A narrative review of reviews of interconnecting risks (IR) of mental health problems for young people

Julian Edbrooke-Childs and Jessica Deighton

The aim of this narrative review is to examine the most prevalent multiple or interconnecting risks of mental health problems that have been identified in previous reviews of the literature and to examine those most prevalent for children and young people. Overall, ten databases were searched for published literature reviews, and from 1,556 unique hits, 91 reviews examining individual risks were included, with 35 reviews examining interconnecting risks. The findings suggest that interpersonal connection plays a central role in interconnecting risks, as indicated by the number of interconnections between social groups, interpersonal, parental relationships and family cohesion with other risk themes. Family and systemic approaches have clear value in supporting young people by enabling the development of a secure relational foundation on which to build future protective interpersonal connections.

Practitioner Points

• Interpersonal connection plays a central role in interconnecting risks, as indicated by the number of interconnections between social groups, interpersonal, parental relationships and family cohesion with other risk themes.
• Interventions that support young people to build and maintain interpersonal connections when experiencing individual and interconnecting risks may have important consequences for the prevention and early intervention of mental health problems.
• Family and systemic approaches have clear value in supporting young people by enabling the development of a secure relational foundation on which to build future protective interpersonal connections.

Keywords: interconnecting risk; mental health; narrative review; risk; young people

Childhood and adolescence are critical periods of development, characterised by numerous physiological, psychological and social transitions. For some, it is a period also characterised by exposure to numerous

Evidence Based Practice Unit, University College London & Anna Freud National Centre for Children and Families, Clinical, Educational and Health Psychology, Gower Street, London, WC1E 6BT, UK

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risks undermining mental health, with approximately 23% of the population having experienced one adverse childhood experience and 19–35% having experienced two or more (Bellis et al., 2019). This stage of development is a critical period for intervention and support as 12% of young people will experience mental health difficulties, and up to 75% of adult mental health problems emerge by the age of 24 years (Kessler et al., 2007; NHS Digital, 2018). It is known that exposure to multiple risks in childhood and adolescence increases the likelihood of mental health problems in young people (Evans et al., 2013). Nevertheless, there is a need for evidence on the prevalence of multiple risks that synthesises the literature to examine how these prevalent multiple risks interconnect to identify unifying mechanisms for intervention.

The concept of risk factors working in combination to undermine adaptive functioning is not new. There is extensive literature around the impact of multiple adverse childhood events (ACEs) on a range of health outcomes (Hughes et al., 2017). Previous research has also demonstrated that a culmination of risk factors (not necessarily ACEs) can exhaust the system’s capacity to cope and lead to a negative impact that is potentially more deleterious than the sum of its parts (Appleyard et al., 2005). Nevertheless, young people can function well in spite of this myriad of adversities if other protective factors are available. These protective factors might be individual, familial or part of wider social or societal contexts, but they ameliorate the potential harm posed by the risk factors (Masten, 2014). This relationship between risk and protective factors is described as resilience: ‘The capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability, viability, or development’ (Sapienza and Masten, 2011) (p. 268). This capacity to withstand threats relies on a constellation of protective factors, arguably the most malleable of which involve access to social support and a variety of positive interpersonal relationships (Armstrong et al., 2005). These social relationships and interpersonal connections allow the building of epistemic trust: ‘that is, trust in the authenticity and personal relevance of interpersonally transmitted knowledge about how the social environment works and how best to navigate it’ (Fonagy et al., 2017) (p. 177). The primary aim of the present narrative review is to examine the most prevalent interconnecting risks of mental health problems that have been identified in previous reviews of the literature and, to inform these interconnecting risks, examine the most prevalent individual risks for young people. To address this, there were two review questions:
Review question 1: What are the most prevalent individual risk factors of mental health problems for young people identified in published literature reviews?

Review question 2: What are the most prevalent interconnecting risk factors of mental health problems for young people in published literature reviews?

Method

To address the overall aim of identifying unifying mechanisms for intervention and future research, a narrative review of reviews was conducted (Ferrari, 2015), which applies systematic review methods (Higgins et al., 2021; Moher et al., 2009) to the planning and conduct of literature reviews to mitigate the role of subjectivity. A narrative review was chosen as there was a broader focus on examining types of common individual and interconnecting risks as opposed to a narrower focus on examining evidence of intervention effectiveness, which is more suitable for a systematic review. A protocol was developed in advance and is available in Supplementary Material 1. Overall, ten databases were searched in January 2020: PsycINFO (OVID), MEDLINE (OVID), EMBASE (OVID), Web of science core collection, current contents connect, SciELO Citation Index, Cochrane Library of Systematic Reviews, CINAHL (EBSCO), ERIC (EBSCO) and child and adolescent studies (EBSCO). Searches were restricted to studies published in English in the past 10 years (2010–2020). The search strategy was developed based on previous reviews (Ettekal et al., 2019; Evans et al., 2013) and comprised four concepts: participants (e.g. child), comparator (e.g. multiple risk), outcome (e.g. internalising) and study design (e.g. literature review). Search terms by database are shown in Supplementary Material 1. Subjectivity was also explicitly addressed through regular review meetings with the co-authors; for example, we reviewed the types of risks being identified with particular focus on ensuring those located within the system, not solely within the individual, were being represented and reflected.

The search flow is shown in Figure 1. The database searches resulted in 1,778 hits, and after duplicates were removed, 1,556 titles and abstracts were screened. In particular, 1,314 obviously irrelevant hits were excluded, including studies that were not published (e.g. dissertations), primary research studies and studies with no mention of risks, mental health or children or young people. The inclusion/exclusion criteria are presented in Table 1. Correspondingly, 238 full texts were screened.
for eligibility, of which 147 were excluded. The final sample of included reviews was 91 reviews examining individual risks, with 35 reviews examining interconnecting risks.

All types of literature review were included. Findings relevant or applicable to children and young people were prioritised, but relevant studies with a broader age range (or not reported age range) were not excluded; studies exclusively on infants, young children (<10 years) or adults were excluded, as the focus was on risks that could be tackled in school-aged children and young people to prevent mental health
| Include/Exclude | Participants | Intervention | Comparator | Outcome | Study design |
|----------------|--------------|--------------|------------|---------|--------------|
| Include        | Children and young people | N/A          | Any risk factors | Internalising problems | Literature review |
| Include        | Exclusively infants or young children (<10 years) | Protective factors | | Externalising problems | Systematic review |
| Include        | Exclusively adults (> 18 years) | Interventional studies | | Substance misuse | Meta-analysis |
| Exclude        | Age range not reported and no reference to children or young people | | | Learning difficulties | Not published (e.g., dissertation) |
| Include        | | | | | Insufficient information for data extraction (e.g., only abstract available) |
| 1st author & reference | Year | Review type | No. of studies | Lead country | Age range | Main focus |
|------------------------|------|-------------|----------------|--------------|-----------|------------|
| Aghaei et al. | 2019 | Systematic review | 28 | Iran | Youth | ADHD |
| Alisic | 2015 | Systematic review | 17 | Australia | Youth | Parental intimate partner homicide |
| Assink et al. | 2015 | Meta-analysis | 55 | The Netherlands | Youth | Offending |
| Azeredo | 2018 | Systematic review | 17 | Portugal | Youth | Externalising problems |
| Barker et al. | 2015 | Narrative review | NR | The Netherlands | Youth | Psychopathology |
| Barrocas et al. | 2016 | Integrative and theoretical review | NR | Portugal | Youth | Parental drug addiction |
| Becker et al. | 2018 | Narrative review | NR | US | Youth | Sleep |
| Bell et al. | 2015 | Systematic review | NR | Australia | Youth | Brain tumour |
| Benner et al. | 2018 | Meta-analysis | NR | US | Youth | Racial discrimination |
| Betancourt et al. | 2013 | Narrative review | NR | US | Youth | HIV/AIDS |
| Biswas et al. | 2016 | Systematic review | 10 | Brazil | Youth | Hairdressing |
| Bottino et al. | 2015 | Narrative review | NR | Canada | Youth | Child abuse |
| Browne et al. | 2016 | Systematic review | NR | US | Youth | Externatizing behaviours |
| Brumley et al. | 2016 | Meta-analysis | NR | Germany | Youth | Type 1 diabetes |

(Continues)
## TABLE 2 (CONTINUED)

| 1st author & reference | Year | Review type      | No. of studies | Lead country | Age range   | Main focus                                                                 |
|------------------------|------|------------------|----------------|--------------|-------------|-----------------------------------------------------------------------------|
| Byrne                  | 2017 | Systematic review| 7              | US           | Youth       | Pre-pubertal youth                                                          |
| Cha                    | 2018 | Narrative review | NR             | US           | Youth       | Suicidality                                                                |
| Chapman                | 2016 | Critical review  | 37             | UK           | Youth       | Depression                                                                  |
| Davis                  | 2019 | Systematic review| NR             | US           | Youth       | Environmental toxicant exposure                                             |
| Dawson                 | 2012 | Integrative review| 9              | Australia    | Youth       | Imprisoned parents                                                          |
| Dennison               | 2016 | Narrative review | 21             | US           | Youth       | Depression                                                                  |
| Devlin                 | 2019 | Systematic review| 44             | UK           | Youth       | Parenting practices                                                         |
| Di Manno               | 2015 | Systematic review| 14             | Australia    | Youth       | Parental separation                                                         |
| Dishion                | 2011 | Narrative review | NR             | US           | Youth       | Peer contagion                                                             |
| Epkins                 | 2011 | Narrative review | NA             | US           | Youth       | Social anxiety and depression                                               |
| Estrada-Prat           | 2019 | Systematic review| 48             | Spain        | Non-specific | Bipolar disorder                                                            |
| Evans                  | 2013 | Narrative review | 196            | US           | Youth       | Cumulative risk and development                                             |
| Ferguson               | 2013 | Narrative review | NR             | US           | Youth       | Physical environment and child development                                |

(Continues)
| 1st author & reference | Year  | Review type          | No. of studies | Lead country | Age range | Main focus                  |
|------------------------|-------|----------------------|----------------|--------------|-----------|-----------------------------|
| Forbes                 | 2012  | Narrative review     | NR             | US           | Youth     | Depression                  |
| Francis                | 2016  | Systematic review    | 18             | Australia    | Youth     | Intellectual giftedness    |
| Fritz                  | 2018  | Systematic review    | 22             | The Netherlands | Youth | Childhood adversity      |
| Ghanizadeh             | 2011  | Narrative review     | NR             | Iran         | Non-specific* | Imprisoned individuals |
| Hall                   | 2018  | Systematic review    | 35             | US           | Youth     | LGBTQ+                     |
| Hamm                   | 2015  | Scoping review       | 36             | Canada       | Youth     | Cyberbullying               |
| Harold                 | 2018  | Narrative review     | NR             | UK           | Youth     | Psychopathology             |
| Hellstrom              | 2019  | Systematic review    | 6              | Sweden       | Youth     | ADHD and autistic spectrum disorder |
| Hoare                  | 2016  | Systematic review    | 32             | Australia    | Youth     | Psychopathology             |
| Holliday               | 2016  | Narrative review     | NR             | USA          | Youth     | Nicotine use                |
| Holt                   | 2015  | Meta-analysis        | 47             | US           | Youth     | Suicidality                 |
| Hughes                 | 2017  | Meta-analysis        | 37             | UK           | Non-specific | Adverse childhood experiences |
| Jastrowski             | 2019  | Narrative review     | NR             | US           | Youth     | Chronic pain                |
| Kaye                   | 2017  | Conceptual review    | NR             | US           | Youth     | Survivors of cancer         |
| Kushner                | 2015  | Narrative review     | NR             | Canada       | Youth     | Psychopathology             |
| Lahey                  | 2012  | Narrative review     | NR             | US           | Youth     | Conduct disorder            |

(Continues)
| 1st author & reference | Year | Review type    | No. of studies | Lead country | Age range       | Main focus                                      |
|------------------------|------|----------------|----------------|--------------|-----------------|------------------------------------------------|
| Lange                  | 2013 | Meta-analysis  | 69             | Canada       | Youth           | Foetal alcohol syndrome                         |
| Larsen                 | 2015 | Systematic review | 44              | Denmark      | Youth           | Disordered eating                               |
| Le                     | 2018 | Meta-analysis  | 30             | Australia    | Young people from LMICs | Poly-victimisation                             |
| Lee                    | 2019 | Systematic review | 54              | Korea        | Youth in Korea  | Multi-ethnic groups                             |
| Letourneau              | 2013 | Meta-analysis  | 33             | Canada       | Youth           | Socioeconomic status                            |
| Lim                    | 2019 | Scoping review  | 49             | Singapore    | Youth           | Depression                                      |
| Loomes                 | 2017 | Meta-analysis  | 54             | UK           | Youth           | Autistic spectrum disorder                      |
| Loring                 | 2015 | Narrative review | NR             | US           | Youth           | Epilepsy                                        |
| Luo                    | 2019 | Integrative review | NR             | USA          | Non-specific*  | ADHD                                            |
| Maniglio               | 2015 | Systematic review | 36             | Italy        | Non-specific*  | Conduct disorder                               |
| March-Llanes           | 2017 | Meta-analysis  | 27             | Spain        | Youth           | Psychopathology                                 |
| Masten                 | 2012 | Narrative review | NA             | US           | Youth           | Mass trauma                                     |
| Mayo                   | 2017 | Narrative review | 8              | US           | Youth           | Psychosis                                       |
| McCray                 | 2013 | Narrative review | NR             | US           | Youth           | Fragile X syndrome                              |
| McCrory                | 2012 | Narrative review | NR             | UK           | Youth           | Child abuse                                     |
| McHugh                 | 2019 | Meta-analysis  | 18             | Australia    | Youth           | Self-harm                                       |
| 1st author & reference | Year | Review type | No. of studies | Lead country | Age range | Main focus |
|------------------------|------|-------------|----------------|--------------|-----------|------------|
| Misiak61               | 2017 | Comprehensive review | NR             | Poland       | Youth     | Psychosis |
| Morris62               | 2012 | Meta-analysis    | 35             | US           | Youth     | Post-traumatic stress symptoms |
| Murray63               | 2012 | Systematic review | 40             | UK           | Youth     | Imprisoned parents |
| Norton64               | 2017 | Narrative review  | NR             | Australia    | Youth     | Social anxiety disorder |
| Oswald65               | 2011 | Narrative review  | 32             | Germany      | Youth     | Foster care |
| Ottisova66             | 2016 | Updated Systematic review | 31             | UK           | Non-specific* | Human trafficking |
| Pan67                  | 2015 | Meta-analysis    | 11             | China        | Non-specific | ADHD |
| Patel68                | 2018 | Systematic review | 12             | US           | Non-specific* | Depression |
| Patil69                | 2018 | Systematic review | 25             | US           | Youth in the United States | Minoritized groups |
| Perks70                | 2019 | Meta-analysis    | 39             | Australia    | Youth     | Fire setting |
| Piotrowska71           | 2015 | Meta-analysis    | 133            | UK           | Youth     | Antisocial behaviour |
| Ronald72               | 2018 | Systematic review | 13             | UK           | Non-specific | Psychosis |
| Sanders73              | 2015 | Systematic review | 47             | Australia    | Youth in Australia | Obesity |
| Scerif74               | 2015 | Narrative review  | NR             | UK           | Youth     | ADHD |

(Continues)
| 1st author & reference | Year | Review type     | No. of studies | Lead country | Age range          | Main focus                                                                 |
|-----------------------|------|-----------------|----------------|--------------|--------------------|----------------------------------------------------------------------------|
| Schroeder75           | 2014 | Narrative review| NR             | Canada       | Youth              | Autistic spectrum disorder                                                 |
| Stepp76               | 2016 | Systematic review| 39             | US           | Non-specific*      | Borderline personality disorder                                             |
| Stevens77             | 2019 | Narrative review| NR             | UK           | Youth in England  | Refugees, asylum seekers, undocumented migrants                             |
| Straussner78          | 2018 | Narrative review| NR             | US           | Youth              | Parental substance use                                                      |
| Tam79                 | 2017 | Systematic review| 11             | UK           | Youth              | Forcibly displaced                                                          |
| Thapar80              | 2013 | Narrative review| NR             | UK           | Non-specific       | ADHD                                                                       |
| Timshel81             | 2017 | Systematic review| 15             | Denmark      | Non-specific*      | Refugee                                                                    |
| Toomey82              | 2017 | Critical review  | 125            | US           | Youth              | Minority ethnic and LGBTQ+                                                 |
| Tung83                | 2016 | Meta-analysis    | 18             | US           | Youth              | ADHD                                                                       |
| van Duinkerken84      | 2019 | Integrative review| NR             | Brazil/the Netherlands | Non-specific* | Type 1 diabetes                                                             |
| Vijayakumar85         | 2011 | Narrative review| NR             | India        | Non-specific*      | Suicidality                                                                |
| Wadsworth86           | 2018 | Systematic review| 11             | US           | Youth              | Pre-adolescents                                                            |
| Wang87                | 2018 | Meta-analysis    | 14             | US           | Non-specific       | Stress-related disorders                                                   |
| Whitely88             | 2019 | Systematic review| 26             | Australia    | Youth              | ADHD                                                                       |

(Continues)
| 1st author & reference | Year | Review type           | No. of studies | Lead country     | Age range | Main focus                      |
|------------------------|------|-----------------------|----------------|------------------|-----------|---------------------------------|
| Whitten⁹⁰              | 2019 | Systematic review     | 19             | Australia        | Youth     | Parental offending              |
| Xia⁹⁰                  | 2015 | Systematic review     | 47             | China            | Youth     | Depression                      |
| Yildrim⁹¹              | 2012 | Narrative review      | NR             | The Netherlands  | Non-specific* | Testosterone and psychopathy |

Note. Full references of included studies are shown in Supplementary Material 2. * = although a range of ages was included, results for young people were reported separately and extracted. NR = not reported. LMIC = low and lower-middle income countries. ADHD = attention-deficit-hyperactivity-disorder. LGBTQ+ = lesbian, gay, bisexual, transgender, questioning, and related communities.
problems. We examined mental health outcomes pertaining to internalising and externalising problems, and we defined a risk factor as ‘a special type of correlate that precedes the outcome of interest and can be used to divide the population into high- and low-risk groups’ (Franklin et al., 2017) (p. 190).

Data were extracted for author, year, aim, review type, sample, individual risk and associated mental health outcome, and interconnecting risks and associated mental health outcome. A summary of information on included studies is presented in Table 2. Given the aims of the present review, an assessment of bias was not included. Data were analysed using meta-synthesis in a process of reading and re-reading each study, familiarising, identifying, extracting, recording, organising, comparing, relating, mapping, stimulating and verifying (Lachal et al., 2017). Analysis was performed in NVivo, and risks were coded using modified frameworks from published models conceptualising risk (Furber et al., 2017; Kaye et al., 2017) at the global (environmental, cultural, ethnicity, sexual orientation and gender identity and socioeconomic status), community (school, social groups), family (family cohesion, parental relationships, parental stress and functioning), biological (genetic, physiological) and individual (adverse experiences, demographics and personality, behavioural, neurocognitive development, physical, psychological and interpersonal) levels. In addition to the review meetings with co-authors, we additionally convened a group of twenty-four diverse cross-discipline stakeholders who reviewed preliminary findings and the organisation of risk themes, involving young people, parents/carers, policy makers, educators, mental health practitioners and researchers from the disciplines of psychology, public health, philosophy, epidemiology and economics.

Results

Review question 1: What are the most prevalent individual risk factors of mental health problems for young people identified in published literature reviews?

The primary and secondary individual risk themes are summarised in Table 3. The five primary individual risk themes and their corresponding secondary themes were biological (genetic, physiological), community (school, social groups), family (family cohesion, parental relationships, parental stress and functioning), global (culture, environmental,
| Primary theme | Secondary theme | Name & Description |
|---------------|-----------------|--------------------|
| Biological    | Genetic         | Genes. A range of genes, genetic regulations, and epigenetic dysregulations including 5-HTTLPR polymorphism, 22q11.2 deletion syndrome, PAK3 mutations, Fragile X syndrome, dopaminergic and serotonergic, rs1800497 locus, William syndrome, Trisom 21, BDNF Val66Met genotype, 22Q11DS, DNA myelination, mRNA expressions of BDNF in the PFC and hippocampus, schizophrenia PRS, IDO2 gene, SNP heritability, monoamine oxidase-A, noradrenergic receptor (e.g., ADRA2A, 2C, 1C) and transporter genes (e.g., SLC6A2), dopamine-beta-hydroxylase, and dopamine receptor (e.g., DRD4, DRD5, DRD2, DRD3) and transporter genes (e.g., DAT, SLC6A3). Heritability. Heritability estimated between 30-80% across studies. |
| Physiological |                 | Biological processes. A range of biological processes including dysregulation of SAM and HPA, metabolic dysregulation, proinflammatory markers, and testosterone. Brain structures. Brain circuits (e.g., functional connectivity), structural abnormalities in the hippocampus, abnormalities in the default mode network, low striatal response to reward, and brain-derived neurotrophin factor. Puberty timing. Early puberty timing. |
| Community     | School          | Relative age. Youngest child in a classroom. School performance or attitudes. Low academic attainment, school problems, negative attitudes toward schools, and school stressors. Social groups Delinquent peers. Neighbourhood adversity. Low neighbourhood support and community level danger. Perpetration of bullying. Bullying and cyberbullying. |

(Continues)
| Primary theme     | Secondary theme       | Name & Description                                                                 |
|-------------------|-----------------------|------------------------------------------------------------------------------------|
| Family            | Family cohesion       | Suicide clustering.  
Victim and perpetrator of bullying.  
Victim of bullying. Bullying, cyberbullying, and peer victimisation. |
|                   | Familial adverse experiences. Family adversity, parental experience of child abuse.  
Familial mental health problems.  
Family criminal history.  
Family relationships. Low family support, low family cohesion, low family climate, low family functioning, interfamilial conflict, and low family management strategies.  
Family stress. Stressors and acculturation strain. |
| Parental relationships | Family composition. Parental separation and single parent household. |
| Parental stress and functioning | Parental criminal history.  
Parental emotion regulation. Maladaptive parental cognitive or emotional responses. |

(Continues)
| Primary theme               | Secondary theme   | Name & Description                                                                                                                                 |
|----------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Parental mental health     |                   | problems. Parental psychopathology, parental attention-deficit-hyperactivity-disorder, parental anxiety, parental depression, parental social anxiety disorder, parental stress, parental disordered eating, parental post-traumatic stress disorder, and parental psychological distress. |
| Parental physical health   |                   | problems.                                                                                                                                         |
| Parental substance use     |                   |                                                                                                                                                    |
| Global                     | Culture           | Identity (culture). Low cultural pride or ethnic identity, culture-based conflict, multidimensional racial socialization, and messages about mainstream fit. |
| Environmental              |                   | Religiosity. Negative religious experiences.                                                                                                      |
| Ethnicity                  |                   | Exposure to toxins or chemicals or equivalent (e.g., noise).                                                                                       |
| Acculturation              |                   | Acculturative strain and resettlement stress.                                                                                                      |
| Discrimination             |                   | Discrimination, police discrimination, perceived discrimination, and cultural alertness to discrimination.                                           |
| Ethnic density             |                   |                                                                                                                                                    |
| Majority ethnic group      |                   |                                                                                                                                                    |
| Minority ethnic group      |                   |                                                                                                                                                    |
| Sexual orientation and     |                   | Sexual orientation and gender identity. LGBTQ+, negative sexual identity, low family and peer support, low engagement in romantic or sexual relationships, low “outness”, stressors related to hiding or managing sexual identity, and low sexual orientation certainty. |
| gender identity            | Socioeconomic     | status. Low socioeconomic status, low family socioeconomic background, low family education, severe early deprivation, homelessness, high household mobility and low stability, residential crowing, substandard housing, and homelessness. |
| (Continues)                | status            | (Continues)                                                                                                                                       |
| Primary theme | Secondary theme | Name & Description |
|---------------|-----------------|--------------------|
| Individual    | Adverse experiences | Adverse live events. Adverse life events (e.g., stressful life events, abuse, trauma, neglect, maltreatment, cumulative experience of social trauma, direct and indirect disaster exposure, violence), forced migration, trafficking, and victimization (harassment, violence, discrimination, poly-victimization). |
| Behavioural   | Behaviour problems or antisocial behaviour | Behaviour problems or antisocial behaviour. Fire fascination or involvement, behaviour problems, antisocial behaviour, aggression, conduct problems, and cruelty. |
|               | Criminal history | Criminal history, attitude toward offending. |
|               | Digital | Digital. Screen time, use of the Internet, low/high video game usage, non-school related screen time, daily computer usage, no computer use, and social media use. |
|               | Impulsivity | |
|               | Substance use | |
|               | Unhealthy lifestyle | Sedentary behaviour, energy-dense food intake, obesity, poor sleep, and nutritional deficiencies. |
| Demographics and personality | Age | |
|               | Gender | |
|               | Personality | Neuroticism, low extraversion, low conscientiousness, and low agreeableness. |
|               | Neurocognitive development | Cognitive problems, lower intelligence quotient, and neuropsychological problems. |
| Physical      | Physical health problems | Physical health problems. Acute injury/illness, health problems, type 1 diabetes, chronic pain, epilepsy, and direct or indirect experience of HIV. |

(Continues)
| Primary theme | Secondary theme | Name & Description |
|---------------|-----------------|--------------------|
| Psychological | Early onset. Earlier onset of difficulties is a risk factor of mental health problems. | |
| Emotion regulation and coping. Low coping, maladaptive coping strategies, emotional dysregulation, anxiety sensitivity, emotional reactivity, intolerance of uncertainty, rumination, distress tolerance, low cognitive reappraisal, experiential avoidance, high expressive suppression, high ego under-control, high coping expectancy, behavioural inhibition, low behavioural inhibition, high effortful control, and low sustained attention. |
| Empathy. Low empathy and interpersonal callousness |
| Identity. Thwarted belonging, low self-esteem, worthlessness, hopelessness, and body dissatisfaction. |
| Mental health problems. Experiencing one mental health problems is a risk factor for experiencing other mental health problems. |
| Interpersonal | Attachment style. Insecure, anxious, ambivalent, and disorganised attachment style. |
| Interpersonal connectedness. Loneliness and isolation. |
| Interpersonal relationships. Negative social interactions, interpersonal relationship difficulties, peer contagion, and sexual behaviour. |
| Teenage parenthood. |
ethnicity, sexual orientation and gender identity, and socioeconomic status) and individual (adverse experiences, behavioural, demographics and personality, physical, psychological and interpersonal).

**Review question 2: What are the most prevalent interconnecting risk factors of mental health problems for young people in published literature reviews?**

The six primary interconnecting risk themes and their secondary themes were biological (genetic, physiological), cumulative risks (e.g. total number of risk factors), family (parental relationships, parental stress and functioning, family cohesion), community (social groups), global (environmental, sexual orientation and gender identity, ethnicity, socioeconomic status) and individual (behavioural, psychological, neuropsychological development, demographics and personality, adverse experiences, interpersonal and physical). The most prominent relationships between these interconnecting risk themes, based on frequency and strength of relationships between codes, are shown in Figure 2 (all relationships between IR themes are not shown to facilitate interpretation).

The secondary theme social groups showed the highest number of interconnections with other risk themes (nine), followed by psychological (eight), genetic (six), parental stress and functioning (five), and interpersonal (five). The secondary themes ethnicity and sexual orientation and gender identity showed prominent interconnections, suggesting the importance of intersectionality of multiple minoritised groups. It should be noted that being a member of minoritised groups in and of itself is not the proposed risk factor, rather it is the discrimination and marginalisation of minoritised groups by society that is the proposed risk factor. As expected, the secondary theme parental stress and functioning and family cohesion showed prominent interconnections. Other interconnections were also in line with previous studies, and for example, adverse events and psychological showed prominent interconnections, suggesting an interplay between adverse experiences and psychological processes in determining mental health problems (Hughes et al., 2017).

The importance of interpersonal connections and the role they play in a range of risks was reflected by the interconnections between the secondary themes social groups, interpersonal, parental relationships and family cohesion with other risk themes. Interestingly, the secondary theme interpersonal showed interconnections with parental stress and functioning, physical, psychological, social groups and adverse experiences, highlighting the importance of tackling interpersonal
connections when addressing interconnecting risks of mental health problems. Similarly, the secondary theme family cohesion showed interconnections with parental stress and functioning, psychological and social groups (in addition to genetic) – and parental relationships showed interconnections with psychological and adverse experiences – highlighting the importance of tackling interpersonal interconnections within the family in addressing interconnecting risks of mental health problems. Finally, social groups showed interconnections with demographics and personality, ethnicity, family cohesion, interpersonal, parental stress and functioning, psychological, and sexual orientation and
gender identity (in addition to genetic and physiological), highlighting the importance of tackling interpersonal interconnections within social groups in addressing interconnecting risks of mental health problems.

Discussion

The primary aim of the present narrative review was to examine the most prevalent interconnecting risks of mental health problems identified in previous reviews of the literature and, to inform these interconnecting risks, examine the most prevalent individual risks for young people. The present narrative review identified five primary individual risk themes and their corresponding secondary themes based on the most prevalent risks identified in the published literature: biological (genetic, physiological), community (school, social groups), family (family cohesion, parental relationships, parental stress and functioning), global (culture, environmental, ethnicity, sexual orientation and gender identity and socioeconomic status) and individual (adverse experiences, behavioural, demographics and personality, physical, psychological and interpersonal). We also identified six primary interconnecting risk themes and their secondary themes from the published literature: biological (genetic, physiological), cumulative risks, family (parental relationships, parental stress and functioning and family cohesion), community (social groups), global (environmental, sexual orientation and gender identity, ethnicity and socioeconomic status) and individual (behavioural, psychological, neurocognitive development, demographics and personality, adverse experiences, interpersonal and physical). These risks were identified from 91 reviews examining individual risks, with 35 reviews examining interconnecting risks.

Limitations of the present study include the role of subjectivity; nevertheless, we attempted to mitigate this through regular review meetings and consultation with stakeholders, and although young people, parents/carers and families were involved in this consultation, further work will be necessary to understand how the risks identified in the present study are similar and different to their lived experiences.

The findings of the present review suggest that there is a relationship between interpersonal connection and interconnecting risks, as indicated by the number of interconnections between social groups, interpersonal relationships, parental relationships and family cohesion with other risk themes. Interpersonal connections (IC) in a variety of domains, from family cohesion, parental relationships, peer relationships
(or social groups) and interpersonal (including attachment style, loneliness and isolation, and relationship difficulties), were identified as a common, unifying experience underpinning different risks of mental health problems for young people. The findings therefore highlight the importance of IC as a protective factor in mitigating risk of mental health problems for young people. Based on the findings of this review, we define IC as building and maintaining supportive, valued and caring relationships with family, peers, professionals or trusted adults characterised by closeness, common identity, companionship and acceptance.

Exposure to individual and interconnecting risks may undermine an individual’s capacity for epistemic trust (Fonagy et al., 2017). Correspondingly, an individual’s capacity to build and maintain IC is diminished as others are perceived as inauthentic and hostile and the social environment as high risk and aversive, resulting in distrust of information transmitted by actors in the social context. When this occurs in childhood and adolescence, the capacity to learn and adapt to the social environment is undermined, with deleterious outcomes for the individual, family and society as this critical period of development is compromised.

Interventions that support young people to build and maintain IC when experiencing individual and IR may have important consequences not only in mitigating the development of mental health problems but also in increasing the capacity for adaptation, therefore improving long-term outcomes for the individual, family and society. Family and systemic approaches have clear value in supporting young people in this process by enabling the development of a secure relational foundation on which to build future protective IC, and promoting IC and fostering epistemic trust has a role in a range of different psychotherapeutic approaches and modalities.

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**Authors’ Declaration of Interests**

Nothing to disclose.

**Authors’ Contribution**

JE-C and JD conceived of the study, drafted the manuscript and approved the final version to be published; JE-C conducted the review with supervision of JD.

**Conflict of interests**

None.

**Data Availability Statement**

Not applicable.

**References**

Appleyard, K., Egeland, B., van Dulmen, M. H. M. and Alan Sroufe, L. (2005) When more is not better: the role of cumulative risk in child behavior outcomes. *Journal of Child Psychology and Psychiatry, 46*(3): 235–245. https://doi.org/10.1111/j.1469-7610.2004.00351.x

Armstrong, M. I., Birnie-Lefcovitch, S. and Ungar, M. T. (2005) Pathways between social support, family well being, quality of parenting, and child resilience: what we know. *Journal of Child and Family Studies, 14*(2): 269–281. https://doi.org/10.1007/s10826-005-5054-4

Bellis, M. A., Hughes, K., Ford, K., Ramos Rodriguez, G., Sethi, D. and Passmore, J. (2019) Life course health consequences and associated annual costs of adverse childhood experiences across Europe and North America: a systematic review and meta-analysis. *The Lancet Public Health, 4*(10): e517–e528. https://doi.org/10.1016/S2468-2667(19)30145-8

Ettekal, I., Eiden, R. D., Nickerson, A. B. and Schuetze, P. (2019) Comparing alternative methods of measuring cumulative risk based on multiple risk indicators:
are there differential effects on children’s externalizing problems? *PLoS One*, 14(7): e0219134. https://doi.org/10.1371/journal.pone.0219134

Evans, G. W., Li, D. and Whipple, S. S. (2013) Cumulative risk and child development. *Psychological Bulletin*, 139(6): 1342–1396. https://doi.org/10.1037/a0031808

Ferrari, R. (2015) Writing narrative style literature reviews. *Medical Writing*, 24: 230–235. https://doi.org/10.1179/2047480615Z.00000000329

Fonagy, P., Campbell, C. and Bateman, A. (2017) Mentalizing, attachment, and epistemic trust in group therapy. *International Journal of Group Psychotherapy*, 67: 176–201. https://doi.org/10.1080/00207284.2016.1263156

Franklin, J. C., Ribeiro, J. D., Fox, K. R., Bentley, K. H., Kleiman, E. M., Huang, X., Musacchio, K. M., Jaroszewski, A. C., Chang, B. P. and Nock, M. K. (2017) Risk factors for suicidal thoughts and behaviors: A meta-analysis of 50 years of research. *Psychological Bulletin*, 143(2): 187–232. https://doi.org/10.1037/bul000084

Furber, G., Leach, M., Guy, S. and Segal, L. (2017) Developing a broad categorisation scheme to describe risk factors for mental illness, for use in prevention policy and planning. *Australian and New Zealand Journal of Psychiatry*, 51(3): 230–240. https://doi.org/10.1177/0004867416642844

Higgins, J. P. T., Thomas, J., Chandler, J., Cumpston, M., Li, T., Page, M. J. and Welch, V. A. (eds.) (2021) *Cochrane Handbook for Systematic Reviews of Interventions version 6.2* (updated February 2021). Cochrane. Retrieved from www.training.cochrane.org/handbook

Hughes, K., Bellis, M. A., Hardcastle, K. A., Sethi, D., Butchart, A., Mikton, C., Jones, L. and Dunn, M. P. (2017) The effect of multiple adverse childhood experiences on health: a systematic review and meta-analysis. *The Lancet Public Health*, 2(8): e356–e366. https://doi.org/10.1016/S2468-2667(17)30118-4

Kaye, E. C., Brinkman, T. M. and Baker, J. N. (2017) Development of depression in survivors of childhood and adolescent cancer: a multi-level life course conceptual framework. *Supportive Care in Cancer*, 25(6): 2009–2017. https://doi.org/10.1007/s00520-017-3659-y

Kessler, R. C., Amminger, G. P., Aguilar-Gaxiola, S., Alonso, J., Lee, S. and Ustün, T. B. (2007) Age of onset of mental disorders: a review of recent literature. *Current Opinion in Psychiatry*, 20(4): 359–364. https://doi.org/10.1097/YCO.0b013e28186ebc8c

Lachal, J., Revah-Levy, A., Orri, M. and Moro, M. R. (2017) Metasynthesis: an original method to synthesize qualitative literature in psychiatry. *Frontiers in Psychiatry*, 8(269). https://doi.org/10.3389/fpsyt.2017.00269

Masten, A. S. (2014) *Ordinary magic: resilience in development*. NY: Guildford Press.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G. and The Prisma Group. (2009) Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Medicine*, 6(7): e1000097. https://doi.org/10.1371/journal.pmed.1000097

NHS Digital. (2018) *Mental health of children and young people in England, 2017*. Retrieved from https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2017/2017

Sapienza, J. K. and Masten, A. S. (2011) Understanding and promoting resilience in children and youth. *Current Opinion in Psychiatry*, 24(4). https://doi.org/10.1097/YCO.0b013e32834776a8

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