journal of family therapy

Journal of Family Therapy (2021) **0**: 1–2
doi: 10.1111/1467-6427.12344

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

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

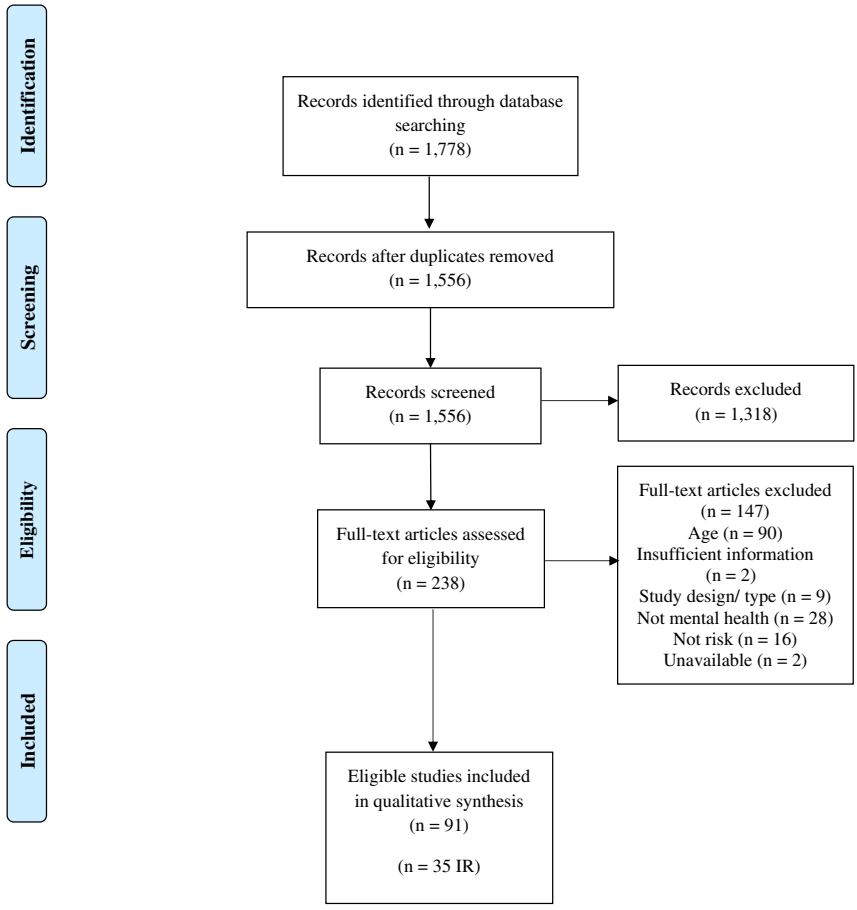

Figure 1. Search flow

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

TABLE 1 *Inclusion/Exclusion criteria*

Include/Exclude	Participants	Intervention	Comparator	Outcome	Study design
Include	Children and young people	N/A	Any risk factors	Internalising problems	Literature review
Include				Externalising problems	Systematic review
Include					Meta-analysis
Include					Meta-synthesis
Exclude	Exclusively infants or young children (<10 years)		Protective factors	Substance misuse	Primary research study
Exclude	Exclusively adults (> 18 years)		Interventional studies	Learning difficulties	Not published (e.g., dissertation)
Exclude	Age range not reported and no reference to children or young people				Insufficient information for data extraction (e.g., only abstract available)

TABLE 2 *Summary of included studies. Full references of included studies can be found in Supplementary Material 2*

1st author & reference	Year	Review type	No. of studies	Lead country	Age range	Main focus
Aghaei[1]	2019	Systematic review	28	Iran	Youth	ADHD
Alisic[2]	2015	Systematic review	17	Australia	Youth	Parental intimate partner homicide
Assink[3]	2015	Meta-analysis	55	The Netherlands	Youth	Offending
Azeredo[4]	2018	Systematic review	17	Portugal	Youth	Externalising problems
Barker[5]	2018	Narrative review	NR	UK	Youth	Psychopathology
Barrocas[6]	2016	Integrative and theoretical review	NR	Portugal	Youth	Parental drug addiction
Becker[7]	2015	Narrative review	NR	US	Youth	Sleep
Bell[8]	2018	Systematic review	20	Australia	Youth	Brain tumour
Benner[9]	2018	Meta-analysis	126	US	Youth	Racial discrimination
Betancourt[10]	2013	Narrative review	29	US	Youth	HIV/AIDS
Biswas[11]	2016	Narrative review	NR	UK	Non-specific*	Psychopathology
Bottino[12]	2015	Systematic review	10	Brazil	Youth	Cyberbullying
Browne[13]	2015	Narrative review	NR	Canada	Youth	Cumulative risk and development
Brumley[14]	2016	Systematic review	53	US	Youth	Externalizing behaviours
Buchberger[15]	2016	Meta-analysis	14	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[16]	2017	Systematic review	7	US	Youth	Pre-pubertal youth
Cha[17]	2018	Narrative review	NR	US	Youth	Suicidality
Chapman[18]	2016	Critical review	37	UK	Youth	Depression
Davis[19]	2019	Systematic review	NR	US	Youth	Environmental toxicant exposure
Dawson[20]	2012	Integrative review	9	Australia	Youth	Imprisoned parents
Dennison[21]	2016	Narrative review	21	US	Youth	Depression
Devlin[22]	2019	Systematic review	44	UK	Young people in sub-Saharan African countries	Parenting practices
Di Manno[23]	2015	Systematic review	14	Australia	Youth	Parental separation
Dishion[24]	2011	Narrative review	NR	US	Youth	Peer contagion
Epkins[25]	2011	Narrative review	NA	US	Youth	Social anxiety and depression
Estrada-Prat[26]	2019	Systematic review	48	Spain	Non-specific*	Bipolar disorder
Evans[27]	2013	Narrative review	196	US	Youth	Cumulative risk and development
Ferguson[28]	2013	Narrative review	NR	US	Youth	Physical environment and child development

(Continues)

TABLE 2 (CONTINUED)

1st author & reference	Year	Review type	No. of studies	Lead country	Age range	Main focus
Forbes[29]	2012	Narrative review	NR	US	Youth	Depression
Francis[30]	2016	Systematic review	18	Australia	Youth	Intellectual giftedness
Fritz[31]	2018	Systematic review	22	The Netherlands	Youth	Childhood adversity
Ghanizadeh[32]	2011	Narrative review	NR	Iran	Non-specific*	Imprisoned individuals
Hall[33]	2018	Systematic review	35	US	Youth	LGBTQ+
Hamm[34]	2015	Scoping review	36	Canada	Youth	Cyberbullying
Harold[35]	2018	Narrative review	NR	UK	Youth	Psychopathology
Hellstrom[36]	2019	Systematic review	6	Sweden	Youth	ADHD and autistic spectrum disorder
Hoare[37]	2016	Systematic review	32	Australia	Youth	Psychopathology
Holliday[38]	2016	Narrative review	NR	USA	Youth	Nicotine use
Holt[39]	2015	Meta-analysis	47	US	Youth	Suicidality
Hughes[40]	2017	Meta-analysis	37	UK	Non-specific	Adverse childhood experiences
Jastrowski[41]	2019	Narrative review	NR	US	Youth	Chronic pain
Kaye[42]	2017	Conceptual review	NR	US	Youth	Survivors of cancer
Kushner[43]	2015	Narrative review	NR	Canada	Youth	Psychopathology
Lahey[44]	2012	Narrative review	NR	US	Youth	Conduct disorder

(Continues)

TABLE 2 (CONTINUED)

1st author & reference	Year	Review type	No. of studies	Lead country	Age range	Main focus
Lange[45]	2013	Meta-analysis	69	Canada	Youth	Foetal alcohol syndrome
Larsen[46]	2015	Systematic review	44	Denmark	Youth	Disordered eating
Le[47]	2018	Meta-analysis	30	Australia	Young people from LMICs	Poly-victimisation
Lee[48]	2019	Systematic review	54	Korea	Youth in Korea	Multi-ethnic groups
Letourneau[49]	2013	Meta-analysis	33	Canada	Youth	Socioeconomic status
Lim[50]	2019	Scoping review	49	Singapore	Youth	Depression
Loomes[51]	2017	Meta-analysis	54	UK	Youth	Autistic spectrum disorder
Loring[52]	2015	Narrative review	NR	US	Youth	Epilepsy
Luo[53]	2019	Integrative review	NR	USA	Non-specific*	ADHD
Maniglio[54]	2015	Systematic review	36	Italy	Non-specific*	Conduct disorder
March-Llanes[55]	2017	Meta-analysis	27	Spain	Youth	Psychopathology
Masten[56]	2012	Narrative review	NA	US	Youth	Mass trauma
Mayo[57]	2017	Narrative review	8	US	Youth	Psychosis
McCray[58]	2013	Narrative review	NR	US	Youth	Fragile X syndrome
McCrory[59]	2012	Narrative review	NR	UK	Youth	Child abuse
McHugh[60]	2019	Meta-analysis	18	Australia	Youth	Self-harm

(Continues)

TABLE 2 (CONTINUED)

1st author & reference	Year	Review type	No. of studies	Lead country	Age range	Main focus
Misiak[61]	2017	Comprehensive review	NR	Poland	Youth	Psychosis
Morris[62]	2012	Meta-analysis	35	US	Youth	Post-traumatic stress symptoms
Murray[63]	2012	Systematic review	40	UK	Youth	Imprisoned parents
Norton[64]	2017	Narrative review	NR	Australia	Youth	Social anxiety disorder
Oswald[65]	2011	Narrative review	32	Germany	Youth	Foster care
Ottisova[66]	2016	Updated Systematic review	31	UK	Non-specific*	Human trafficking
Pan[67]	2015	Meta-analysis	11	China	Non-specific	ADHD
Patel[68]	2018	Systematic review	12	US	Non-specific*	Depression
Patil[69]	2018	Systematic review	25	US	Youth in the United States	Minoritized groups
Perks[70]	2019	Meta-analysis	39	Australia	Youth	Fire setting
Piotrowska[71]	2015	Meta-analysis	133	UK	Youth	Antisocial behaviour
Ronald[72]	2018	Systematic review	13	UK	Non-specific	Psychosis
Sanders[73]	2015	Systematic review	47	Australia	Youth in Australia	Obesity
Scerif[74]	2015	Narrative review	NR	UK	Youth	ADHD

(Continues)

TABLE 2 (CONTINUED)

1st author & reference	Year	Review type	No. of studies	Lead country	Age range	Main focus
Schroeder[75]	2014	Narrative review	NR	Canada	Youth	Autistic spectrum disorder
Stepp[76]	2016	Systematic review	39	US	Non-specific*	Borderline personality disorder
Stevens[77]	2019	Narrative review	NR	UK	Youth in England	Refugees, asylum seekers, undocumented migrants
Straussner[78]	2018	Narrative review	NR	US	Youth	Parental substance use
Tam[79]	2017	Systematic review	11	UK	Youth	Forcibly displaced
Thapar[80]	2013	Narrative review	NR	UK	Non-specific	ADHD
Timshel[81]	2017	Systematic review	15	Denmark	Non-specific*	Refugee
Toomey[82]	2017	Critical review	125	US	Youth	Minority ethnic and LGBTQ+
Tung[83]	2016	Meta-analysis	18	US	Youth	ADHD
van Duinkerken[84]	2019	Integrative review	NR	Brazil/the Netherlands	Non-specific*	Type 1 diabetes
Vijayakumar[85]	2011	Narrative review	NR	India	Non-specific*	Suicidality
Wadsworth[86]	2018	Systematic review	11	US	Youth	Pre-adolescents
Wang[87]	2018	Meta-analysis	14	US	Non-specific	Stress-related disorders
Whitely[88]	2019	Systematic review	26	Australia	Youth	ADHD

(Continues)

TABLE 2 (CONTINUED)

1st author & reference	Year	Review type	No. of studies	Lead country	Age range	Main focus
Whitten[89]	2019	Systematic review	19	Australia	Youth	Parental offending
Xia[90]	2015	Systematic review	47	China	Youth	Depression
Yildrim[91]	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,

TABLE 3 *Summary of individual risks*

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 mythelation, 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 neutotrophic 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)

TABLE 3 (CONTINUED)

Primary theme	Secondary theme	Name & Description
		Suicide clustering.
		Victim and perpetrator of bullying.
		Victim of bullying. Bullying, cyberbullying, and peer victimisation.
Family	Family cohesion	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.
		Foster care or child separation.
		Parent-child relationships. Parental relationships lacking closeness, warmth, acceptance, regulation, and intimacy, with hostility, criticism, and psychological control.
	Parental stress and functioning	Parental criminal history.
		Parental emotion regulation. Maladaptive parental cognitive or emotional responses.

(Continues)

TABLE 3 (CONTINUED)

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.
		Religiosity. Negative religious experiences.
	Environmental	Exposure to toxins or chemicals or equivalent (e.g., noise).
	Ethnicity	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 gender identity	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.
	Socioeconomic status	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)

TABLE 3 (CONTINUED)

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. Fire fascination or involvement, behaviour problems, antisocial behaviour, aggression, conduct problems, and cruelty.
		Criminal history. Criminal history, attitude toward offending.
		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. Acute injury/illness, health problems, type 1 diabetes, chronic pain, epilepsy, and direct or indirect experience of HIV.

(Continues)

TABLE 3 (CONTINUED)

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, neurocognitive 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

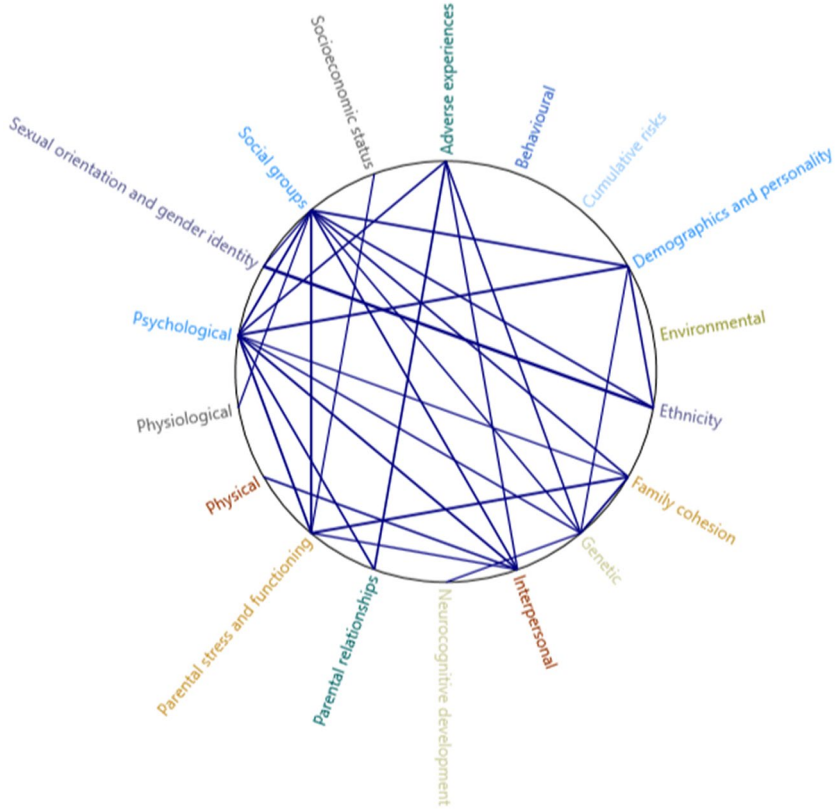

Figure 2. Relationships between interconnecting risk themes

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 tacking 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.

Acknowledgements

The authors would like to thank the consultation group of young people, parents/carers, policy makers, educators, mental health practitioners and researchers who reviewed the preliminary findings. The project was supported with funding from the Nuffield Foundation. The Nuffield Foundation is an independent charitable trust with a mission to advance social well-being. It funds research that informs social policy, primarily in Education, Welfare and Justice. It also funds student programmes that provide opportunities for young people to develop

skills in quantitative and scientific methods. The Nuffield Foundation is the founder and co-funder of the Nuffield Council on Bioethics and the Ada Lovelace Institute. The Foundation has funded this project, but the views expressed are those of the authors and not necessarily the Foundation. Visit www.nuffieldfoundation.org.

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.000000000329

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/bul0000084

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 Dunne, 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.0b013e32816ebc8c

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

Supporting Information

Additional supporting information may be found in the online version of this article at the publisher's web site: