited to self-explain their resilience at two distinct points in time?; Which resilience-enabling resources, if any, become significantly more (or less) salient over time and how do township-dwelling, school-attending adolescents explain the resilience-enabling value of these resources?	Education and education-informed aspirations Supportive family (e.g., caring parents or siblings or extended family) Faith-based supports (e.g., belief in a caring god that would help alleviate material need) Personal strengths (e.g., sporting talent; expressive skill) Services (e.g., social welfare) Agency (e.g., investing in a sporting activity and trusting such investment to prompt fame and fortune) Supportive peers; Supportive community Cultural heritage (e.g., Ubuntu values and associated sense of belonging)
Artuch-Garde et al. (2017)	The Short Self-Regulation Questionnaire (SSRQ): Self-regulation (Goals; Perseverance; Learning from mistakes; Decision making. Resilience; Coping and confidence; Tenacity and adaptation; Perception of control and achievement; Perception of support; Tolerance of Negative Situations)	Self-regulation (goals and learning from mistakes)
Burt and Simons (2015)	Combining two scales from a shortened version of the Multidimensional Inventory of Black Identity (MIBI): Positive racial identities; One item question: Spirituality	Positive racial identities; Spirituality
Hiller et al. (2017)	The child's views on what they found help or unhelpful following their experience; the ways they coped (or did not) post-trauma; their perspective on ideal support. Questions were largely open ended (e.g., 'Was there anything you did to try and make yourself feel better?', 'Was there anything that happened that made it hard to cope?', 'Do you think anyone could tell how you were feeling?', 'If you had a friend go through something similar how might you help them?', with some more direct prompts used to seek clarity (e.g., 'Was that helpful?')	Parental, Peer and Social support
Li et al. (2017)	A semi-structured individualised interview to explore how students managed specific risks (e.g., family conflict or low school commitment). Students were asked open questions about the impact of significant others, their own strengths, weaknesses and interests and life events: Important persons: 1. In your life, is there any person who has had an important impact on you? 2. If yes, who are the important people who give you help in your life? 3. How have they helped you? Could you give me some examples? Self: 1. Now let us talk a little bit about you. Do you have any hobbies or do you participate in recreational activities? 2. What would you say is your strength? Your weakness? 3. Do you have any special goals or objectives that you are working towards? 4. When you look back, what has been the most critical thing that happened to you in your life? 5. How do you generally feel about yourself as a person at this stage in your life?	Ecological Social Environment (Caring and support in everyday life; Academic expectations and involvement; Spiritual encouragement; Behavioural discipline and guidance; Providing opportunities for meaningful involvement and role modelling; Individual factors (Having positive life goals; Perseverance; and Confidence)
Nussbaum et al. (2017)	Connor-Davidson Resilience Scale (CD-RISC): Resilience (Personal competence; Tolerance of negative affect; Positive acceptance of change; Trust in one's instincts; Sense of social support; Spiritual faith; An action-oriented approach to problem solving)	Personal competency; Tolerance of negative affect; Safe interpersonal relations; High performance; Social, Family support and Social Connectedness

TABLE 3 (Continued)

Reference	Measures (risk/resilience)	Significant domains of resilience (protective factors)*
Pérez-González et al. (2017)	The Adolescent Resilience Questionnaire (ARQ): Comprises 88 items and 12 scales measuring resilience in 5 domains: Self (Confidence, Emotional Insight, Negative Cognition, Social Skills, Empathy/Tolerance); Family (Connectedness, Availability); Peers (Connectedness, Availability); School (Supportive Environment, Connectedness); Community (Connectedness)	Connectedness to Peers; Counselling; High Availability to Peers; High confidence; High Connectedness to Family; High Connectedness to School; High empathy/tolerance; High social skills; Low negative cognition
Aitcheson et al. (2017)	The Beck Depression Inventory-II (BDI-II); The Beck Anxiety Inventory (BAI); The Multi-Group Identy Measure (MEIM); Black Nationalist Ideology Scale (BIS); The family Sense of Coherence Scale (FSOC-S); The Parental Authority Questionnaire (PAQ); Amirkhan Coping Strategy Indicator (CSI); Self-Regulation Questionnaire (SRQ); The Live Orientation Test- Revised (LOT-R); Demographic questionnaire: parental education; level and socioeconomic status	Older age, Optimism, family sense of coherence, ethnic identity, self-regulation; coping skills
Collishaw et al. (2016)	Interviews: parental positive expressed emotion; Global Assessment of Functioning scores; The Child and Adolescent Psychiatric Assessment; Strengths and Difficulties Questionnaire; Iowa Youth and Families Project parental warmth subscale; Perceived Social Support Scale; Assessing Social Esteem and Peer Inclusion; Self-Efficacy Scale; Frequency of exercise: adolescent questionnaire	Parent expressed emotion; Co-parent support; Good-quality social relationship. Self-efficacy, Frequent exercise
Moreno et al. (2016)	2014 Spanish HBSC Questionnaire (life styles, positive health, family, peers, school); Global Health Score (GHS); Quality of Parent–Child Relationship (QPCR); Multidimensional Scale of Perceived Social Support (MSPSS); Revised Bully/Victim Questionnaire; European School Survey Project on Alcohol and Other Drugs; SOC-13; Emotional Regulation Index for Children and Adolescent Scale (ERICA) Curiosity and Exploratory Inventory-II; Body Investment Scale	High contributions Perceived family wealth; Sense of coherence; Satisfaction with body image Perceived academic achievement Modest contributions Breakfast frequency; Satisfaction with friendships; Moderate to vigorous physical activity; Teacher support; Curiosity and exploration
Forres-Bank et al. (2015)	Interview protocol: assess constructs inherent in risk, protection, resilience and PYD frameworks	*Themes* Resources that support development. Positive neighbourhood/community factors (supportive services). Interpersonal connections with positive impact or influence. Coping with adversity. Enduring: praying, singing, playing sports. Harnessing resources. Staying out of trouble. Adapt and change. Caring and compassion. Concern of others and contribution (to help others) Competence and confidence. Aspirations and well-being. Academic and career pathways (school engagement). The right path; Have a better life; Adult roles; Physical and emotional wellness. Wisdom and advice (strong messages about not quitting or giving up)

TABLE 3 (Continued)

Reference	Measures (risk/resilience)	Significant domains of resilience (protective factors)*
Hopkins et al. (2014)	Self-reports specifically designed for the target population; Ordinal scale designed by (WAACHS); Socio-Economic Index for Areas (SEIFA); Culture and neighbourhood level self-report	In high-risk family: Pro-social friendship living in low socioeconomic neighbourhoods. Self-esteem; Self-regulation. Low-risk family: Perception of racism; Self-esteem; Self-regulation
Wexler et al. (2014)	Semi-structured interview guide (narratives of experiences and personal stories)	Stressors: relationship loss, 'not being there for me', non-supportive/hostile experience, becoming an adult, boredom. Resilience strategies Relationships with others; Being responsible; Creating systems of reciprocity. Practicing subsistence living, giving back to family and community
Jain et al. (2012))	Youth Self Report and Young Adult Self Report Scales; Exposure to Community Violence Scale; California Healthy Kids Survey Resilience module; Provision of Social Relations instrument; Deviance of Peers; Family Boundaries and Expectation Scale; School Questionnaire; Neighbourhood social cohesion and social control, collective efficacy and organisation and services index; Concentrated poverty: items from USA census	Supportive relationships (with parents and other adults); Positive peers Family support; Neighbourhood-level cohesion and control
Williams and Nelson-Gardell (2012)	Duke-University of North Carolina Functional Social Support Questionnaire; Sarson Social Support Questionnaire; Loneliness and Social Dissatisfaction; Questionnaire for Young Children measuring quality of peer relationships; National Longitudinal Study of Adolescent Health; Drug Free Schools; The Kaufman Brief Intelligence Tests; Philadelphia Family Management Study Caregiver Interview Schedule; Child Behaviour Checklist	Variables that predict resilience School engagement; Caregiver social support; Hope and expectancy Caregiver education; Socioeconomic status
Beaver et al. (2011)	Dopamine D2 receptor gene (DRD2); Dopamine D4 receptor gene (DRD4); Dopamine transporter gene (DAT1); Serotonin transporter gene (5-HTTLPR); Victimisation Scale; Lifetime Resiliency from Victimisation; Serious Delinquency Scale; Low Self-Control Scale; Delinquent Peers Scale; Maternal Disengagement Scale; Social Support Scale	Predictors of resilience Wave 1: DRD2 = negative effect; DAT1; 5-HTTLPR = positive effect. Wave 2: DRD2 = negative effect. Wave 3: DRD2 = negative effect; 5-HTTLPR = positive effect
Klasen et al. (2010)	Child War Trauma Questionnaire; International Neuropsychiatry Interview; YSR; Self-developed Checklist (domestic and community violence); Connor-Davidson Resilience Scale; Positive Orientation Subscale of the Adolescent Resilience Scale; Peritraumatic Dissociative Experience Questionnaire; Guilt Cognitions Scale of the Trauma-Related Guilt Inventory; Revenge Motivations Subscale of the Transgression-Related Interpersonal Motivations Scale	Lower exposure to domestic violence; Lower guilt cognitions Less motivation to seek revenge; Better socioeconomic status; Perceived spiritual support
Wille et al. (2008)	Self and parent-reported; Strengths and Difficulties Questionnaire; Parent's Questionnaire of the KiGGS; Winkler Index; SF-12; Short form of the German translation of the Checklist-90-R; Interviews; General Perceived Self-Efficacy Scale; Self-Perception Profile for Children; Child Health and Illness Profile-Adolescent Edition; Bernese Questionnaire of Subjective Well-Being; Family Climate Scale; Parental Support Scale and Peer Competence Scale from the International Health Behaviour in School-Aged Children study; Social Support Scale	Personal resources: Self-efficacy; Optimism; Satisfaction; Self concept. Good family climate; Parental support; Social support; Peer competence
Kidd and Shahar (2008)	Interviews and self-reports; Conflict Tactics Scale; Kinsley Scale; Relationship Questionnaire; The Rosenberg Self-Esteem Scale; UCLA Loneliness Scale; Beck's Hopelessness Scale; Brief form of Lester's Helplessness Scale; Short Form General Health Survey	Social involvement (not predictive) Secure attachment (not predictive) Self-esteem

TABLE 3 (Continued)

Reference	Measures (risk/resilience)	Significant domains of resilience (protective factors)[*]
Buckner et al. (2003)	Interviews of youths and mothers; The Child Behaviour Checklist; Children's Depression Inventory; 37-item Revised Children's Manifest Anxiety Scale; The Child Global Assessment Scale; Life Events Questionnaire modified; The Kaufman Brief Intelligence Test; Self-Perception Profile for Children; The California Child Q-Sort and Haan Q-Sort; My Family and Friends	Self-regulation (emotion regulation and executive function) as a predictor of resilience Intelligence; Self-esteem; Parental monitoring (providing structure to children)
Masten et al. (1999)	Life events and development questionnaires; Severity of Psychosocial Stressors Scale; Duncan Socioeconomic Index SES; Parenting quality and competence: children/parent interviews; Self-reports; School records; Status Questionnaire Competence Rating Scale; Peabody Individual Achievement test; Wechsler Intelligence Scale for Children-Revised; Self-Worth scale of a Self-Perception questionnaire based on Harter's Adolescent and Young Adults Scales; Psychological distress: Symptom Checklist 90-Revised; Multidimensional Personality Questionnaire; Positive Emotionality Composite Score; Negative Emotionality Composite Score	Intellectual functioning (IQ) Parenting quality (combination of warmth, expectations and structure)
Fergusson and Lynskey (1996)	Index of family adversity; Self, teachers and parental reports; Modified version of the Rutgers Alcohol Problem Index; Interviews; Revised Behaviour Problem Checklist; Self Report Early Delinquency Scale; DSM-III-R; Wechsler Intelligence Scale for Children; Coopersmith Self Esteem Inventory; Tridimensional Personality Questionnaire; Parental Bonding Instrument; Parental Attachment Scale	Levels of exposure to family adversity (low); Increased early IQ; Decreased affiliations with delinquent peers; Reduced levels of novelty seeking
Luthar (1991)	The Life Events Checklist; Self-report questionnaire; Teacher-Child Rating Scale; The Revised Class Play; The Raven's Standard Progressive Matrices; The Socials Skills Inventory; The Nowicki-Strickland Locus Control Scale; The Sentence Completion Test, Form 81; The Children's Depression Inventory; Children's Manifest Anxiety Scale; The Depressive Experiences Questionnaire	*Protective factors* Internal locus of control; Social expressiveness; Positive events and intelligence *Compensatory factor* Ego development

*For quantitative studies $p < 0.05$.

Community: Social Support Scale (Beaver et al., 2011; Hildebrand et al., 2019; Wille et al., 2008) or Exposure to Community Violence Scale (Jain et al., 2012); *Peers*: Assessing Social Esteem and Peer Inclusion (Collishaw et al., 2016), Deviance of Peers; (Jain et al., 2012) or Delinquent Peers Scale (Beaver et al., 2011); *Cultural*: Black Nationalist Ideology Scale (BIS; Aitcheson et al., 2017) or The Brief RCOPE (Schaefer et al., 2018); *Family*: The Family Environment Scale (FES; Family cohesion; DiClemente et al., 2018), The Home Environment Resources Scale (HERS; Hildebrand et al., 2019) or The Parental Authority Questionnaire (Aitcheson et al., 2017); *School*: The School Connectedness Scale (SCS; Yablon, 2019) or the Adapted version of the Sense of School as a Community questionnaire (DiClemente et al., 2018).

In 14 studies, standardised scales of resilience were not used, instead evaluations were completed using self-report or interviews (see Table 3).

3.3.3 | Resilience domains and protective factors

The significant domains of resilience and their protective factors are represented in Table 3. More than 60 protective factors were identified as being significant in reducing any outcome across the 31 articles. For quantitative articles, $p < 0.05$ was considered statistically significant, and for qualitative studies key themes identified in the articles were included. These protective factors were then merged and classified into 10 different domains and two dimensions of resilience (Individual skills and Environmental), developing a new model of resilience: The Individual and Environmental Resilience Model (IERM; see Figure 2).

The evironmental dimension was broken down in five different domains according to the resiliece factors found. For each domain the protective factors identified in more than two studies were: a) *Cultural*: Spirituality (3); and Ethnic identity (2); b) *Community*: Social resources and support (medical, aid...) (8); Social relationship and connectedness (4); Socioeconomic status (3); Neighbourhood-level cohesion and control (2); Participation in community activities or service work (2) and Safety and security (2); c) *School*: School engagement and connectedness (4); Access to education (2); Having a positive mentor (2); and School safety (2); d) *Peers*: Peer support (3); Satisfaction with friendships (2) and Connectedness to Peers (2); e) *Family*: Parenting quality (combination of warm, expectations and structure (Family–centered care, Family meals together, Good parent–child communication, Low parents stress, Good family climate, Low exposure to domestic violence, Clothes and food) (8); Family support (7); Rules or routine (4).

Individual skills dimension was also categorised into five domains (Emotional, Behaviour, Cognitive, Biological and Comunication skills). The protective factors identified in more than two studies were: (a) *Emotional*: Self-regulation (6); Empathy, solidarity, altruism, compassion, tolerant for others (5); Perceived support (family, social, spiritual, school...) (4); Confidence (3); Optimism (3); Self-esteem (3); Hope and expectancy (2); Satisfaction (2); Self-concept, self-image

(satisfaction with body image) (2); (b) *Behaviour*: Physical activity (5); Coping (3); Competence (2); Perseverance (2); (c) *Cognitive*: Have a better life (aspirations and positive life goals) (4); Intelligence (4); Self-efficacy (sense of control, internal locus control) (4); and Lower guilt cognitions (2); (d) *Comunication skills*: Social skills (2) (see the evidence-based resilient variables and conceptual resilient model in Tables 3 and 4; Figure 2).

4 | DISCUSSION

By using systematic principles for searching and screening, in addition to quality criteria (Furlan et al., 2009), this integrative systematic review contributes to identifying which protective factors have some evidence of efficacy in this population. Five Environmental domains (Cultural, Community, School, Peers, Family) and five Individual domains (Emotional, Behaviour, Cognitive, Biological and Comunication skills) were identified from 31 studies with different methodologies that investigated resilience in the younger population in various contexts of adversity or risk. In addition, this review identifies and classifies protective evidence-based factors found in the literature. Our review focuses on 31 studies with different methodologies that investigate resilience in young population in various contexts of adversity or risk. As a result, we have developed the conceptual model 'IERM'.

This integrative systematic review, has collated existing knowledge in a new way, to support the development of innovative or new interventions in young populations at risk.

The results show that there is not a universal definition of resilience used across the literature include in this review (Aburn et al., 2016). The most common definition of resilience used was having good mental health and good psychosocial functioning despite exposure to risk or adversity (Collishaw et al., 2016; Hopkins et al., 2014; Kidd & Shahar, 2008; Moreno et al., 2016; Williams & Nelson-Gardell, 2012). Our findings are similar to those observed in other studies (Aburn et al., 2016; Bonanno, 2004; Bonanno et al., 2007).

Most studies agreed that resilience is a complex and a context-dependent concept (Connor & Davidson, 2003; Masten & Obradovic, 2006). In the model of resilience presented in Figure 2, resilience is conceptualised as a dynamic construct (Luthar et al., 2000; Masten, 2001; Masten & Coatsworth, 1998; Rutter, 1993) resulting from positive adaptation in a context of risk (Masten & Obradovic, 2006). We can see an interaction between risk contexts (with their accumulation effect) and protective factors (coming from the interaction with environment and individual skills) resulting in positive social and psychological outcomes (Masten & Obradovic, 2008; Masten et al., 2008; Rutter et al., 2010; Supkoff et al., 2012). The variability in the resilience measures used in the studies reviewed can be understood by the differences in the definition of resilience (Klika & Herrenkohl, 2013).

A comprehensive variety of risks are represented in this review. Risk contexts identified (*Armed conflict or facing terror; Exposure*
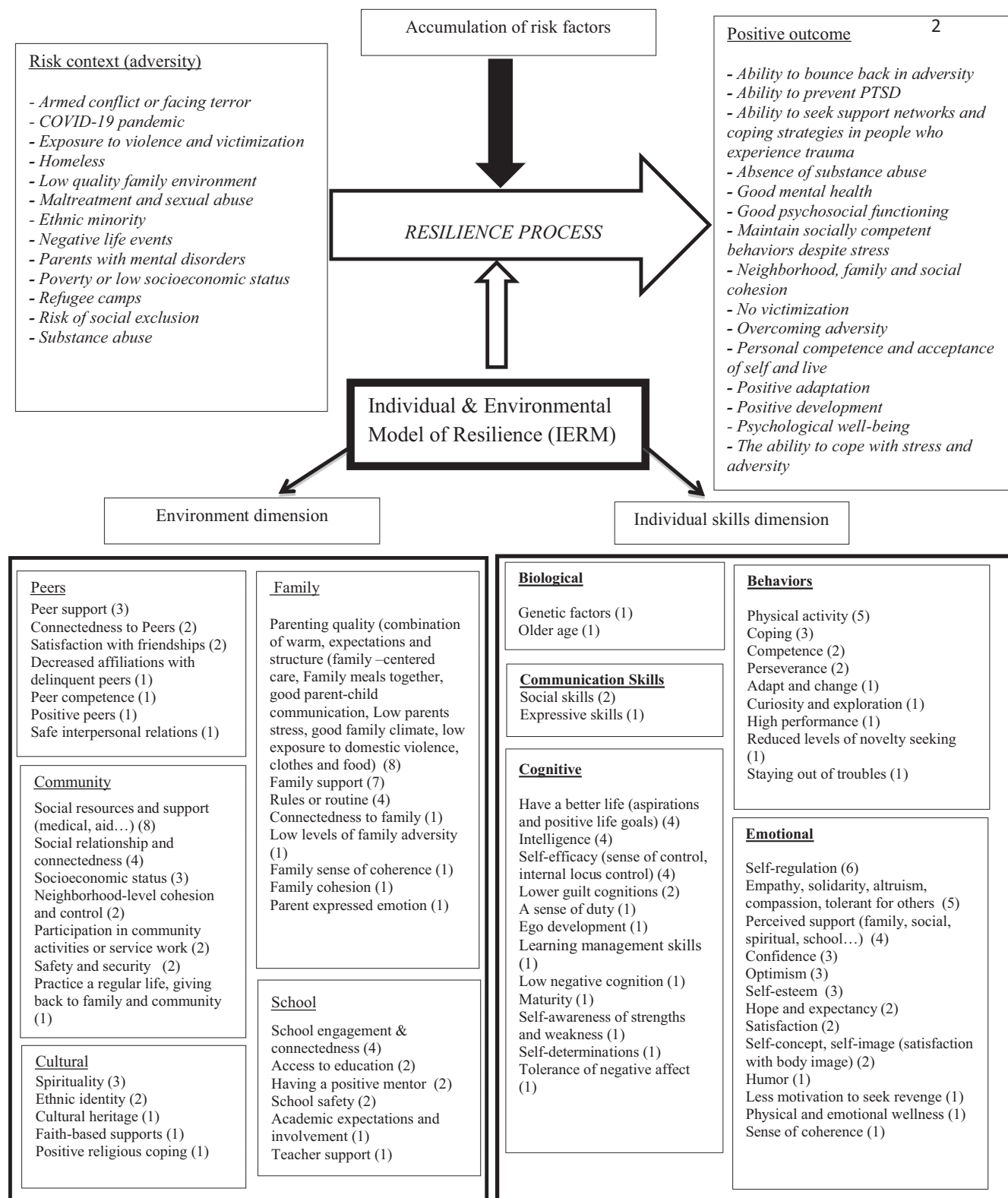
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Accumulation of risk factors

Positive outcome 2

- *Ability to bounce back in adversity*
- *Ability to prevent PTSD*
- *Ability to seek support networks and coping strategies in people who experience trauma*
- *Absence of substance abuse*
- *Good mental health*
- *Good psychosocial functioning*
- *Maintain socially competent behaviors despite stress*
- *Neighborhood, family and social cohesion*
- *No victimization*
- *Overcoming adversity*
- *Personal competence and acceptance of self and live*
- *Positive adaptation*
- *Positive development*
- *Psychological well-being*
- *The ability to cope with stress and adversity*

Risk context (adversity)

- *Armed conflict or facing terror*
- *COVID-19 pandemic*
- *Exposure to violence and victimization*
- *Homeless*
- *Low quality family environment*
- *Maltreatment and sexual abuse*
- *Ethnic minority*
- *Negative life events*
- *Parents with mental disorders*
- *Poverty or low socioeconomic status*
- *Refugee camps*
- *Risk of social exclusion*
- *Substance abuse*

RESILIENCE PROCESS

Individual & Environmental Model of Resilience (IERM)

Environment dimension

Individual skills dimension

Peers
Peer support (3)
Connectedness to Peers (2)
Satisfaction with friendships (2)
Decreased affiliations with delinquent peers (1)
Peer competence (1)
Positive peers (1)
Safe interpersonal relations (1)

Community
Social resources and support (medical, aid…) (8)
Social relationship and connectedness (4)
Socioeconomic status (3)
Neighborhood-level cohesion and control (2)
Participation in community activities or service work (2)
Safety and security (2)
Practice a regular life, giving back to family and community (1)

Cultural
Spirituality (3)
Ethnic identity (2)
Cultural heritage (1)
Faith-based supports (1)
Positive religious coping (1)

Family
Parenting quality (combination of warm, expectations and structure (family –centered care, Family meals together, good parent-child communication, Low parents stress, good family climate, low exposure to domestic violence, clothes and food) (8)
Family support (7)
Rules or routine (4)
Connectedness to family (1)
Low levels of family adversity (1)
Family sense of coherence (1)
Family cohesion (1)
Parent expressed emotion (1)

School
School engagement & connectedness (4)
Access to education (2)
Having a positive mentor (2)
School safety (2)
Academic expectations and involvement (1)
Teacher support (1)

Biological
Genetic factors (1)
Older age (1)

Communication Skills
Social skills (2)
Expressive skills (1)

Cognitive
Have a better life (aspirations and positive life goals) (4)
Intelligence (4)
Self-efficacy (sense of control, internal locus control) (2)
Lower guilt cognitions (2)
A sense of duty (1)
Ego development (1)
Learning management skills (1)
Low negative cognition (1)
Maturity (1)
Self-awareness of strengths and weakness (1)
Self-determinations (1)
Tolerance of negative affect (1)

Behaviors
Physical activity (5)
Coping (3)
Competence (2)
Perseverance (2)
Adapt and change (1)
Curiosity and exploration (1)
High performance (1)
Reduced levels of novelty seeking (1)
Staying out of troubles (1)

Emotional
Self-regulation (6)
Empathy, solidarity, altruism, compassion, tolerant for others (5)
Perceived support (family, social, spiritual, school…) (4)
Confidence (3)
Optimism (3)
Self-esteem (3)
Hope and expectancy (2)
Satisfaction (2)
Self-concept, self-image (satisfaction with body image) (2)
Humor (1)
Less motivation to seek revenge (1)
Physical and emotional wellness (1)
Sense of coherence (1)

FIGURE 2 Individual and environmental model of resilience and protective factors.

to violence and victimisation; Homeless; Low quality family environment; Maltreatment and sexual abuse; Ethnic minority; Negative life events; Parents with mental disorders; Poverty or low socioeconomic status; Refugee camps; Risk of social exclusion and Substance abuse) are concordant with those reported by the International Resilience Project (Ungar, 2008; Ungar & Liebenberg, 2009) and other studies (Braverman, 1999; Brooks-Gunn et al., 1993; Murray, 2003).

In addition, two studies identified differences between high-risk and low-risk exposures depending on the accumulation of risk factors (Hopkins et al., 2014; Wille et al., 2008). Hopkins

TABLE 4 Number of studies identifying a statistically significant positive association of the factor with resilient outcomes

Resilient factor	Evidence
Environmental	
Cultural	
Spirituality	++
Ethnic identity	+
Cultural heritage	+
Faith-based supports	+
Positive religious coping	+
Community	
Social resources and support (medical, aid)	+++
Social relationship and connectedness	++
Socioeconomic status	++
Neighbourhood-level cohesion and control	+
Participation in community activities or service work	+
Safety and security	+
Practice a regular life, giving back to family and community	+
School	
School engagement and connectedness	++
Access to education	+
Having a positive mentor	+
School safety	+
Academic expectations and involvement	+
Teacher support	+
Peers	
Peer support	++
Connectedness to peers	+
Satisfaction with friendships	+
Decreased affiliations with delinquent peers	+
Peer competence	+
Positive peers	+
Safe interpersonal relations	+
Interaction with family	
Family support	+++
Parenting quality (combination of warm, expectations and structure (family-centered care, Family meals together, good parent–child communication, Low parents stress, good family climate, low exposure to domestic violence, clothes and food)	+++
Rules or routine	++
Connectedness to family	+
Low levels of family adversity	+
Family sense of coherence	+
Family cohesion	+
Parent expressed emotion	+
Individual skills	
Communication skills	

TABLE 4 (Continued)

Resilient factor	Evidence
Social skills	+
Expressive skills	+
Emotional	
Self-regulation	+++
Empathy, solidarity, altruism, compassion, tolerant for others	+++
Confidence	++
Optimism	++
Perceived support (family, social, spiritual, school...)	++
Self-esteem	++
Hope and expectancy	+
Satisfaction	+
Self-concept, self-image (satisfaction with body image)	+
Humour	+
Less motivation to seek revenge	+
Physical and emotional wellness	+
Sense of coherence	+
Behaviour	
Physical activity	+++
Coping	++
Adapt and change	+
Competence	+
Curiosity and exploration	+
High performance	+
Perseverance	+
Reduced levels of novelty seeking	+
Staying out of troubles	+
Cognitive	
Have a better life (aspirations and positive life goals)	++
Intelligence	++
Self-efficacy (sense of control, internal locus control)	++
Lower guilt cognitions	+
A sense of duty	+
Ego development	+
Learning management skills	+
Low negative cognition	+
Maturity	+
Self-awareness of strengths and weakness	+
Self-determinations	+
Tolerance of negative affect	+
Biological	
Genetic factors	+
Older age	+

Note: Evidence: significant protective factor presents in the review: + (1 or 2 studies); ++ (3 or 4 studies); +++ (>4 studies).

et al. (2014) showed that the resilience process only occurred in high-risk contexts (2 or >5 risks). However, BELLA study (Wille et al., 2008) showed that when more than 6 adverse factors occurred together, the probability of developing a mental health problem was higher (Fonagy et al., 1994; Luthar, 1993; Mohammadinia et al., 2018; Murray, 2003; Rutter, 1993; Yule et al., 2019). In accordance with other studies, resilience (better mental health) was associated with a higher number of protective factors available to the young person, child or adolescent (Collishaw et al., 2016; Jain et al., 2012). However, the resilience process also depends on severity and timing of exposure to adversity (Segura et al., 2017). This can compromise the phenomenon of allostatic load, with adolescents being more vulnerable to the incidence of new diseases and disorders.

The social ecological model theory proposed by Bronfenbrenner (1979) defines the child's development within the system of interactions between him/herself and his/her environment (immediate: family, peers; and wide social: community, culture). According to the ecology of human development (Bronfenbrenner, 1979) and the ecological resilience model proposed by Ungar (2008), two big dimensions of resilience were found in this review: Interaction with environment and Individual skills. Interaction with environment includes protective factors from cultural, community, school, peers and family domains. In concordance with the ecological model from Ungar (2008) and the meta-analysis from Yule et al. (2019), individual, family, school, peers and community factors were found. (Ostaszewski & Zimmerman, 2006; Ungar, 2008). Individual skills dimension, also was broken down into five different domains which are: Biological, Behavioural, Communication skills, Cognitive and Emotional.

Cultural, Community and Biological domains have been poorly identified in other studies but are essential to understand resilience according to global models about human functioning (Bronfenbrenner, 1979; Dahlgren & Whitehead, 1991; Ungar, 2008).

The most consistent predictors of protective factors found in this review are social and family support, parenting quality for environmental dimension and self-regulation for individual skills dimension. All findings are congruent with other works (Fonagy et al., 1994; Luthar, 1993; Mohammadinia et al., 2018; Murray, 2003; Rutter, 1993; Yule et al., 2019).

The social ecological model (Ungar, 2008) includes 32 resilience factors distributed into 4 domains (culture (7), community (8), relationship (4) and individual (13)). Of these, 20 (28.57%) were identified in the IERM; the IERM also included another 50 (71.42%) protective factors that were not found in the ecological model.

The new identified protective factors that were included in the IERM were, among others: (a) community domain (*Practice a regular life, giving back to family and community, socioeconomic statutus* and *neighbourhood-level cohesion and control*); (b) relationship domain (*school engagement, peer competence, low levels of exposure to family adversity, absence of physical abuse and parental expectations*); and (c) individual domain (*perceived academic achievement, physical activity, sense of coherence, self-concept, self-image, curiosity and exploration,*

adapt and change, have a better life (aspirations), self-esteem, self-regulation, hope and expectancy, lower guilt cognitions, less motivation to seek revenges, satisfaction, intelligence, reduced levels of novelty seeking, ego development, genetic factors and older age).

Twenty out of thirty-two protective factors described in the ecological model (55.55%) were common across the included studies and congruent with other publications (Fonagy et al., 1994; Luthar, 1993; Murray, 2003; Rutter, 1993). The ecological domains (culture, community, relationship and individual) were represented in this review: 3/7 (42.8%); 3/8 (37.5%); 4/4 (100%); 10/13 (76.92%), respectively.

To understand resilience, other protective factors not included in the ecological model should be considered, such as intelligence, self-esteem, self-concept, as well as genetic and biological factors, among others. In the present review, no protective factors related with political practice (political measures in health or education) were found, although they were represented in the ecological model (Ungar, 2008). It would be interesting to conduct studies on how these factors related to political pratice (such as, facilitating help-seeking behaviours from educational institutions) protect adolescents from negative outcomes.

Comparing IERM to factors associated with resilience in children exposed to social adversity in Gartland et al.'s (2019) systematic review, the IERM added more than 30 additional protective factors. In the systematic review, protective factors were categorised into five domains (individual, family, social, school and community). In the Individual domain, eight factors were represented in the IERM (*self-regulation, empathy, self-esteem, hope, social skills, coging, cognitive and self efficacy*; Gartland et al., 2019) and there were more than 30 that have not been identified in the review, such as *expressive skills, optimism, humour, perseverance, ego development* among others. Nevertheless, five individual protective factors were not found in the IERM (*self-identity, gender, possitive affect, temperament and help seeking*). In the family, social and community domains, all of the resilience factors were represented in the IERM (*family relationships, parenting skills, caregiver relationship, family environment and parent mental health, social support, social skills, school environment, teachers, student engagement, spirituality, neighbourhood and culture* among others; Gartland et al., 2019). More than 15 different resilience factors were included in the IERM, such as *ethnic identity, positive religious coping, socioeconomic status, safety and security, acces to education, peer support rules and routine* from family among others.

In addition, the 11 protective factors identified and included in the meta-analysis from Yule et al. (2019) were also represented in the IERM (*positive self-perceptions, cognitive ability, self-regulation, coping, family support, parental effectiveness, school support, community cohesion, extra-curricular activities and religious involvement*).

Comparing the IERM model with other models or other systematic reviews, we found that IERM adds news factors that can buffer between risk exposures and defined outcomes. However, compared especially with Ungar's model, our model is conceptually equivalent. The ecological model seems also consistent with other models that

explain the social determinants of health inequalities (Dahlgren & Whitehead, 1991; Evans et al., 1994; Marmot, 2005). So, we can consider the IERM sensitive enough to assess social inequities in the context of resilience phenomena in youths. The IERM is a dynamic, non-closed and integrative model developed thanks to empirical evidence. Nevertheless, future research should address how many of these new factors are needed to create a positive or negative resilient state in adolescents at risk, and the individual weight of them and their confluence in the resilient process.

4.1 | Implications

Given the volume of publications on resilience studies, this work helps to clarify the dimensions of resilience and shows that the concept still needs to be investigated to further break down the factors of each dimension and facilitate the definition of new intervention proposals. This review also identifies the protective factors related to resilience with more scientific evidence. The present study will allow us to design new interventions to promote resilience in young population focused on these identified protective factors.

The outcomes of this study suggest that our model offers one of the most complete ways to assess a complex concept such as resilience, in concordance with other models, such as the ecological model.

For future research, psychosocial and educational interventions should be considered according to the complexity and dimensionality of resilience, mainly in the cultural and community domains in which young population develop. Furthermore, the influence of the cumulative effect of risk on resilient processes should be contemplated.

4.2 | Limitations and strenghts

Finally, to appreciate the findings of this review, some limitations need to be considered. First, meta-analysis and risk of bias assessment have not been conducted using the classical PRISMA guideline because of the heterogeneity found in exposures and outcomes. Instead, we used adapted scales for quantitative and qualitative studies (Handbook for Systematic Reviews of Interventions version 5.1.0, Higgins & Green, 2011; and the Qualitative Research Checklist 31.05.13, Critical Appraisal Skills Programme, 2017). Other aspects of risk of bias might be selection and reporting bias in the included studies specifically for observational studies, such as representativeness of the cohort or the cases or mostly outcomes reported were self-reported (e.g. mental disorders).

Therefore, effect of sample sizes has not been calculated. Second, most of the research included in this review focused on a single risk, without considering the cumulative effects of other factors. This review also fails to take into account the interaction between different and complex risks, assets and resources involved in a process of resilience (Ostaszewski & Zimmerman, 2006). Third, the search only included those articles written either in English or Spanish. Thus, other articles written in other languages were not included. Finally, high heterogeneity within the sudies was encountered in this review due to the complexity of the resilience concept and the numerous existing different definitions.

Despite having some limitations, this review describes the protective factors related to resilience, in different types of risk and adversity contexts. In addition, only those studies of high methodological quality have been included.

5 | CONCLUSION

In this review, the complexity of the resilience process was confirmed. The cultural context was considered in only few studies, while resilience depends on the capacity of the person and the resources offered by the environment (cultural, community, school, peers and family) and is influenced by culture and social context in which it develops (Ungar, 2004). Our conceptual model 'IERM' provides knowledge about the wide variety of protective factors that intervene in resilient processes and that must be taken into account when developing programs to promote resilience. We believe that the ecological model proposed by the International Resilience Research Group includes a larger number of factors of resilience. Nevertheless, we have found other significant factors in this review, such as intelligence, self-esteem and self-concept, genetic factors and biological processes, which should be taken into account in future studies and interventions.

To reduce the risk of several exposures, and to help in the development of resilience in young population, it seems appropriate to develop specific interventions adressing multiple dimensions, in particular, interventions aimed at developing protective factors with more identified scientific evidence such as social relationship, self-esteem and self-regulation among others.

AUTHOR CONTRIBUTIONS

Study concept and design: Llistosella M; Castellví P; Gutiérrez-Rosado T. Baeza-Velasco C.

Reviewing and extracting data: Llistosella M; Castellví P; Perez-Ventana C; Gutiérrez-Rosado T. Drafting of the manuscript: Llistosella M; Castellví P; Gutiérrez-Rosado T; Baeza-Velasco C; Limonero JT. Critical revision of the manuscript for important intellectual content: Llistosella M; Castellví P; Gutiérrez-Rosado T; Baeza-Velasco C; Perez-Ventana C; Limonero JT.

DATA AVAILABILITY STATEMENT

Data used in this study can be acquired upon request (mllistosella@cst.cat).

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.