National Institute for Health and Care Excellence

Final

Social, emotional and mental wellbeing in primary and secondary education

[D] Evidence reviews for risk factors for poor social, emotional and mental wellbeing

NICE guideline NG223

Evidence reviews underpinning recommendations 1.3.1 to 1.3.4 and research recommendations in the NICE guideline

July 2022

Final

These evidence reviews were developed by developed by the Public Health Guidelines team

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1 Risk factors for poor social, emotional and mental wellbeing

1.1 Review question

What are the risk factors associated with social, emotional and mental wellbeing?

1.1.1 Introduction

Social and emotional skills are key during children and young people's development and may help them to achieve positive outcomes in health, wellbeing and future success. These skills encompass five core competencies, self-awareness, self-regulation, social awareness, responsible decision-making and relationship skills. These skills can be taught during primary school in a cumulative approach whereby the skills acquired increase in complexity as appropriate to age and act as a foundation for further development in secondary school.

Some children may be 'struggling' to develop these skills and may be at risk of poor social, emotional and mental wellbeing outcomes. If risk factors for social, emotional and mental wellbeing could be identified, schools might be able to use this information to give the right kind of support to the children and young people who need it.

1.1.2 Summary of the protocol

Table 1: PICO Table

Population	Children (including those with SEND) in UK key stages 1 and 2 or equivalent in primary education Children and young people (including those with SEND) in UK key stages 3 to 4 or equivalent in secondary education Young people in post-16 education (further education) • up to the age of 18 or 19 for young people without SEND • up to the age of 25 for young people with SEND
Exposure	Factors associated with poor social, emotional and mental wellbeing • Family, relationships and home life factors • Wider school and neighbourhood environment factors • Individual characteristics • Socioeconomic factors
Comparator	Children or young people who are not presenting with poor social and emotional wellbeing
Outcomes	Poor social, emotional and mental wellbeing outcome with a statistical measure such as adjusted hazard ratios, adjusted risk ratios, adjusted odds ratios
Types of study to be included	We will include the following study type in the first instance: • Systematic reviews of cohort studies • Cohort studies (prospective or retrospective) that have used multivariable regression analysis to adjust for confounding variables If cohort studies do not cover all the variables in the list of exposures we will look for the following studies on that variable: • Cross-sectional studies that have used regression analysis to adjust for confounding variables

1.1.3 Methods and process

This evidence review was developed using the methods and process described in Developing NICE guidelines: the manual and in the methods chapter.. Methods specific to this review question are described in the review protocol in Appendix A.

Declarations of interest were recorded according to NICE's conflicts of interest policy.

1.1.3.1 Meta-analysis and GRADE

Many of the studies included in this review did not report sufficient data to allow checking of reported odds ratios, and data were unable to be meta-analysed. Additionally, the committee asked for the data to be grouped in a bespoke way. As a result the quality of evidence was determined by risk of bias assessments rather than GRADE and the evidence has been summarised in the form of a narrative review.

1.1.4 Prognostic evidence

1.1.4.1 Included studies

In total 22,007 references were identified through systematic searches after duplicates were removed. Of these, 523 references were considered relevant, based on title and abstract, to the protocols for risk factors and were ordered for full text review. Of these 80 were included, 432 references were excluded and 11 were not retrieved. One additional study was identified by a committee member and included. Of the 81 included references, 57 studies were extracted. The remaining 24 studies were excluded because they did not contain risk factors of interest to the committee.

The 57 extracted studies included cohort studies in unselected populations(ie general populations rather than selected for a specific reason) and cohort studies in sub-populations or cross-sectional studies, which contained specific risk factors identified by the committee. Out of the included studies, 57 were extracted; 35 were cohort studies conducted in unselected populations and 1 was conducted in a specific sub-population. Of the remaining 21 references, 17 were cross-sectional studies conducted in unselected populations and 4 were cross-sectional studies conducted within a specific sub-population.

1.1.4.2 Excluded studies

See Appendix J for full list of excluded studies

1.1.5 Summary of studies included in the prognostic evidence

Study [Country]	Study design	Population (N)	Risk / protective factors	Outcome(s)
Adriaanse 2016 [The Netherlands]	Cross-sectional	Students classified as Moroccan-Dutch according to the ethnic categories defined by Statistics Netherlands (N= 152)	• High self-esteem	• Mental health concerns
Ahun 2018 [Canada]	Cohort	Participants of the Québec Longitudinal Study of Child Development (N= 1537)	• Parental depression • Gender • Maternal age (young) • Parental anxiety • Parental antisocial behaviour • Single-parent family • Low socioeconomic status • Family dysfunction • Difficult temperament	• Behavioural difficulties
Ashford 2008 [The Netherlands]	Cohort	A sample of children aged 2–3 years drawn from the inoculation register of the Dutch province of South Holland and from the Rotterdam municipal population register (N= 294)	• Low socioeconomic status • Poor parent mental health • Parental stress • Internalising problems	• Behavioural difficulties
Baiden 2020 [US]	Cross-sectional	Children and adolescents aged 6-17 years included in the 2016–2017 National Survey of Children's Health (NSCH) (N= 45,041)	• ACEs	• Poor social and emotional wellbeing
Bannink 2013 [The Netherlands]	Cohort	Children included in the Rotterdam Youth Monitor (RYM) (N= 3181)	• Chronic / severe illness of parent • Chronic / severe illness of sibling • Mental illness of parent	• Mental health concerns

Study [Country]	Study design	Population (N)	Risk / protective factors	Outcome(s)
			• Mental illness of sibling • Parental drug / alcohol use • Sibling drug / alcohol use • Conflict between parents • Change in family structure e.g. divorce • Unwanted pregnancy • Sexual, physical and emotional abuse • Unfavourable parent-adolescent attachment	
Bannink 2014 [The Netherlands]	Cohort	Children included in the Rotterdam Youth Monitor (RYM) (N=3181)	• Bullying • Cyberbullying	• Mental health concerns
Bond 2007 [Australia]	Cohort	Year 8 students in the 26 schools participating in the Gatehouse Project (N= 1902)	• Gender • Single-parent family • School / social connectedness • Arguments with others • Bullying • Anxiety / depressive symptoms • Alcohol or substance use	• Mental health concerns
Brady 2020 [UK]	Cohort	Participants in the Avon Longitudinal Study of Parents and Children (ALSPAC) (N= 4011)	• Chronic illness • Asthma	• Mental health concerns
Briggs-Gowan 2012 [US]	Cohort	11 to 35 months old children born healthy in the New Haven-Meriden Standard Metropolitan Statistical Area of the 1990 Census (N= 437)	• Trauma-related symptoms	• Behavioural difficulties • Poor social and emotional wellbeing
Bulhoes 2019 [Portugal]	Cross-sectional	Urban adolescents born in 1990 (N= 1988)	• Early puberty • Physical activity	• Mental health concerns

Study [Country]	Study design	Population (N)	Risk / protective factors	Outcome(s)
Burke 2011 [US]	Cross-sectional	All paediatric patients seen at the Bayview Child Health Center (BCHC) in its first 2 years of operation (April 2007–April 2009) (N= 701)	• ACEs	• Behavioural difficulties
Cabaj 2014 [Canada]	Cohort	Participants of the longitudinal Community Perinatal Care (CPC) who participated at the third follow-upstage (CPC-8) (N= 450)	• Gender • Demographic risk • Poor parent mental health • Poor parenting	• Behavioural problems
Cong 2020 [UK]	Cohort	Children of Pregnant women, residing in Avon County, Southwest England, with estimated delivery dates between April 1st, 1991 and December 31st, 1992 (N= 3322)	• Higher parental involvement	• Mental health concerns
Datar 2004 [US]	Cohort	Participants in the Early Childhood Longitudinal Study–Kindergarten (ECLS-K) class (N= 9949)	• Overweight • Race • High socioeconomic status • Single-parent family • High parent education • Parental depression	• Behavioural difficulties
Denham 2016 [Australia]	Cross-sectional	Children (6-12 years) and adolescents (13-17 years) who participated in the child and adolescent component of the Australian National Survey of Mental Health and Wellbeing (N= 3325)	• ADHD • Low self-esteem	• Poor social and emotional wellbeing
Gabalda 2010 [US]	Cross-sectional	Children of women who were in a relationship in the prior 12 months, had a child aged 8 to 12 years old for whom she was	• Cumulative risk factors • Cumulative protective factors	• Behavioural difficulties

Study [Country]	Study design	Population (N)	Risk / protective factors	Outcome(s)
		the legal guardian and who had lived with her at least 50% of the time during the prior year, and was willing to complete the assessment protocol with her child. (N= 152)		
Geoffroy 2018 [Canada]	Cohort	Members of the Quebec Longitudinal Study of Child Development born in 1997/98 (N= 1363)	• Severe victimisation	• Mental health concerns
Hammar 2019 [Sweden]	Cohort	Children of mothers who participated in the part of the South East Sweden Birth Cohort study (N= 573)	• Gender • Parent born outside the country • Maternal smoking during pregnancy • Change in family structure e.g. divorce • ACEs • Parental unemployment	• Behavioural difficulties • Poor social and emotional wellbeing
Hesketh 2004 [Australia]	Cohort	Participants in the Health of Young Victorians Study (HOYVS) (N= 1157)	• Overweight	• Poor social and emotional wellbeing
Hoare 2016 [Australia]	Cross-sectional	Students in years 7 and 8 from schools selected to participate by the Australian Capital Territory (ACT) Health Directorate (N= 634)	• Physical activity	• Mental health concerns
Houtepen 2020 [UK]	Cohort	Children of pregnant women recruited to the Avon Longitudinal Study of Parents and Children (N= 4917)	• ACEs	• Mental health concerns
Hrafnkelsdottir 2018 [Iceland]	Cross-sectional	Eleven tenth-grade students from six elementary schools in metropolitan Reykjavik (N= 244)	• Physical activity	• Mental health concerns

Study [Country]	Study design	Population (N)	Risk / protective factors	Outcome(s)
Hunt 2017 [US]	Cohort	Children included in the Fragile Families and Child Well being Study (FFCW) (N= 3043)	• Adverse childhood experiences	• Behavioural difficulties
Jansen 2013 [Australia]	Cohort	Children included in waves 1 to 4 of the Longitudinal Study of Australian Children (LSAC) (N= 3197)	• Overweight	• Poor social and emotional wellbeing
Jimenez 2016 [US]	Cross-sectional	Children for whom teacher-reported outcomes as well as primary caregiver-report information on 8 ACE exposures on the basis of the Centers for Disease Control and Prevention Kaiser ACE study were available (N = 1007)	• ACEs	• Poor social and emotional wellbeing
Kleszczewska 2019 [Poland]	Cross-sectional	School children that participated in the last round of the International Health Behaviour in School-aged Children (HBSC) studies performed in Poland during the school year 2017/2018 (N= NR)	• Physical activity	• Mental health concerns
Laurens 2019 [Australia]	Cohort	School children with valid records from: the Australian Government Department of Education and Training Australian Early Development Census in 2009, the Middle Childhood Survey (MCS) in 2015 and the NSW Ministry of Health's Admitted Patients Data Collection (APDC; 2001-2016) or Emergency Department Data	• Hospital presentation any school-monitored physical health condition	• Poor social and emotional wellbeing • Behavioural difficulties

Study [Country]	Study design	Population (N)	Risk / protective factors	Outcome(s)
		Collection (EDDC; 2005–2016) (N = 21,304)		
Lee 2017 [South Korea]	Cohort	Participants in the Korean Children & Youth Panel Survey (KCYPS; 2011–2013) (N= 2605)	• Change in sleep duration • Change in sleep quality	• Mental health concerns
Lemstra 2012 [Canada]	Cross-sectional	All students attending school in the city of Saskatoon, Canada, between grades 5-8 (N= 4197)	• Low self-esteem	• Mental health concerns
Loomans 2012 [The Netherlands]	Cohort	Participants in the Amsterdam Born Children and their Development (ABCD) study (N= 3439)	• Maternal caffeine intake during pregnancy • Maternal caffeine intake and smoker during pregnancy	• Poor social and emotional wellbeing
Luoma 2001 [Finland]	Cohort	Children of healthy first-time mothers from all maternity health clinics in the city of Tampere during a 6-month period in 1989–1990 (N= 147)	• Parental depression	• Poor social and emotional wellbeing • Behavioural difficulties
Mathews 2015 [UK]	Cohort	Participants of the Environmental Risk (E-Risk) Longitudinal Twin Study (N= NR)	• Low socioeconomic status • Parental depression • Parental antisocial behaviour • Child abuse / maltreatment • Emotional problems • Behavioural problems • ADHD symptoms	• Poor social and emotional wellbeing
Meeker 2021 [US]	Cross-sectional	High school students from a single county in western New York (N= 1528)	• ACEs	• Mental health concerns
Morgan 2008 [US]	Cohort	Participants of the Early Childhood Longitudinal Study—Kindergarten Class (ECLS-K) (N= 11,515)	• Reading problems • Approaches to learning problems • Interpersonal problems • Internalising problems	• Poor social and emotional wellbeing

Study [Country]	Study design	Population (N)	Risk / protective factors	Outcome(s)
			• Over 25% of students being of a specific race in class • Gender • Low parent education • Low socioeconomic status • Race • Single-parent family • Other family structures • Home language not English	• Behavioural difficulties
Munasinghe 2020 [Australia]	Cohort	Young people recruited via social media (Instagram and Facebook) from the general population aged 13-19 years of a Sydney population catchment (N= 582)	• Social distancing measures	• Mental health concerns
O'Connor 2002 [UK]	Cohort	Parents and children of those included in the Avon Longitudinal Study (N= 7748)	• Maternal smoking during pregnancy • Maternal drinking during pregnancy • Parental education • Parental anxiety • Parental depression	• Behavioural difficulties
O'Farrell 2005 [Ireland]	Cross-sectional	Students in randomly selected classes at the 24 schools selected to participate in the study (N= 992)	• Low self-esteem	• Mental health concerns
Paavonen 2003 [Finland]	Cohort	Finnish-speaking children, aged 8 to 9 years from school districts in the Helsinki area (N= 1320)	• Sleep disturbance	• Behavioural difficulties
Park 2014 [South Korea]	Cohort	Children in schools from Seoul, Seongnam, Incheon, Ulsan, and Yeoncheon (N= 1003)	• Parental stress • Parental depression	• Behavioural difficulties

Study [Country]	Study design	Population (N)	Risk / protective factors	Outcome(s)
Roberts 2013 [US]	Cohort	Participants in the Teen Health 2000 Study (TH2K) (N= 4175)	• Overweight • Obese	• Poor social and emotional wellbeing • Mental health concerns
Roetman 2019 [Sweden]	Cohort	Children included in The Child and Adolescent Twin Study in Sweden (CATSS) (N= 6319)	• Behavioural problems • Poor parent mental health	• Poor social and emotional wellbeing
Rothon 2010 [UK]	Cohort	Participants from three Local Education Authority (LEA) boroughs in East London (Hackney, Newham and Tower Hamlets) in 2001 (N= 2789)	• Physical activity	• Mental health concerns
Rushton 2002 [UK]	Cohort	Adolescents included in the National Longitudinal Study of Adolescent Health (AddHealth) survey (N= 13,568)	• Need for professional services e.g. counselling • School exclusion / suspension • General health • Somatic symptoms • Gender • Unable to obtain needed medical care • Suicidal ideation • Family has fun together • Close to father • Bereavement	• Mental health concerns
Sawyer 2011 [Australia]	Cohort	Children included in wave 1 of the national Longitudinal Study of Australian Children (LSAC) when they were 4-5 years-old (N= 3363)	• Overweight	• Poor social and emotional wellbeing

Study [Country]	Study design	Population (N)	Risk / protective factors	Outcome(s)
Scourfield 2016 [UK]	Cohort	Participants from the Avon Longitudinal Study of Parents and Children (N = 2250)	• Child abuse / maltreatment • Parent enjoyment • Parent confidence	• Mental health concerns
Sourander 2005 [Finland]	Cohort	Finnish-speaking children born in 1981 and living in one of the five University hospital catchment areas of Finland (Turku University Hospital, south-west Finland) (N= 609)	• Emotional problems • Hyperkinetic symptoms • Changes in family structure • Depressive symptoms • Need for professional services e.g. counselling	• Behavioural difficulties
Spencer 2020	Cross-sectional	Children age 6–11 years old seen for well child visits at a large, urban, safety-net hospital-based paediatric clinic (n= 943)	• Cumulative social risk factors	• Poor social and emotional wellbeing
Stickley 2016 [Czech Republic, Russia & US]	Cross-sectional	Adolescents aged 13–15 years that participated in the Social and Health Assessment (SAHA) conducted in the Czech Republic, Russia and the United States (N = 4255)	• Shyness	• Poor social and emotional wellbeing
Thurston 2018 [US]	Cross-sectional	Households included in the MCHB/HRSA sponsored National Survey of Children's Health (NSCH, 2011–2012) (N= 65,680)	• ACEs	• Poor social and emotional wellbeing
Totsika 2011 [UK]	Cross-sectional	Children included in two UK national surveys on psychiatric morbidity of 5–16-year olds (N = 18,415)	• Autism spectrum disorder • SEND	• Poor social and emotional wellbeing
Vanaelst 2012 [Belgium, Cyprus, Estonia, Germany, Hungary, Italy, Spain and Sweden]	Cross-sectional	Those included in the control regions of the countries participating in the IDEFICS project (N = 4066)	• Cumulative familial and social adversities • ACEs	• Poor social and emotional wellbeing

Study [Country]	Study design	Population (N)	Risk / protective factors	Outcome(s)
Visser 2003 [The Netherlands]	Cohort	Children, aged 4 to 18, referred to the outpatient clinic of the Academic Hospital Rotterdam – Sophia, Department of Child and Adolescent Psychiatry, between June 1982 and January 1995 (N= 1286)	• SEND	• Behavioural difficulties • Poor social and emotional wellbeing
Waenerlund 2016 [Sweden]	Cohort	Participants of the Study of Health in School Children in Umea (SISU) (N= 566)	• Poor school experience	• Poor social and emotional wellbeing • Mental health concerns
Wang 2019 [US]	Cross-sectional	Participants of the national Youth Risk Behavior Survey (YRBS) in grades 9-12 (N= 16,410)	• Physical activity	• Mental health concerns
Wang 2008 [Canada]	Cross-sectional	Fifth grade students from 291 public schools (N= 4945)	• Physical activity	• Poor social and emotional wellbeing
Wirback 2014 [Sweden]	Cohort	Adolescents and participating within the BROMS cohort study (N= 1880)	• Low parent education • Unskilled parent occupation • Born outside the country • Parental unemployment • Single-parent family	• Mental health concerns
Yu 2020 [South Korea]	Cross-sectional	Adolescent girls who participated in the 3rd-11th Korea Youth Risk Behaviour Web-based Survey (KYRBS) from 2007 to 2015 (N= 319,437)	• Early puberty	• Mental health concerns

See Appendix D for full evidence tables.

1.1.6 Summary of the prognostic evidence

Table 2: Family, relationships and home life factors

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Parental depression	At age 4 – Adj OR 1.46 (0.91 to 2.34) (girls)[1] At age 8.5 – Adj OR 7.6 (1.6 to 36.6)[1] At age 12 – Adj OR 1.1 (0.8 to 1.51)[1]	NR	At age 8.5 – Adj OR 8.5 (2.7 to 26.5)[1] At age 9.05 – Adj OR 2.07 (0.85 to 5.06)[1] At 2-year follow-up – Adj OR 1.14 (1.01 to 1.29) (girls)[4]
Poor parenting	NR	NR	At age 7 – Adj OR 2.62 (1.43 to 4.82)[1]
Child abuse/maltreatment	At age 12 – Adj OR 1.5 (1.01 to 2.22)[1]	At age 16.5 – Adj OR 1.31 (1.13 to 1.53)[1]	NR
Single-parent family	At third grade – Adj OR 1.29 (Sig)[1]	At age 16 - Adj OR 1.3 (0.89 to 1.88)[3] At age 17.5 – Adj OR 2.8 (1.1 to 7.5)[2]	At age 12 - Adj OR 0.59 (0.26 to 1.34)[1] At 2-year follow-up – Adj OR 1.27 (0.86 to 1.88) (girls)[4] At third grade – Adj OR 1.31 (Sig)[1]
Parental drug/alcohol use	NR	At age 14.3 – Adj OR 2.34 (1.45 to 3.79)[2]	NR
Parental unemployment	At age 12 – Adj OR 1.14 (0.34 to 3.80)[1]	At age 17.5 – Adj OR 1.8 (0.7 to 4.5)[2]	At age 12 – Adj OR 2.76 (1.03 to 7.41)[1]
Family dysfunction	NR	NR	At age 12 – Adj OR 1.04 (0.9 to 1.2)[1]
Poor parent mental health	At age 15 – Adj OR 1.36 (1.06 to 1.73[2] At age 18 – Adj OR 0.99 (0.61 to 1.59)[2]	At age 14.3 – Adj OR 1.86 (1.08 to 3.21)[2]	At age 10.9 - Adj OR 1.81 (0.91 to 3.61)[1] At age 12 - Adj OR 2.6 (1.55 to 4.36)[1]

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Sexual, physical and emotional abuse	NR	At age 14.3 – Adj OR 2.51 (1.69 to 3.7)[2]	
Bereavement	NR	At 1-year follow-up – Adj OR 0.2 (0.1 to 0.6)[3]	NR
Maternal age (young)	NR	NR	At age 12 - Adj OR 1.17 (0.46 to 2.93)[1]
Maternal age (old)	At age 4 – Adj OR 1.78 (1.08 to 2.95) (girls)[1]	NR	NR
Parental Stress	NR	NR	At age 9.05 – Adj OR 3.09 (1.51 to 6.31)[1] At age 10.9 – Adj OR 2.10 (1.12 to 3.95)[1]
Chronic / severe illness in a sibling	NR	At age 14.3 – Adj OR 1.23 (0.75 to 2.04)[2]	NR
Chronic severe illness in a parent	NR	At age 14.3 – Adj OR 1.34 (0.94 to 1.9)[2]	NR
Parental anxiety	At age 4 – Adj OR 1.88 (1.31 to 2.69) (girls)[1]	NR	At age 12 – Adj OR 1.52 (1.29 to 1.8)[1]
Parental antisocial behaviour	at age 12 – Adj OR 1.45 (1.02 to 2.05)[1]	NR	At age 12 – Adj OR 1.09 (0.8 to 1.35)[1]
Sibling drug/alcohol use	NR	At age 14.3 – Adj OR 0.82 (0.39 to 1.71)[2]	NR
Sibling mental illness	NR	At age 14.3 – Adj OR 1.91 (0.98 to 3.73)[2]	NR
Conflict between parents	NR	At age 14.3 – Adj OR 1.51 (1.21 to 1.88)[2]	NR
Change in family structure e.g. divorce	At age 12 – Adj OR 1.24 (0.34 to 4.61)[1]	At age 14.3 – Adj OR 1.25 (0.97 to 1.62)[2]	At age 12 – Adj OR 1.12 (0.31 to 4.10)[1] At age 16 – Adj OR 2.8 (1.2 to 6.4) (boys)[2,3]
Unwanted pregnancy	NR	At age 14.3 – Adj OR 2.17 (0.63 to 7.45)[2]	NR
Unfavourable parent-child attachment	NR	At age 14.3 – Adj OR 2.03 (1.55 to 2.65)[2]	NR

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Arguments with others	NR	At age 16 – Adj OR 1.39 (1.04 to 1.85)[2]	NR
High maternal caffeine intake during pregnancy	At age 5.1 – Adj OR 0.65 (0.25 to 1.67)[1]	NR	NR
High maternal caffeine intake and smoker during pregnancy	At age 5.1 – Adj OR 54.73 (3.48 to 860.32)[1]	NR	NR
Family has fun together	NR	At 1-year follow-up – Adj OR 0.6 (0.4 to 0.9)[3]	NR
Close to father	NR	At 1-year follow-up – Adj OR 0.4 (0.3 to 0.7)[3]	NR
Parent enjoyment	NR	At age 16.5 – Adj OR 0.9 (0.8 to 1.02)[1]	NR
Parent confidence	NR	At age 16.5 – Adj OR 0.99 (0.87 to 1.13)[1]	NR
Low parent education	At third grade – Adj OR 1.37 (NS)[1]	At age 17.5 – Adj OR 1.5 (0.9 to 2.5)[2]	At third grade – Adj OR 1.22 (NS)[1]
High parent education	At age 4 – Adj OR 0.28 (0.15 to 0.54) (girls)[1]	NR	At 2-year follow-up – Adj OR 0.71 (0.44 to 1.12) (girls)[4]
Parent born outside the country	At age 12 – Adj OR 1.35 (0.32 to 5.62)[1]	At age 17.5 – Adj OR 1.1 (0.7 to 1.7)[2]	At age 12 – Adj OR 0.85 (0.21 to 1.94)[1]
Household structure: Other	At third grade – Adj OR 1.56 (Sig)[1]	NR	At third grade – Adj OR 1.44 (Sig)[1]
Home language not English	At third grade – Adj OR 0.83 (NS)[1]	NR	At third grade – Adj OR 0.9 (NS)[1]
Cumulative familial and social adversities	At age 7.91 – Adj OR 6.98 (3.74 to 13.02)[6]	NR	NR
Mother smoking during pregnancy	At age 4 – Adj OR 1.21 (0.87 to 1.72) (girls)[1] At age 12 – Adj OR 1.24 (0.44 to 3.44)[1]	NR	At age 12 – Adj OR 4.33 (1.78 to 10.52)[1]
Mother drinking alcohol during pregnancy	At age 4 – Adj OR 1.20 (0.48 to 2.97) (girls)[1]	NR	NR
Higher parental involvement	NR	At age 18 – Adj OR 0.71 (0.46 to 1.09)[1,2]	NR

[1]Risk / predictive factor measured between pregnancy to child age 5 years

[2]Risk / predictive factor measured between 6 to 13 years

[3]Risk / predictive factor measured from 14+ years

[4]Risk / predictive factor measured in kindergarten

[5]Age of risk / predictive factor measurement not reported

[6]Age of risk / predictive factor measured at the same age as outcome

NR: not reported; NS: not statistically significant; Sig: statistically significant.

Potential risk factors identified in the protocol for, for which no data were available include parent-child conflict, negative family environment, family conflict, poor parental supervision, neglect and young carers.

Table 3: Wider school and neighbourhood environment factors

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Traumatic event	At age 5 – Adj OR 3.1 (1.4 to 6.5)[1]		At age 5 – Adj OR 6.8 (3.1 to 14.8)[1]
Bullying	NR	At age 14.3 – Adj OR 1.45 (1.06 to 2.0) (boys and girls)[2] At age 16 – Adj OR 1.29 (1 to 1.68)[2]	NR
Cyberbullying	NR	At age 14.3 – Adj OR 2.53 (1.55 to 4.12)[2]	NR
Criminal exploitation	NR		NR
School exclusion/suspension	NR	At 1-year follow-up – Adj OR 1.9 (1.3 to 2.7)[3]	NR
Good school/poor social connectedness	NR	At age 16 – Adj OR 1.4 (0.88 to 2.28)[3]	NR
Low school/good social connectedness	NR	At age 16 – Adj OR 1.34 (1.04 to 1.76)[3]	NR

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Low school/poor social connectedness	NR	At age 16 – Adj OR 1.27 (0.86 to 1.88)[3]	NR
Poor school experience	At age 12 – Adj OR 1.46 (0.9 to 2.37)[2]	At age 12 – Adj OR 2.14 (1.34 to 3.42)[3]	NR
Over 25% black students in class	At third grade – Adj OR 0.68 (Sig)[1]	NR	At third grade – Adj OR 1.06 (NS)[1]
Over 25% hispanic students in class	At third grade – Adj OR 0.98 (NS)[1]	NR	At third grade – Adj OR 1.06 (NS)[1]
Severe victimisation	NR	At age 15 – Adj OR 2.34 (1.2 to 4.53)[2]	NR
Social distancing measures	NR	At 22 weeks after risk factor was measured – Adj OR 1.48 (0.74 to 2.95)[5]	NR

[1]Risk / predictive factor measured between pregnancy to child age 5 years

[2]Risk / predictive factor measured between 6 to 13 years

[3]Risk / predictive factor measured from 14+ years

[4]Risk / predictive factor measured in kindergarten

[5]Age of risk / predictive factor measurement not reported

NR: not reported; NS: not statistically significant; Sig: statistically significant.

Potential risk factors identified in the protocol for, for which no data were available include peer rejection, stressful events, poor academic achievement, community-level stressful or traumatic events, school-level stressful or traumatic events, community violence, school violence, school failure, low commitment to school, aggression toward peers, associating with drug-using peers, societal/community norms favour alcohol and drug use, associating with deviant peers, loss of close relationship or friends, peer on peer abuse and criminal exploitation.

Table 4: Individual characteristics

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Adverse childhood experiences (Direct and indirect)	At age 5 – Adj OR 2.7 (1.4 to 5.0)[6]	At age 16 – Adj OR 7.99 (Sig)[6]	At age 8.13 – Adj OR 32.6 (13.00 to 81.78)[6]

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
	At age 7.91 – Adj OR 2.74 (1.92 to 3.91)[6] At age 11.49 – Adj OR 1.77 (1.63 to 1.92)[6] At age 11.5 – Adj OR 0.59 (0.52 to 0.66)[6] At age 12 – Adj OR 4.82 (1.24 to 18.67)[1]	At age 17 – Adj OR 2.43 (1.57 to 3.77)[1,2,3]	At age 9 – Adj OR 3.76 (2.26 to 6.27)[1] At age 12 – Adj OR 2.39 (0.71 to 8.05)[1]
Female gender	NR	At age 16 – Adj OR 2.54 (1.69 to 3.83)[3] At 1-year follow-up – Adj OR 1.6 (1.1 to 2.4)[3]	At age 12 – Adj OR 1.10 (0.53 to 2.28)[1]
Male gender	At third grade – Adj OR 1.66 (Sig)[1]	NR	At age 7 – Adj OR 1.7 (1.02 to 2.82)[1] At age 12 - Adj OR 1.21 (0.83 to 1.76)[1] At third grade – Adj OR 1.08 (NS)[1]
Difficult temperament: inflexibility, low positive mood, withdrawal, poor concentration	NR	NR	At age 12 - Adj OR 1.06 (0.94 to 1.2)[1]
Low-level depressive symptoms and persistent depressive disorder	NR	NR	At age 16 – Adj OR 2.3 (1.01 to 5.6) (girls)[2]
Anxiety/depressive symptoms	NR	At age 16 – Adj OR 3.17 (2.31 to 4.35)[3]	NR

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Alcohol or substance use	NR	At age 16 – Adj OR 1.22 (0.83 to 1.79)[3]	NR
Internalising problems	NR	NR	At age 10.9 – Adj OR 2.9 (1.59 to 5.29)[1] At third grade – Adj OR 2.53 (Sig)[1]
Chronic illness	NR	At age 15 – Adj OR 1.6 (1.14 to 2.25)[2]	NR
Asthma	NR	At age 15 – Adj OR 1.85 (1.32 to 2.58)[2]	NR
Overweight	At age 8 – Adj OR 1.2 (1.04 to 1.37)[1] At age 10 – Adj OR 2.19 (1.63 to 2.94)[1,2] At age 10.8 – Adj OR 1.8 (1.2 to 2.6)[2] At 12-month follow-up – Adj OR 1.1 (0.77 to 1.57)[5]	At 12-month follow-up – Adj OR 1.07 (0.8 to 1.43)[5]	At 2-year follow-up – Adj OR 1.34 (0.88 to 2.03) (girls)[4]
Obese	At 12-month follow-up – Adj OR 1.13 (0.8 to 1.59)[5]	At 12-month follow-up – Adj OR 1.66 (1.29 to 2.14)[5]	NR
Change in sleep duration	NR	At age 10 – Adj OR 1.09 (0.85 to 1.41)[2]	NR
Change in sleep quality	NR	At age 10 – Adj OR 2.36 (1.18 to 4.71)[2]	NR
Previous sleep disturbance	NR	NR	At age 12 – Adj OR 0.78 (0.43 to 1.43)[2]

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Persistent sleep disturbance	NR	NR	At age 12 – Adj OR 1.82 (0.83 to 3.97)[2]
Emotional problems	At age 12 – Adj OR 1.13 (0.93 to 1.37)[1]	NR	At age 16 – Adj OR 3.9 (1.7 to 8.8) (girls)[2]
Behavioural problems	At age 12 – Adj OR 1.31 (1.1 to 1.57)[1] At age 15 – Adj OR 1.17 (1.12 to 1.22)[2] At age 18 – Adj OR 1.3 (1.22 to 1.39)[2]	NR	NR
ADHD symptoms / diagnosis	At age 9 – Adj OR 6.15 (3.55 to 10.67)[6] At age 12 – Adj OR 1.55 (1.29 to 1.87)[1]	NR	NR
High physical activity	At age 15.8 – Adj OR 0.48 (0.26 to 0.90)[6]	At age 13 – Adj OR 0.67 (0.22 to 2.02) (girls)[6] At age 15.1 – Adj OR 1.48 (0.90 to 2.46) (girls)[6] At age 15.8 – Adj OR 0.31 (0.14 to 0.71)[6] At 2-year follow-up – Adj OR 0.99 (0.89 to 1.1) (girls)[2,3]	NR

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Low physical activity	At age 10.5 – Adj OR 0.78 (0.57 to 1.07)[6]	At age 13 – Adj OR 4.64 (3.39 to 6.36)[6] At <16 years – Adj OR 1.25 (1.11 to 1.42)[6]	NR
Need for professional services e.g. counselling	NR	At 1-year follow-up – Adj OR 1.9 (1.2 to 3.0)[3]	At age 16 – Adj OR 6.5 (1.7 to 25.6)[5]
Fair/poor general health	NR	At 1-year follow-up – Adj OR 1.7 (1.1 to 2.7)[3]	NR
Somatic symptoms	NR	At 1-year follow-up – Adj OR 1.6 (1.1 to 2.5)[3]	NR
Suicidal ideation	NR	At 1-year follow-up – Adj OR 1.5 (1.0 to 2.2)[3]	NR
Hyperkinetic symptoms	NR	NR	At age 16 – Adj OR 2.9 (1.03 to 8.1) (boys)[2]
Race: Black	At third grade – Adj OR 1.75 (Sig)[1]	NR	At 2-year follow-up – Adj OR 0.79 (0.49 to 1.26)[4] (girls) At third grade – Adj OR 0.86 (NS)[1]
Race: Hispanic	At third grade – Adj OR 1.01 (NS)[1]	NR	At 2-year follow-up – Adj OR 0.76 (0.49 to 1.18) (girls)[4] At third grade – Adj OR 0.87 (NS)[1]
Race: Asian	At third grade – Adj OR 0.63 (NS)[1]	NR	At 2-year follow-up – Adj OR 1.14 (0.69 to 1.89) (girls)[4] At third grade – Adj OR 0.49 (Sig)[1]
Race: Other	At third grade – Adj OR 1.21 (NS)[1]	NR	At third grade – Adj OR 1.03 (NS)[1]

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Reading problems	At third grade – Adj OR 1.2 (NS)[1]	NR	At third grade – Adj OR 1.66 (Sig)[1]
Approaches problems	At third grade – Adj OR 1.74 (Sig)[1]	NR	At third grade – Adj OR 1.94 (Sig)[1]
Interpersonal problems	At third grade – Adj OR 3.33 (Sig)[1]	NR	NR
High self-esteem	NR	At age 13.6 – Adj OR 0.60 (0.40 to 0.90)[6]	NR
Low self-esteem	NR	At age 9 – Adj OR 13.92 (4.37 to 44.36)[6] At age 12 – Adj OR 5.6 (4.1 to 7.5) At age 15 – Adj OR 13.44 (4.1 to 7.5)[6]	NR
Early puberty	NR	At age 13 – Adj OR 6.07 (2.00 to 18.46) (girls)[2] At age 15 – Adj OR 1.19 (1.14 to 1.23) (girls)[2]	NR
Shyness	At age 14 – Adj OR 1.36 (0.87 to 2.14) (girls)[6]	NR	NR
Autism spectrum disorder	At age 10 – Adj OR 8.32 (4.94 to 14.01)[6]	NR	NR
Special educational needs and disabilities (SEND)	At age 10 – Adj OR 2.75 (2.29 to 3.30)[6] At 6.2-year follow-up – Adj OR 2.0 (Sig)[6]	NR	At 6.2-year follow-up – Adj OR 1.6 (Sig) [6]
Cumulative risk factors	At age 8.5 – Adj OR 2.3 (1.4 to 3.9)[6]		At age 10 – Adj OR 11.89 (4.14 to 34.19)[6]
Cumulative protective factors	NR	NR	At age 10 – Adj OR 0.24 (0.07 to 0.79)[6]

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Hospital presentation for physical health condition	At age 11 – Adj 1.18 (0.97 to 1.43)[1,2]	NR	At age 11 – Adj 1.22 (1.06 to 1.41)[1,2]

[1]Risk / predictive factor measured between pregnancy to child age 5 years

[2]Risk / predictive factor measured between 6 to 13 years

[3]Risk / predictive factor measured from 14+ years

[4]Risk / predictive factor measured in kindergarten

[5]Age of risk / predictive factor measurement not reported

[6]Age of risk / predictive factor measured at the same age as outcome

NR: not reported; NS: not statistically significant; Sig: statistically significant.

Potential risk factors identified in the protocol for, for which no data were available include perceived incompetence, negative explanatory and inferential style, anxiety insecure attachment, poor social skills: communication and problem-solving skills, extreme need for approval and social support, head injury and foetal alcohol syndrome.

Table 5: Socioeconomic factors

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Poverty / low socioeconomic status	At age 12 – Adj OR 2.4 (1.62 to 3.56)[1] At third grade – Adj OR 1.15 (NS)[1]	NR	At age 10.9 - Adj OR 1.66 (0.93 to 2.96)[1] At age 12 - Adj OR 0.84 (0.65 to 1.1)[5] At third grade – Adj OR 1.2 (NS)[1]
High socioeconomic status	NR	NR	At 2-year follow-up – Adj OR 0.53 (0.31 to 0.9) (Q4) (TR) (girls)[4]
Demographic risk	NR	NR	At age 7 – Adj OR 2.82 (1.27 to 6.26)[1]

Risk / Protective factor	Poor social & emotional wellbeing	Mental health concerns	Behavioural difficulties
Unable to obtain needed medical care	NR	At 1-year follow-up – Adj OR 1.6 (1.1 to 2.2)[3]	NR
Unskilled parent occupation	NR	At age 17.5 – Adj OR 2.0 (1.1 to 3.6)[2]	NR

[1]Risk / predictive factor measured between pregnancy to child age 5 years

[2]Risk / predictive factor measured between 6 to 13 years

[3]Risk / predictive factor measured from 14+ years

[4]Risk / predictive factor measured in kindergarten

[5]Age of risk / predictive factor measurement not reported

NR: not reported; NS: not statistically significant; Sig: statistically significant.

Potential risk factors identified in the protocol for, for which no data were available include urban setting.

1.1.7 Narrative synthesis of the evidence

Due to the large number of different social and emotional outcomes reported across the included studies, the committee agreed that the most pragmatic way to manage the evidence was to group all of the different outcomes reported by the papers into three overarching categories:

- poor social and emotional wellbeing,
- mental health concerns
- behavioural difficulties.

And to explore risk and protective factors for each of these groups. The risk and protective factors were sorted into four categories as outlined in the protocol:

- family, relationships and home life factors,
- wider school and neighbourhood environment factors,
- individual characteristics
- socioeconomic factors.

The majority of included studies were assessed as having a moderate risk of bias (50 out of 57 studies) using the QUiPS checklist as recommended in the NICE manual. Of the remaining studies, six were rated as low risk of bias and one was rated as high risk of bias.

Family, relationships and home life factors

Several factors were reported to be significantly predictive or protective for a given outcome based on data from single studies. Child abuse / maltreatment, single parent families, parental anxiety, cumulative familial and social adversities, high maternal caffeine intake (during pregnancy), maternal age being older, parental anxiety and non-traditional household structure were all reported to be significant risk factors for poor social and emotional wellbeing.

Child abuse / maltreatment, parental drug / alcohol use, poor parent mental health, sexual, physical and emotional abuse, conflict between parents, unfavourable parent-child attachment, arguments with others and having a parent born outside the country were all reported to be significant predictors of mental health concerns. Families having fun together, being close to father and bereavement were all reported to have a significant protective effect against mental health concerns. Poor parenting, parental anxiety, parental stress, household structure: other, parental unemployment and mother smoking during pregnancy were reported to be significant predictors of behavioural difficulties.

There were few instances where data from more than one study contributed to an outcome for a specific risk / protective factor. For instances where this did occur, the evidence was often contradictory, with some studies demonstrating statistically significant effects and others not. For example, three studies reported on the effect of parental depression on poor social and emotional wellbeing. Two studies showed no significant effect, whereas one reported that it was a significant risk factor. Additionally, three more studies reported on the effect of parental depression on behavioural difficulties. Two studies reported this risk factor to be significant, whereas one did not. Contradictory data was also seen for the effect of poor parental mental health on poor social and emotional wellbeing, the effect of being a single parent family on mental health concerns and the effect of a change in family structure, being a single parent family and poor parental mental health on behavioural difficulties.

Wider school and neighbourhood factors

Regarding wider school and neighbourhood factors, most studies reported the effect of risk / protective factors on mental health concerns. Several factors that showed significant risk of

mental health concerns were linked to school life. Bullying was found to be a significant risk factor for mental health concerns by two studies. Additionally, cyberbullying, school exclusion/suspension, low school connectedness/poor social connectedness, poor school experience and severe victimisation were reported to be significant factors for mental health concerns by single studies. Experiencing a traumatic event was found to be a significant risk factor for both poor social and emotional wellbeing and behavioural difficulties by one study. Finally, being in a class with over 25% black students was reported to be a protective factor against poor social and emotional wellbeing by one study.

Individual characteristics

Within the category of individual characteristics, eleven studies reported on the effect of adverse childhood experiences (ACEs) across all three outcomes (poor social and emotional wellbeing n=6, mental health concerns n=2, behavioural difficulties n=3). All except one study reporting on behavioural difficulties showed that ACEs were a significant risk factor for all three outcomes.

Factors associated with neurodiversity and special education needs were found to be predictors of poor social and emotional wellbeing, including ADHD symptoms/diagnosis, autism spectrum disorder and special educational needs and disabilities (SEND). Additionally, SEND was also reported to be a significant risk factor for behavioural difficulties. Further significant risk factors for poor social and emotional wellbeing included male gender, behavioural problems, being black, approaches to learning problems, interpersonal problems and cumulative risk factors.

Female gender, anxiety / depressive symptoms, chronic illness, asthma, obesity, change in sleep quality, need for professional counselling services, fair / poor general health, somatic symptoms, suicidal ideation, low physical activity, low self-esteem and early puberty were all reported as significant risk factors for mental health concerns. Furthermore, low-level depressive symptoms and persistent depressive disorder, internalising problems, emotional problems, need for professional services, hyperkinetic symptoms, reading problems, approaches to learning problems, cumulative risk factors and hospital presentation for physical health condition were all significant predictors of behavioural difficulties.

There was also contradictory data reported across a number of risk/protective factors. One study reported male gender to be a significant risk factor for behavioural difficulties whereas two studies showed it to be non-significant. Three studies found being overweight to be a significant risk factor for poor social and emotional wellbeing, whereas one study found it to be non-significant. One study found that having Asian ethnicity was a significant protective factor for behavioural difficulties, whereas another study found this to be non-significant. Finally, one study found higher physical activity to be a significant protective factor against mental health concerns, whereas three other studies found this to be non-significant.

Socioeconomic factors

Regarding socioeconomic factors, demographic risk was reported as being a significant predictor of behavioural difficulties by one study. Additionally, being unable to obtain medical care and having a parent with an unskilled occupation were reported as being significant predictors of mental health concerns by one study each. High socioeconomic status was reported to be a significant protective factor against behavioural difficulties by one study. There was contradictory data for the effect of poverty / low socioeconomic status on poor social and emotional wellbeing. One study found this factor to be a significant predictor of poor social and emotional wellbeing, whereas another study found it to be non-significant. Finally, three studies reported poverty / low socioeconomic status to be a non-significant predictor of behavioural difficulties.

The committee recognised the limitations of the evidence base, in particular that many of the factors that were shown to significantly predict or protect against any of the three outcomes were reported from single studies. Furthermore, there was a lack of evidence that demonstrated the cumulative effect of multiple different risk factors. Additionally, it was noted that there were some surprising admissions for certain risk factors, such as being a young carer or experiencing neglect.

1.1.8 Economic evidence

No economic evidence presented as the review does not concern interventions.

1.1.9 Evidence statements

Family, relationships and home life factors

Poor social and emotional wellbeing

Three cohort studies (Lee 2017 [N= 2605], Luoma 2001 [N= 147] and O'Connor 2002 [N= 7748]) reported the effect of parent depression on poor social and emotional wellbeing. One study reported parent depression to be a significant predictor of poor social and emotional wellbeing (aOR 7.6 (95% CI: 1.6 to 36.6)). Two studies reported parent depression to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.46 (95% CI: 0.91 to 2.34)) (girls only); aOR 1.1 (95% CI: 0.8 to 1.51)). The risk of bias for these studies was moderate.

One cohort study (Matthews 2015 [N= NR]) reported the effect of child abuse/maltreatment on poor social and emotional wellbeing. This study reported child abuse/maltreatment be a significant predictor of poor social and emotional wellbeing (aOR 1.5 (95% CI: 1.01 to 2.22) The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of being from a single-parent family on poor social and emotional wellbeing. This study reported being from a single parent family to be a significant predictor of poor social and emotional wellbeing (aOR 1.29 (significant)) The risk of bias for this study was moderate.

One cohort study (Hammar 2019 [N= 573]) reported the effect of parental unemployment on poor social and emotional wellbeing. This study reported parental unemployment to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.14 (95%CI: 0.34-3.80)) The risk of bias for this study was moderate.

One cohort study (Roetman 2019 [N=6319]) reported the effect of poor parent mental health on poor social and emotional wellbeing. One outcome reported parent mental health to be a significant predictor of poor social and emotional wellbeing (aOR 1.36 (1.06 to 1.73) at age 15. At age 18, poor parent mental health was found to be a non-significant predictor of poor social and emotional wellbeing aOR 0.99 (0.61 to 1.59) (The risk of bias for these studies moderate.

One cohort study (O'Connor 2002 [N= 7748]) reported the effect of maternal age (old) on poor social and emotional wellbeing (in girls). This study reported old maternal age to be a significant predictor of poor social and emotional wellbeing (aOR 1.78 (1.08 to 2.95)) in girls. The risk of bias for this study was moderate.

One cohort study (O'Connor 2002 [N= 7748]) reported the effect of parental anxiety on poor social and emotional wellbeing (in girls). This study reported parental anxiety to be a significant predictor of poor social and emotional wellbeing (aOR 1.88 (1.31 to 2.69)) in girls. The risk of bias for this study was moderate.

One cohort study (Matthews 2015 [N= NR]) reported the effect of parental antisocial behaviour on poor social and emotional wellbeing. This study reported parental antisocial behaviour to be a significant predictor of poor social and emotional wellbeing (aOR 1.45 (1.02 to 2.05)). The risk of bias for this study was moderate.

One cohort study (Hammar 2019 [N= 573]) reported the effect of a change in family structure (e.g. divorce) on poor social and emotional wellbeing. This study reported a change in family structure to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.24 (0.34 to 4.61)). The risk of bias for this study was moderate.

One cohort study (Loomans 2012 [N= 3439]) reported the effect of high maternal caffeine intake during pregnancy on poor social and emotional wellbeing. This study reported high maternal caffeine intake during pregnancy to be a non-significant predictor of poor social and emotional wellbeing (aOR 0.65 (0.25 to 1.67)). The risk of bias for this study was moderate.

One cohort study (Loomans 2012 [N= 3439]) reported the effect of high maternal caffeine intake and being a smoker during pregnancy on poor social and emotional wellbeing. This study reported high maternal caffeine intake and being a smoker during pregnancy to be a significant predictor of poor social and emotional wellbeing (aOR 54.73 (3.48 to 860.32)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of low parent education on poor social and emotional wellbeing. This study reported low parent education to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.37 (non-significant)). The risk of bias for this study was moderate.

One cohort study (O'Connor 2002 [N= 7748]) reported the effect of high parent education on poor social and emotional wellbeing in girls. This study reported high parent education to be significantly not associated with poor social and emotional wellbeing (aOR 0.28 (0.15 to 0.54)). The risk of bias for this study was moderate.

One cohort study (Hammar 2019 [N= 573]) reported the effect of a parent born outside the country on poor social and emotional wellbeing. This study reported a parent born outside the country to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.35 (0.32 to 5.62)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of household structure: other, on poor social and emotional wellbeing. This study reported household structure: other to be a significant predictor of poor social and emotional wellbeing (aOR 1.56 (significant)) The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of 'home language not English', on poor social and emotional wellbeing. This study reported 'home language not English' to be non-significantly not associated with poor social and emotional wellbeing (aOR 0.83 (non-significant)) The risk of bias for this study was moderate.

One cross-sectional study (Vanaelst 2012 [N= 4066]) reported the effect of cumulative familial and social adversities on poor social and emotional wellbeing. This study reported cumulative familial and social adversities to be a significant predictor of poor social and emotional wellbeing (aOR 6.98 (3.74 to 13.02)) The risk of bias for this study was low.

One cohort study (O'Conner 2002 [N= 7748]) reported the effect of a mother smoking during pregnancy, on poor social and emotional wellbeing in girls. This study reported a mother smoking during pregnancy to be non-significant predictor of poor social and emotional wellbeing in girls (aOR 1.21 (0.87 to 1.72)) The risk of bias for this study was moderate.

One cohort study (O'Conner 2002 [N= 7748]) reported the effect of a mother drinking alcohol during pregnancy, on poor social and emotional wellbeing in girls. This study reported a mother drinking alcohol during pregnancy to be non-significant predictor of poor social and

emotional wellbeing in girls (aOR 1.20 (0.48 to 2.97)) The risk of bias for this study was moderate.

Mental health concerns

One cohort study (Matthews 2015 [N= NR]) reported the effect of child abuse/maltreatment, on mental health concerns. This study reported child abuse/maltreatment to be a significant predictor of mental health concerns (aOR 1.5 (1.01 to 2.22)) The risk of bias for this study was moderate.

Two cohort studies (Bond 2007 [N=1902], Wirback 2014 [N= 1880]) reported the effect of being from a single parent family on mental health concerns. One study (Bond 2007 [N=1902]) reported this as a non-significant predictor of mental health concerns (aOR 1.3 (0.89 to 1.88). One study (Wirback 2014 [N= 1880]) reported this as a significant predictor of mental health concerns (aOR 2.8 (1.1 to 7.5)). The risk of bias for both studies was moderate.

One cohort study (Bannink 2013 [N= 3181]) reported the effect of parental drug/alcohol use on mental health concerns. This study reported parental drug/alcohol use to be a significant predictor of mental health concerns (aOR 2.34 (1.45 to 3.79)) The risk of bias for this study was high.

One cohort study (Wirback 2014 [N= 1880]) reported the effect of parental unemployment on mental health concerns. This study reported parental unemployment to be a non-significant predictor of mental health concerns (aOR 1.8 (0.7 to 4.5)) The risk of bias for this study was moderate.

One cohort study (Bannink 2013 [N= 3181]) reported the effect of poor parent mental health on mental health concerns. This study reported poor parent mental health to be a significant predictor of mental health concerns (aOR 1.86 (1.08 to 3.21)) The risk of bias for this study was high.

One cohort study (Bannink 2013 [N= 3181]) reported the effect of sexual, physical and emotional abuse on mental health concerns. This study reported sexual, physical and emotional abuse to be a significant predictor of mental health concerns (aOR 2.51 (1.69 to 3.7)) The risk of bias for this study was high.

One cohort study (Rushton 2002 [N= 13,568]) reported the effect of bereavement on mental health concerns. This study reported bereavement to be significantly not associated with mental health concerns (aOR 0.2 (0.1 to 0.6)). The risk of bias for this study was moderate.

One cohort study (Bannink 2013 [N= 3181]) reported the effect of chronic/sever illness in a sibling on mental health concerns. This study reported chronic/sever illness in a sibling to be a non-significant predictor of mental health concerns (aOR 1.23 (0.75 to 2.04)). The risk of bias for this study was high.

One cohort study (Bannink 2013 [N= 3181]) reported the effect of chronic/sever illness in a parent on mental health concerns. This study reported chronic/sever illness in a parent to be a non-significant predictor of mental health concerns (aOR 1.34 (0.94 to 1.9)). The risk of bias for this study was high.

One cohort study (Bannink 2013 [N= 3181]) reported the effect of sibling drug/alcohol use on mental health concerns. This study reported sibling drug/alcohol use to be non-significantly not associated with mental health concerns (aOR 0.82 (0.39 to 1.71)). The risk of bias for this study was high.

One cohort study (Bannink 2013 [N= 3181]) reported the effect of sibling mental illness on mental health concerns. This study reported sibling mental illness to be a non-significant

predictor of mental health concerns (aOR 1.91 (0.98 to 3.73)). The risk of bias for this study was high.

One cohort study (Bannink 2013 [N= 3181]) reported the effect of conflict between parents on mental health concerns. This study reported conflict between parents to be a significant predictor of mental health concerns (aOR 1.51 (1.21 to 1.88)). The risk of bias for this study was high.

One cohort study (Bannink 2013 [N= 3181]) reported the effect of change in family structure e.g. divorce, on mental health concerns. This study reported change in family structure to be a non-significant predictor of mental health concerns (aOR 1.25 (0.97 to 1.62)). The risk of bias for this study was high.

One cohort study (Bannink 2013 [N= 3181]) reported the effect of unwanted pregnancy on mental health concerns. This study reported unwanted pregnancy to be a non-significant predictor of mental health concerns (aOR 2.17 (0.63 to 7.45)). The risk of bias for this study was high.

One cohort study (Bannink 2013 [N= 3181]) reported the effect of unfavourable parent-child attachment on mental health concerns. This study reported unfavourable parent-child attachment to be a significant predictor of mental health concerns (aOR 2.03 (1.55 to 2.65)). The risk of bias for this study was high.

One cohort study (Bond 2007 [N=1902]) reported the effect of arguments with others on mental health concerns. This study reported arguments with others to be a significant predictor of mental health concerns (aOR 1.39 (1.04 to 1.85)). The risk of bias for this study was moderate.

One cohort study (Adriaanse 2016 [N= 152]) reported the effect of ‘family has fun together’ on mental health concerns. This study reported family has fun together to be significantly not associated with mental health concerns (aOR 0.6 (0.4 to 0.9)). The risk of bias for this study was moderate.

One cohort study (Rushton 2002 [N= 13,568]) reported the effect of being ‘close to father’ on mental health concerns. This study reported being ‘close to father’ to be significantly not associated with mental health concerns (aOR 0.4 (0.3 to 0.7)). The risk of bias for this study was moderate.

One cohort study (Scourfield 2016 [N= 2250]) reported the effect of parent enjoyment on mental health concerns. This study reported parent enjoyment to be non-significantly not associated with mental health concerns (aOR 0.9 (0.8 to 1.02)). The risk of bias for this study was high.

One cohort study (Scourfield 2016 [N= 2250]) reported the effect of parent confidence on mental health concerns. This study reported parent confidence to be non-significantly not associated with mental health concerns (aOR 0.99 (0.87 to 1.13)). The risk of bias for this study was high.

One cohort study (Wirback 2014 [N= 1880]) reported the effect of parent born outside the country on mental health concerns. This study reported parent born outside the country to be non-significant predictor mental health concern (aOR 1.1 (0.7 to 1.7)). The risk of bias for this study was moderate.

One cohort study (Cong 2020 [N= 3322]) reported the effect of higher parental involvement on mental health concerns. This study reported higher parental involvement to be non-significantly not associated with mental health concerns (aOR 0.71 (0.46 to 1.09)). The risk of bias for this study was moderate.

Behavioural difficulties

Three cohort studies (Luoma 2001 [N= 147], Park 2014 [N= 1003], Datar 2004 [N= 9949]) reported the effect of parental depression on behavioural difficulties. Two studies reported parental depression to be a significant predictor of behavioural difficulties (aOR 8.5 (2.7 to 26.5) and 1.14 (1.01 to 1.29 (girls)). One study reported parental depression to be a non-significant predictor of behavioural difficulties (aOR 2.07 (0.85 to 5.06)). The risk of bias for these studies was moderate.

One cohort study (Cabaj 2014 [N= 450]) reported the effect of poor parenting on behavioural difficulties. This study reported poor parenting to be a significant predictor of behavioural difficulties (aOR 2.62 (1.43 to 4.82)).The risk of bias for this study was moderate.

Three cohort studies (Ahun 2018 [N=1537], Datar 2004 [N= 9949], Morgan 2008 [N= 11,515]) reported the effect of being from a single parent family on behavioural difficulties. One study reported being from a single parent family to be a significant predictor of behavioural difficulties (aOR 1.31 (Sig)). One study reported this to be a non-significant predictor of behavioural difficulties (aOR 1.27 (0.86 to 1.88) (girls)). One study reported this to be non-significantly not associated with behavioural difficulties (aOR 0.59 (0.26 to 1.34)). The risk of bias for these studies was moderate.

One cohort study (Hammar 2019 [N= 573]) reported the effect of parental unemployment on behavioural difficulties. This study reported parental unemployment to be a significant predictor of behavioural difficulties (aOR 2.76 (1.03 to 7.41)). The risk of bias for this study was moderate.

One cohort study (Ahun 2018 [N=1537]) reported the effect of family dysfunction on behavioural difficulties. This study reported family dysfunction to be a non-significant predictor of behavioural difficulties (aOR 1.04 (0.9 to 1.2)) The risk of bias for this study was moderate.

Two cohort studies (Ashford 2008 [N= 294], Ahun 2018 [N=1537]) reported the effect of poor parent mental health on behavioural difficulties. One study reported poor parent mental health to be a significant predictor of behavioural difficulties (aOR 2.6 (1.55 to 4.36)). One study reported this to be a non-significant predictor of behavioural difficulties (aOR 1.81 (0.91 to 3.61)) The risk of bias for these studies was moderate.

One cohort study (Ahun 2018 [N=1537]) reported the effect of maternal age (young) on behavioural difficulties. This study reported maternal age (young) to be a non-significant predictor of behavioural difficulties (aOR 1.17 (0.46 to 2.93)). The risk of bias for this study was moderate.

Two cohort studies (Park 2014 [N= 1003], Ashford 2008 [N= 294]) reported the effect of parental stress on behavioural difficulties). Both studies reported parental stress to be a significant predictor of behavioural difficulties (aOR 3.09 (1.51 to 6.31 and aOR 2.10 (1.12 to 3.95)). The risk of bias for these studies was moderate.

One cohort study (Ahun 2018 [N=1537]) reported the effect of parental anxiety on behavioural difficulties. This study reported parental anxiety to be a significant predictor of behavioural difficulties (aOR 1.52 (1.29 to 1.8)). The risk of bias for this study was moderate.

One cohort study (Ahun 2018 [N=1537]) reported the effect of parental antisocial behaviour on behavioural difficulties. This study reported parental antisocial behaviour to be a non-significant predictor of behavioural difficulties (aOR 1.09 (0.8 to 1.35)). The risk of bias for this study was moderate.

Two cohort studies (Hammar 2019 [N= 573], Sourander 2005 [N=609]) reported the effect of change in family structure on behavioural difficulties. One study reported change in family structure to be a non-significant predictor of behavioural difficulties (aOR 1.12 (0.31 to 4.10)).

One study reported this to be a significant predictor of behavioural difficulties (aOR 2.8 (1.2 to 6.4) (boys)). The risk of bias for these studies was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of low parent education on behavioural difficulties. This study reported low parent education to be a non-significant predictor of behavioural difficulties (aOR 1.22 (non-significant)). The risk of bias for this study was moderate.

One cohort study (Datar 2014 [N= 9949]) reported the effect of high parent education on behavioural difficulties. This study reported high parent education to be non-significantly not associated with behavioural difficulties (aOR 0.71 (0.44 to 1.12) (girls)). The risk of bias for this study was moderate.

One cohort study (Hammar 2019 [N= 573]) reported the effect of a parent born outside the country on behavioural difficulties. This study reported a parent born outside to be non-significant and not associated with behavioural difficulties (aOR 0.85 (0.21 to 1.94)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of household structure: other, on behavioural difficulties. This study reported household structure: other to be a significant predictor of behavioural difficulties (aOR 1.44 (significant)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of home language not English on behavioural difficulties. This study reported home language not English to be non-significant and not associated with behavioural difficulties (aOR 0.9 (non-significant)). The risk of bias for this study was moderate.

One cohort study (Hammar 2019 [N= 573]) reported the effect of mother smoking during pregnancy on behavioural difficulties. This study reported mother smoking during pregnancy to be a significant predictor of behavioural difficulties (aOR 4.33 (1.78 to 10.52))). The risk of bias for this study was moderate.

Wider school and neighbourhood environment factors

Poor social and emotional wellbeing

One cohort study (Briggs-Gowan 2012 [N= 437]) reported the effect of traumatic event on poor social and emotional wellbeing. This study reported a traumatic event to be a significant predictor of poor social and emotional wellbeing (aOR 3.1 (1.4 to 6.5)). The risk of bias for this study was moderate

One cohort study (Waenerlund 2016 [N= 566]) reported the effect of poor school experience on poor social and emotional wellbeing. This study reported a poor school experience to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.46 (0.9 to 2.37)). The risk of bias for this study was moderate

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of over 25% black students in class on poor social and emotional wellbeing. This study reported over 25% black students in class to be significantly not associated with poor social and emotional wellbeing (aOR 0.68 (significant)). The risk of bias for this study was moderate

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of over 25% Hispanic students in class in class on poor social and emotional wellbeing. This study reported Over 25% Hispanic students in class to be non-significantly not associated with poor social and emotional wellbeing (aOR 0.98 (non-significant)). The risk of bias for this study was moderate

Mental health concerns

Two cohort studies (Bannink 2014 [N= 3181], Bond 2007 [N=1902]) reported the effect of bullying on mental health concerns. One study reported bullying to be significantly associated with mental health concerns. (aOR 1.45 (1.06 to 2.0)). One study reported this to be non-significantly associated with mental health concerns (aOR 1.29 (1 to 1.68)). The risk of bias for these studies was moderate.

One cohort study (Bannink 2014 [N= 3181]) reported the effect of cyberbullying on mental health concerns. This study reported cyberbullying to be a significant predictor of mental health concerns (aOR 2.53 (1.55 to 4.12)). The risk of bias for this study was moderate

One cohort study (Rushton 2002 [N= 13,568]) reported the effect of school exclusion/suspension on mental health concerns. This study reported school exclusion/suspension to be a significant predictor of mental health concerns (aOR 1.9 (1.3 to 2.7)). The risk of bias for this study was moderate

One cohort study (Bond 2007 [N=1902]) reported the effect of good school/poor social connectedness on mental health concerns. This study reported good school/poor social connectedness to be a non-significant predictor of mental health concerns (aOR 1.4 (0.88 to 2.28)) The risk of bias for this study was moderate.

One cohort study (Bond 2007 [N=1902]) reported the effect of low school/good social connectedness on mental health concerns. This study reported low school/good social connectedness to be a significant predictor of mental health concerns (aOR 1.34 (1.04 to 1.76)). The risk of bias for this study was moderate.

One cohort study (Bond 2007 [N=1902]) reported the effect of low school/poor social connectedness on mental health concerns. This study reported low school/poor social connectedness to be a non-significant predictor of mental health concerns (aOR 1.27 (0.86 to 1.88)). The risk of bias for this study was moderate.

One cohort study (Waenerlund 2016 [N= 566]) reported the effect of poor school experience on mental health concerns. This study reported poor school experience to be a significant predictor of mental health concerns (aOR 2.14 (1.34 to 3.42)). The risk of bias for this study was moderate.

One cohort study (Geoffroy 2018 [N= 1363]) reported the effect of severe victimisation on mental health concerns. This study reported of severe victimisation to be a significant predictor of mental health concerns (aOR 2.34 (1.2 to 4.53)). The risk of bias for this study was moderate.

One cohort study (Munasinghe 2020 [N= 582]) reported the effect of social distancing measures on mental health concerns. This study reported social distancing measures to be a non-significant predictor of mental health concerns (aOR 1.48 (0.74 to 2.95)). The risk of bias for this study was moderate.

Behavioural difficulties

One cohort study (Briggs-Gowan 2012 [N=437]) reported the effect of traumatic event on behavioural difficulties. This study reported traumatic event to be a significant predictor of behavioural difficulties (aOR 6.8 (3.1 to 14.8)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of over 25% black students in class on behavioural difficulties. This study reported over 25% black students in class to be a non-significant predictor of behavioural difficulties (aOR 1.06 (non-significant)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of over 25% Hispanic students in class on behavioural difficulties. This study reported over 25% Hispanic students

in class to be a non-significant predictor of behavioural difficulties (aOR 1.06 (non-significant)). The risk of bias for this study was moderate.

Individual characteristics

Poor social and emotional wellbeing

Four cross-sectional studies and one cohort study (Jimenez 2016 [N= 1007], Baiden 2020 [N= 45,041], Vanaelst 2012 [N= 4066], Thurston 2018 [N= 65,680], Hammar 2019 [N= 573]) reported the effect of adverse childhood experiences (direct/indirect) on poor social and emotional wellbeing. Four studies reported adverse childhood experiences to be a significant predictor of poor social and emotional wellbeing (aOR 2.7 (1.4 to 5.0), aOR 2.74 (1.92 to 3.91), aOR 1.77 (1.63 to 1.92), aOR 4.82 (1.24 to 18.67)). One study reported adverse childhood experiences to be significantly not associated with good social and emotional wellbeing aOR (0.59 (0.52 to 0.66)). The risk of bias for these studies ranged from low to moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of male gender on poor social and emotional wellbeing. This study reported male gender to be a significant predictor of poor social and emotional wellbeing (aOR 1.66 (significant)). The risk of bias for this study was moderate.

Four cohort studies (Sawyer 2011 [N= 3633], Jansen 2013 [N = 3197], Hesketh 2004 [N= 1157], Roberts 2013 [N=4175]) reported the effect of being overweight on poor social and emotional wellbeing. Three studies reported being overweight to be a significant predictor of poor social and emotional wellbeing (aOR 1.2 (1.04 to 1.37), aOR 2.19 (1.63 to 2.94), aOR 1.8 (1.2 to 2.6)). One study reported being overweight to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.1 (0.77-1.57). The risk of bias for these studies was moderate.

One cohort study (Roberts 2013 [N=4175]) reported the effect of being obese on poor social and emotional wellbeing. This study reported being obese to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.13 (0.8 to 1.59)). The risk of bias for this study was moderate.

One cohort study (Matthews 2015 [N= NR]) reported the effect of emotional problems on poor social and emotional wellbeing. This study reported emotional problems to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.13 (0.93 to 1.37)). The risk of bias for this study was moderate.

Two cohort studies (Matthews 2015 [N= NR], Roetman 2019 [N=6319]) reported the effect of behavioural problems on poor social and emotional wellbeing. These studies reported behavioural problems to be a significant predictor of poor social and emotional wellbeing (aOR 1.31 (1.1 to 1.57), aOR 1.17 (1.12 to 1.22) (at age 15), aOR 1.3 (1.22 to 1.39) (at age 18)). The risk of bias for these studies was moderate. One cohort study and one cross-sectional study (Matthews 2015 [N= NR], Denham 2016 [N= 3225]) reported the effect of ADHD symptoms/diagnosis on poor social and emotional wellbeing. These studies reported ADHD symptoms/diagnosis to be a significant predictor of poor social and emotional wellbeing (aOR 6.15 (3.55 to 10.67), aOR 1.55 (1.29 to 1.87)). The risk of bias for these studies was moderate.

One cross-sectional study (Hrafnkelsdottir 2018 [N = 244]) reported the effect of high physical activity on poor social and emotional wellbeing. This study reported high physical activity to be a significantly not associated with poor social and emotional wellbeing (aOR 0.48 (0.26 to 0.90)). The risk of bias for this study was moderate.

One cross-sectional study (Wang 2008 [N= 4945]) reported the effect of low physical activity on poor social and emotional wellbeing. This study reported low physical activity to be a non-

significantly not associated with poor social and emotional wellbeing (aOR 0.78 (0.57 to 1.07)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of 'race: black' on poor social and emotional wellbeing. This study reported 'race: black' to be a significant predictor of poor social and emotional wellbeing (aOR 1.75 (significant)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of 'race: Hispanic on poor social and emotional wellbeing. This study reported 'race: Hispanic to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.01 (non-significant)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of 'race: Asian on poor social and emotional wellbeing. This study reported 'race: Asian to be non-significant predictor and not associated with of poor social and emotional wellbeing (aOR 0.63 (non-significant)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of 'race: other on poor social and emotional wellbeing. This study reported 'race: other to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.21 (non-significant)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of reading problems on poor social and emotional wellbeing. This study reported reading problems to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.2 (non-significant)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of approaches problems on poor social and emotional wellbeing. This study reported approaches problems to be a significant predictor of poor social and emotional wellbeing (aOR 1.74 (significant)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of interpersonal problems on poor social and emotional wellbeing. This study reported interpersonal problems to be a significant predictor of poor social and emotional wellbeing (aOR 3.33 (significant)). The risk of bias for this study was moderate.

One cross-sectional study (Stickley 2016 [N= 4255]) reported the effect of shyness on poor social and emotional wellbeing. This study reported shyness to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.36 (0.87 to 2.14)). The risk of bias for this study was moderate.

One cross-sectional study (Totsika 2011 [N = 18,415]) reported the effect of autism spectrum disorder on poor social and emotional wellbeing. This study reported autism spectrum disorder to be a significant predictor of poor social and emotional wellbeing (aOR 8.32 (4.94 to 14.01)). The risk of bias for this study was Low.

Two cross-sectional studies (Visser 2003 [N= 1286], Totsika 2011 [N = 18,415]) reported the effect of special educational needs and disabilities (SEND) on poor social and emotional wellbeing. These studies reported special educational needs and disabilities (SEND) to be a significant predictor of poor social and emotional wellbeing (aOR 2.75 (2.29 to 3.30), aOR 2.0 (significant)). The risk of bias for these studies was low to moderate.

One cross-sectional study (Spencer 2020 [N= 943]) reported the effect of cumulative risk factors on poor social and emotional wellbeing. This study reported cumulative risk factors to be a significant predictor of poor social and emotional wellbeing (aOR 2.3 (1.4 to 3.9)). The risk of bias for this study was Low.

One cohort study (Laurens 2019 [N= 21,304]) reported the effect of hospital presentation for physical health condition on poor social and emotional wellbeing. This study reported hospital presentation for physical health condition to be a significant predictor of poor social and emotional wellbeing (aOR 1.18 (0.97 to 1.43)). The risk of bias for this study was moderate.

Mental health concerns

One cohort study and one cross-sectional study (Meeker 2021 [N= 1528], Houtepen 2020 [N= 4917]) reported the effect of adverse childhood experiences (direct and indirect) on mental health concerns. These studies reported adverse childhood experiences to be a significant predictor of mental health concerns (aOR 2.43 (1.57 to 3.77), aOR 7.99 (significant)). The risk of bias for these studies was low.

Two cohort studies (Bond 2007 [N=1902], Rushton 2002 [N= 13,568]) reported the effect of female gender on mental health concerns. These studies reported female gender to be a significant predictor of mental health concerns (aOR 1.6 (1.1 to 2.4), aOR 2.54 (1.69 to 3.83)). The risk of bias for these studies was moderate.

One cohort study (Bond 2007 [N=1902]) reported the effect of anxiety/depressive symptoms on mental health concerns. This study reported anxiety/depressive symptoms to be a significant predictor of mental health concerns (aOR 3.17 (2.31 to 4.35)). The risk of bias for this study was moderate.

One cohort study (Bond 2007 [N=1902]) reported the effect of alcohol or substance use on mental health concerns. This study reported alcohol or substance use to be a non-significant predictor of mental health concerns (aOR 1.22 (0.83 to 1.79)). The risk of bias for this study was moderate.

One cohort study (Brady 2020 [N= 4011]) reported the effect of chronic illness on mental health concerns. This study reported chronic illness to be a significant predictor of mental health concerns (aOR 1.6 (1.14 to 2.25)). The risk of bias for this study was moderate.

One cohort study (Brady 2020 [N= 4011]) reported the effect of asthma on mental health concerns. This study reported asthma to be a significant predictor of mental health concerns (aOR 1.85 (1.32 to 2.58)). The risk of bias for this study was moderate.

One cohort study (Roberts 2013 [N=4175]) reported the effect of being overweight on mental health concerns. This study reported being overweight to be a non-significant predictor of mental health concerns (aOR 1.07 (0.8 to 1.43)). The risk of bias for this study was moderate.

One cohort study (Roberts 2013 [N=4175]) reported the effect of being obese on mental health concerns. This study reported being obese to be a significant predictor of mental health concerns (aOR 1.66 (1.29 to 2.14)). The risk of bias for this study was moderate.

One cohort study (Lee 2017 [N= 2605]) reported the effect of change in sleep duration on mental health concerns. This study reported change in sleep duration to be a non-significant predictor of mental health concerns (aOR 1.09 (0.85 to 1.41)). The risk of bias for this study was moderate.

One cohort study (Lee 2017 [N= 2605]) reported the effect of change in sleep quality on mental health concerns. This study reported change in sleep quality to be a significant predictor of mental health concerns (aOR 2.36 (1.18 to 4.71)). The risk of bias for this study was moderate.

Three cross sectional studies and one cohort study (Bulhoes 2019 [N= 1988], Hoare 2016 [N= 634], Hrafnkelsdottir 2018 [N= 244], Rothon 2010 [N= 2789]) reported the effect of high physical activity on mental health concerns. Two studies reported high physical activity to be

non-significantly not associated with mental health concerns (aOR 0.67 (0.22 to 2.02), aOR 0.99 (0.89 to 1.1)) in girls. One study reported high physical activity to be significantly not associated with mental health concerns (aOR 0.31 (0.14 to 0.71)). One study reported high physical activity to be a non-significant predictor of mental health concerns (aOR 1.48 (0.90 to 2.46)) in girls. The risk of bias for these studies was moderate.

Two cross-sectional studies (Kleszczewska 2019 [N= NR], Wang 2019 [N= 16,410]) reported the effect of low physical activity on mental health concerns. These studies reported low physical activity to be a significant predictor of mental health concerns (aOR 4.64 (3.39 to 6.36), aOR 1.25 (1.11 to 1.42)). The risk of bias for these studies was moderate.

One cohort study (Rushton 2002 [N= 13,568]) reported the effect of need for professional services (eg counselling) on mental health concerns. This study reported need for professional services to be a significant predictor of mental health concerns (aOR 1.9 (1.2 to 3.0)). The risk of bias for this study was moderate.

One cohort study (Rushton 2002 [N= 13,568]) reported the effect of fair/poor general health on mental health concerns. This study reported fair/poor general health to be a significant predictor of mental health concerns (aOR 1.7 (1.1 to 2.7)). The risk of bias for this study was moderate.

One cohort study (Rushton 2002 [N= 13,568]) reported the effect of somatic symptoms on mental health concerns. This study reported somatic symptoms to be a significant predictor of mental health concerns (aOR 1.6 (1.1 to 2.5)). The risk of bias for this study was moderate.

One cohort study (Rushton 2002 [N= 13,568]) reported the effect of suicidal ideation on mental health concerns. This study reported suicidal ideation to be a non-significant predictor of mental health concerns (aOR 1.5 (1 to 2.2)). The risk of bias for this study was moderate.

One cross-sectional study (Adriaanse 2016 [N=152]) reported the effect of high self-esteem on mental health concerns. This study reported high self-esteem to be a significantly not associated with mental health concerns (aOR 0.60 (0.40 to 0.90)). The risk of bias for this study was moderate.

Two cross sectional studies and one cohort study (Denham 2016 [N= 3225], Lemstra 2012 [N= 4197], O' Farrell 2005 [N=992]) reported the effect of low self-esteem on mental health concerns. These studies reported low self-esteem to be a significant predictor of mental health concerns (aOR 13.92 (4.37 to 44.36), aOR 5.6 (4.1 to 7.5), aOR 13.44 (4.1 to 7.5). The risk of bias for these studies was moderate

Two cohort studies (Bulhoes 2019 [N= 1988], Yu 2020 [N= 319,437]) reported the effect of early puberty on mental health concerns. These studies reported early puberty to be a significant predictor of mental health concerns (aOR 6.07 (2.00 to 18.46), aOR 1.19 (1.14 to 1.23)) in girls. The risk of bias for these studies was low-moderate.

Behavioural difficulties

Two cohort studies and one cross sectional study (Burke 2011[[N= 701] Nadine 2011, Hunt 2017 [N= 3043], Hammar 2019 [N= 573]) reported the effect of adverse childhood experiences (direct/indirect) on behavioural difficulties. Two studies reported adverse childhood experiences to be a significant predictor of behavioural difficulties (aOR 32.6 (13.00 to 81.78), aOR 3.76 (2.26 to 6.27)). One study reported adverse childhood experiences to be a non-significant predictor of behavioural difficulties (aOR 2.39 (0.71 to 8.05)). The risk of bias for these studies was moderate.

One cohort study (Hammar 2019 [N= 573]) reported the effect of female gender on behavioural difficulties. This study reported female gender to be a non-significant predictor of behavioural difficulties (aOR 1.10 (0.53 to 2.28). The risk of bias for this study was moderate.

Three cohort studies (Cabaj 2014 [N= 450], Ahun 2018 [N=1537], Morgan 2008 [N= 11,515]) reported the effect of male gender on behavioural difficulties. One study reported male gender to be a significant predictor of behavioural difficulties (aOR 1.7 (1.02 to 2.82)). Two studies reported male gender to be a non-significant predictor of behavioural difficulties (aOR 1.21 (0.83 to 1.76), aOR 1.08 (NS)). The risk of bias for these studies was moderate.

One cohort study (Ahun 2018 [N=1537]) reported the effect of 'difficult temperament: inflexibility, low positive mood, withdrawal, poor concentration' on behavioural difficulties. This was reported to be a non-significant predictor of behavioural difficulties (aOR 1.06 (0.94 to 1.2)). The risk of bias for this study was moderate.

One cohort study (Sourander 2005 [N=609]) reported the effect of 'low-level depressive symptoms and persistent depressive disorder' on behavioural difficulties. This was reported to be a significant predictor of behavioural difficulties (aOR 2.3 (1.01 to 5.6)) in girls. The risk of bias for this study was moderate.

Two cohort studies (Ashford 2008 [N= 294], Morgan 2008 [N= 11,515]) reported the effect of internalising problems on behavioural difficulties. These studies reported internalising problems to be a significant predictor of behavioural difficulties (aOR 2.9 (1.59 to 5.29), aOR 2.53 (significant)). The risk of bias for these studies was moderate

One cohort study (Datar 2004 [N= 9949]) reported the effect of being overweight on behavioural difficulties. This study reported being overweight as a non-significant predictor of behavioural difficulties (aOR 1.34 (0.88 to 2.03)) in girls. The risk of bias for this study was moderate.

One cohort study (Paavonen 2003 [N=1320]) reported the effect of previous sleep disturbance on behavioural difficulties. This study reported previous sleep disturbance as a non-significantly not associated with behavioural difficulties (aOR 0.78 (0.43 to 1.43)). The risk of bias for this study was moderate.

One cohort study (Paavonen 2003 [N=1320]) reported the effect of persistent sleep disturbance on behavioural difficulties. This study reported persistent sleep disturbance as a non-significantly associated with behavioural difficulties (aOR 1.82 (0.83 to 3.97)). The risk of bias for this study was moderate.

One cohort study (Sourander 2005 [N= 609]) reported the effect of emotional problems on behavioural difficulties. This study reported emotional problems as a significantly associated with behavioural difficulties (aOR 3.9 (1.7 to 8.8)) in girls. The risk of bias for this study was moderate.

One cohort study (Sourander 2005 [N= 609]) reported the effect of 'need for professional services (eg counselling)' on behavioural difficulties. This study reported need for professional services as a significantly associated with behavioural difficulties (aOR 6.5 (1.7 to 25.6)). The risk of bias for this study was moderate.

One cohort study (Sourander 2005 [N= 609]) reported the effect hyperkinetic symptoms on behavioural difficulties. This study reported hyperkinetic symptoms as a significantly associated with behavioural difficulties (aOR 2.9 (1.03 to 8.1)). The risk of bias for this study was moderate.

Two cohort studies (Datar 2004 [N= 9949], Morgan 2008 [N= 11,515]) reported the effect of race: black on behavioural difficulties. These studies reported race: black to be non-significantly not associated with behavioural difficulties (aOR 0.79 (0.49 to 1.26) in girls and aOR 0.86 (non-significant)). The risk of bias for these studies was moderate

Two cohort studies (Datar 2004 [N= 9949], Morgan 2008 [N= 11,515]) reported the effect of race: Hispanic on behavioural difficulties. These studies reported race: Hispanic to be non-

significantly not associated with behavioural difficulties (aOR 0.76 (0.49 to 1.18) in girls and aOR 0.87 (non-significant)). The risk of bias for these studies was moderate.

Two cohort studies (Datar 2004 [N= 9949], Morgan 2008 [N= 11,515]) reported the effect of race: Asian on behavioural difficulties. One study reported race: Asian to be a non-significant predictor of behavioural difficulties (aOR 1.14 (0.69 to 1.89) in girls. One study reported race: Asian to be significantly not associated with behavioural difficulties (aOR 0.49 (significant)). The risk of bias for these studies was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of race: other on behavioural difficulties. This study reported race: other to be a non-significant predictor of behavioural difficulties (aOR 1.03 (non-significant)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of reading problems on behavioural difficulties. This study reported reading problems to be a significant predictor of behavioural difficulties (aOR 1.66 (significant)). The risk of bias for this study was moderate.

One cohort study (Morgan 2008 [N= 11,515]) reported the effect of approaches problems on behavioural difficulties. This study reported approaches problems to be a significant predictor of behavioural difficulties (aOR 1.94 (significant)). The risk of bias for this study was moderate.

One cross-sectional study (Visser 2003 [N= 1286]) reported the effect of special educational needs and disabilities (SEND) on behavioural difficulties. This study reported special educational needs and disabilities (SEND) to be a significant predictor of behavioural difficulties (aOR 1.6 (significant)). The risk of bias for this study was moderate.

One cross-sectional study (Gabalda 2010 [N= 152]) reported the effect of cumulative risk factors on behavioural difficulties. This study reported cumulative risk factors to be a significant predictor of behavioural difficulties (aOR 11.89 (4.14 to 34.19)). The risk of bias for this study was moderate.

One cross-sectional study (Gabalda 2010 [N= 152]) reported the effect of cumulative protective factors on behavioural difficulties. This study reported cumulative protective factors to be significantly not associated with behavioural difficulties (aOR 0.24 (0.07 to 0.79)). The risk of bias for this study was moderate.

One cohort study (Laurens 2019 [N= 21,304]) reported the effect of hospital presentation for physical health condition on behavioural difficulties. This study reported hospital presentation for physical health condition to be a significant predictor of behavioural difficulties (aOR 1.22 (1.06 to 1.41)). The risk of bias for this study was moderate.

Socioeconomic factors

Poor social and emotional wellbeing

Two cohort studies (Matthews 2015 [N= NR], Morgan 2008 [N= 11,515]) reported the effect of poverty/low socio-economic status on poor social and emotional wellbeing. One study reported poverty/low socio-economic status to be a significant predictor of poor social and emotional wellbeing (aOR 2.4 (1.62 to 3.56)). One study reported this to be a non-significant predictor of poor social and emotional wellbeing (aOR 1.15 (non-significant)). The risk of bias for these studies was moderate. Mental health concerns

Mental health concerns

One cohort study (Rushton 2002 [N= 13,568]) reported the effect of ‘unable to obtain needed medical care’ on mental health concerns. This study reported ‘unable to obtain needed

medical care' to be a significant predictor of mental health concerns (aOR 1.6 (1.1 to 2.2)). The risk of bias for this study was moderate.

One cohort study (Wirback 2014 [N= 1880]) reported the effect of 'unskilled parent occupation' on mental health concerns. This study reported unskilled parent occupation to be a significant predictor of mental health concerns (aOR 2.0 (1.1 to 3.6)). The risk of bias for this study was moderate.

Behavioural difficulties

Three cohort studies (Ashford 2008 [N= 294], Ahun 2018 [N=1537], Morgan 2008 [N= 11,515]) reported the effect of poverty/low socio-economic status on behavioural difficulties. Two studies reported poverty/low socio-economic status to be a non-significant predictor of behavioural difficulties (aOR 1.66 (0.93 to 2.96), aOR 1.2 (non-significant). One study reported this to be non-significantly not associated with behavioural difficulties (aOR 0.84 (0.65 to 1.1)). The risk of bias for these studies was moderate.

One cohort study (Datar 2004 [N= 9949]) reported the effect of high socioeconomic status on behavioural difficulties. This study reported high socioeconomic status to be significantly not associated with behavioural difficulties (aOR 0.53 (0.31 to 0.9)). The risk of bias for this study was moderate.

One cohort study (Cabaj 2014 [N= 450]) reported the effect of demographic risk on behavioural difficulties. This study reported demographic risk to be a significant predictor of behavioural difficulties (aOR 2.82 (1.27 to 6.26)). The risk of bias for this study was moderate.

1.1.10 The committee's discussion and interpretation of the evidence

1.1.10.1. The outcomes that matter most

The committee agreed that it is highly important to consider the cumulative effect of multiple factors associated with an increased prevalence of poor social, emotional and mental wellbeing (SEMW). The committee were keen that a decision to take action should not be made on the basis of a single risk factor in isolation, as the broader context was important. Similarly, no single factor should be used as a trigger when deciding what action should be taken for a child or young person (CYP). Although the evidence presented focussed on specific risk factors, the committee agreed that the underlying causes associated with these factors were more important. The committee did discuss what they agreed were some of the key risk factors and these are outlined below.

The committee agreed that adjusted odds ratios (AORs) were an appropriate outcome measure for factors associated with poor social and emotional wellbeing, mental health concerns and behavioural difficulties. By capturing outcomes that adjust for confounding variables, the likelihood that the identified factor was the cause of poor social, emotional and mental wellbeing outcome increases.

1.1.10.2 The quality of the evidence

The committee acknowledged that 35 cohort studies conducted in unselected populations was a substantial evidence base. The committee agreed that cohort studies were the most appropriate study design to capture the long-term impact of factors associated with poor social, emotional and mental wellbeing over time. However, due to an absence of evidence for some notable risk factors associated with poor social, emotional and mental wellbeing in the wider literature, the committee recommended that cohort studies conducted in sub-populations and cross-sectional studies be used to fill in these data gaps. These factors included children and young people with special education needs and disabilities, care responsibilities, experiencing neglect, experiencing criminal exploitation, loss of close

relationships or friends, low levels of physical activity and foetal alcohol spectrum disorders. Upon inclusion of these cross-sectional and sub-population studies, the evidence base comprised of 57 studies in total. Studies were published in Australia (n=8), Canada (n=5), Finland (n=3), Iceland (n=1), Ireland (n=1), Poland (n=1), Portugal (n=1), South Korea (n=3), Sweden (n=4), The Netherlands (n=6), UK (n=9) and US (n=13). Additionally, two studies were conducted across multiple countries. The committee noted that studies from outside the UK may not completely align with schooling structures, approaches and perspectives within the UK.

Even after the addition of data from cross-sectional studies and sub-populations, the committee still commented that there was a lack of evidence regarding children and young people with special educational needs and disabilities (SEND). Therefore, the committee agreed that further research was required to determine whether children with SEND are at a higher risk of poor social, emotional and mental wellbeing, due to a lack of longitudinal studies considering SEND as a risk factor (see research recommendation 1.2). They also noted that it was unclear from the evidence base how interactions between various social and personal factors contributed to the overall cumulative effect of risk of poor social, emotional and mental wellbeing. Therefore, they also made a research recommendation in this area (see research recommendation 1.3). Finally, the committee were aware that the impact of the COVID-19 pandemic and government measures implemented to contain the virus will likely have a profound impact on the social, emotional and mental wellbeing of children and young people. However, only one cohort study focussed on how social distancing measures affected social, emotional and mental wellbeing in Australia over a period of 22 weeks. The committee noted that long-term cohort studies will be required to determine the true impact of the COVID-19 pandemic on children and young people. (see research recommendation 1.4).

1.1.10.3 Benefits and harms

The committee agreed that the identification and increased awareness of factors associated with poor social, emotional and mental wellbeing could assist education professionals in making decisions to observe, assess, intervene or refer on behalf of children and young people displaying these factors. The committee also agreed that viewing factors in the context of underlying causes, rather than as individual factors, would be more useful. The committee recognised that many of the individual risk factors were likely to be proxies for common underlying causes. Focussing on the underlying causes would encourage a more holistic view of the social, emotional and mental wellbeing of children and young people. This would also reduce the risk of potential stigma directed towards children and young people labelled with specific factors associated with poor social, emotional and mental wellbeing. The committee suggested a number of underlying causes that could account for many of the single factors measured in the included studies:

- evidence of poor relationships with family, other adults and peers;
- evidence of bullying perpetration / victimisation;
- evidence of poor social connectedness in school;
- evidence of an inability to concentrate or pay attention;
- evidence of chronic illness or poor general health;
- evidence of behavioural difficulties;
- evidence of educational difficulties;
- evidence of adverse childhood experiences and
- report of suicidal ideation.

The committee discussed the potential impact of including certain protected characteristics, such as gender and race as factors associated with poor social, emotional and mental wellbeing. An example of a previous guideline was used, whereby male gender was identified as a risk factor for autism. However, the committee on the previous guideline chose

not to include male gender as a risk factor, due to potentially detrimental implications such as females with autism being overlooked. Due to the evidence presented and that in the wider literature, the committee decided that race and gender should be considered when evaluating the social, emotional and mental wellbeing of children and young people but should be done so in the wider context of factors and evidence of poor social, emotional and mental wellbeing. Further examples of factors that were considered in a wider context included low socioeconomic status and low parent educational achievement. Educational professionals should not consider these factors alone to be associated with poor social, emotional and mental wellbeing but should be aware of them if evidence of poor social, emotional and mental wellbeing already exists. Furthermore, the committee highlighted that protected characteristics are non-modifiable. This further supported the idea that protected characteristics should only be considered in the wider context of factors and evidence of poor social, emotional and mental wellbeing. To ensure that this complexity was recognised, the committee added a recommendation to clarify that the presence of a single risk factor is not necessarily an indicator of poor social, emotional and mental wellbeing and that it was more important to consider the interactions between various risk factors and their cumulative effect, and that these may vary over time. They additionally noted that sometimes the presence of these risk factors may be masking unmet educational needs or disabilities. They clarified that guidance on this was already available and signposted it from the recommendations.

The committee noted that school staff and parents may find it difficult to identify internalising problems in children and young people due to the lack of external symptoms and determined that further research is required in this area (see appendix K). They discussed how internalising social, emotional and mental wellbeing needs meant that it was important that school staff considered information from a broad variety of sources, not just what they saw and what the children and young people told them but also from other information gathered for example during parent-teacher interactions that might give them clues about the person's wellbeing. They needed to take all of this information into account and make a decision about whether they should monitor the child or young person, or whether an intervention was necessary.

The effect of physical activity and of early puberty on social, emotional and mental wellbeing in children and young people were also discussed. It was agreed that physical activity should be generally encouraged in both primary and secondary education, due to its protective nature from poor social, emotional and mental wellbeing demonstrated in the wider literature. It was also noted that recommendations on the amount of physical activity undertaken (length and frequency) could not be made because physical activity was not measured in a uniform way across the studies presented. It was recognised that evidence of early puberty being associated with an increased prevalence of mental health concerns may be linked to female gender. In all studies (n=2) early puberty was categorised as menarche at 10 years or younger. The committee stated that reduced delivery of relationships and sex education (RSE) and reduced sanitary product availability in primary schools may contribute to mental health concerns for those who experience early puberty. It was also noted that the situation is changing, and schools are starting to talk about puberty in RSE and introducing sanitary products at earlier ages. However, this is not consistent across schools and the committee did not think they had enough evidence to make a recommendation.

1.1.10.4 Cost effectiveness and resource use

Although this review did not concern interventions, the committee recognised that the recommendations may lead to an increase in the number of children and young people being observed, assessed or offered interventions for poor social, emotional and mental wellbeing. This could have cost and resource implications if this were to result in additional workload for school staff. However, the committee agreed that many of the tasks will fall under the remit of mental health support teams (MHST) and educational mental health practitioners. It was highlighted in an expert testimony on children and young people's mental health community

transformation and the impact of the pandemic, that an additional £79m of government funding will be provided in 2021/22 in response to the COVID-19 pandemic, which will help accelerate the rollout of MHSTs. This funding may help off-set additional costs that the recommendations could incur. Additionally, there could also be training costs to ensure school staff are able to effectively identify risk factors and know when a child or young person needs to be assessed or offered an intervention.

1.1.10.5 Other factors the committee took into account

The committee agreed that due consideration should be given to whether education professionals would be likely to know about certain risk factors. For example, teachers and school staff may not be aware if children are experiencing consistent poor-quality sleep. Therefore, the committee was able to recommend that education professionals use a variety of information and sources for identifying risk factors, including observations, self-report and formal or informal parent-teacher meetings.

The committee also recognised that the ages of children and young people and types of school they attend may influence the risk factors on poor social, emotional and mental wellbeing. For instance, the evidence reported that poor parent mental health was significantly associated with poor social and emotional wellbeing in children and young people aged 15 years, but not in those aged 18 years. Additionally, low socioeconomic status may not affect children and young people's social, emotional and mental wellbeing if most other students at the school also have low socioeconomic status. These are amongst some of the factors that should be considered when taking into account the broader context of factors associated with poor social, emotional and mental wellbeing.

Additionally, the impact of the COVID pandemic was taken into consideration by the committee. Expert testimony provided evidence for the expected increase in social, emotional and mental wellbeing concerns in children and young people over the course of lockdown. With regards to factors associated with poor social, emotional and mental wellbeing, lack of direct contact between teachers and students has made it challenging for teachers to observe children and young people and identify factors associated with poor social, emotional and mental wellbeing. The committee welcomed the update on national plans to support mental wellbeing in school via mental health support teams and the new role of Education Mental Health Practitioner. The committee also agreed with the expert testimony anticipating the COVID pandemic and lockdowns will have an impact of referrals going forward. See evidence review K for full expert testimony.

The importance of neurodiversity was highlighted by the committee. It was determined that all of this guidance should be applicable to neurodiverse children and young people and there should not be a separate section for guidance specifically for those individuals. The committee recognised that education professionals need to have a clear understanding of the individual needs of neurodiverse children and young people, including those with autism spectrum disorders, ADHD and additional special education needs and disabilities (SEND).

Furthermore, the committee heard expert testimony regarding child and adolescent mental health in the context of COVID-19. The committee discussed the impact of COVID-19 and lockdown on several sub-groups, including low socioeconomic status families, SEND children and those in the BAME community. It was recognised that children with these baseline risk factors are more likely to experience greater difficulties during the pandemic. COVID-19 was also seen to exacerbate pre-existing mental health conditions in young people (16–25 years). See evidence review K for full expert testimony.

Finally, the committee recognised that not all SEND pupils have been affected equally during the pandemic. Some have missed reduced interactions with peers, whereas others have found smaller class sizes beneficial and have struggled more as schools have reopened. This underscored the importance of having an individualised approach to learning for those with SEND. Overall, the testimony demonstrated that SEND pupils had been adversely and

disproportionately affected by the pandemic compared to non-SEND children and young people and that the needs of SEND pupils need to be central to guideline development.

1.1.11 Recommendations supported by this evidence review

This evidence review supports recommendations 1.3.1 to 1.3.4 and the research recommendation on Identification, COVID, Children and young people with special educational needs and Intersecting social and personal factors.

1.1.12 References – included studies

1.1.12.1 Effectiveness

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1.1.14.2 Economic

N/A

Appendices

Appendix A – Review protocols

A.1 Review protocol for Risk factors

Field	Content
PROSPERO registration number	CRD42020187949
Review title (50 Words)	Identifying vulnerable children and young people as part of the whole-school approach
Review question (250 words)	What are the risk factors associated with social, emotional and mental wellbeing?
Objective	To identify which factors are likely to play a role in developing poor social, emotional and mental wellbeing in children and young people in UK key stages 1 to 4 and post-16 education or equivalent.
Searches (300 words)	The following databases will be searched: Medline and Medline in Process (OVID) Embase (OVID) CENTRAL (Wiley)) Cochrane Database of Systematic Reviews (Wiley) PsycINFO (Ovid) Social Policy and Practice (OVID) ERIC (Proquest) Web of Science Database functionality will be used, where available, to exclude: non-English language papers animal studies editorials, letters and commentaries conference abstracts and posters

Field	Content
	registry entries for ongoing or unpublished clinical trials dissertations duplicates Searches will be restricted by: January 1995 to date Secondary Databases A simple keyword-based search approach will be taken in the following databases: DARE (legacy database - records up to March 2014 only) (CRD) National Guidelines Clearinghouse (US Dept. of Health and Human Services) Bibliomap (eppicentre) Dopher (eppicentre) Trophi (epicentre) Citation searching Depending on initial database results, forward citation searching on key papers may be conducted, if judged necessary, using Web of Science (WOS). Only those references which NICE can access through its WOS subscription would be added to the search results. Duplicates would be removed in WOS before downloading. The reference list of current (within 2 years) systematic reviews will be checked for relevant studies Websites Web searches will also be conducted. Google and Google Scholar will be searched for some key terms and the first 50 results examined to identify any UK reports or publications relevant to the review that have not been identified from another source. Searches will also be conducted on key websites for relevant UK reports or publications:

Field	Content
	Websites PSHE association Public Health England Department of Health Department for Education Public Health Institute Mentor-Adepis OFSTED National Foundation for Educational Research Research in Practice Education Endowment Foundation Office for Children's Commissioner Council for disabled children Results will be saved to EPPI Reviewer. A record will be kept of number of records found from each database and of the strategy used in each database. A record will be kept of total number of duplicates found and of total results provided to the Public Health team. The reference list of current (within 2 years) systematic reviews will be checked for relevant studies The searches will be re-run 6 weeks before final submission of the review and further studies retrieved for inclusion. The full search strategies for MEDLINE database will be published in the final review.
Condition or domain being studied (200 words)	Social, emotional and mental wellbeing
Population (200 words)	Inclusion:

Field	Content
	Population Children (including those with SEND) in UK key stages 1 and 2 or equivalent in primary education Children and young people (including those with SEND) in UK key stages 3 to 4 or equivalent in secondary education Young people in post-16 education (further education) up to the age of 18 or 19 for young people without SEND up to the age of 25 for young people with SEND Exclusion: Children in early years foundation stage (EYFS) (Where the studies define the population by age/UK key stage, we will only exclude if more than 50% of the population is in EYFS.) Young people not in education. Young people in higher education.
Exposure (200 words)	Factors associated with poor social, emotional and mental wellbeing Family, relationships and home life for example: Adverse childhood experiences (direct and indirect) Parental depression Parent-child conflict Poor parenting Negative family environment (may include substance abuse in parents) Child abuse/maltreatment Single-parent family (for girls only) Family conflict (all) Parental drug/alcohol use Parental unemployment Family dysfunction

Field	Content
	Parent mental health Poor parental supervision Sexual, physical and emotional abuse Neglect Young carers Bereavement Wider school and neighbourhood environment for example: Peer rejection Stressful events Poor academic achievement Poverty Community-level stressful or traumatic events School-level stressful or traumatic events Community violence School violence Poverty Traumatic event School failure Low commitment to school Aggression toward peers Associating with drug-using peers Societal/community norms favour alcohol and drug use Associating with deviant peers Loss of close relationship or friends Peer on peer abuse

Field	Content
	Bullying Criminal exploitation School exclusion Individual characteristics for example: Adverse childhood experiences (Direct and indirect) Female gender Early puberty Difficult temperament: inflexibility, low positive mood, withdrawal, poor concentration Low self-esteem, perceived incompetence, negative explanatory and inferential style Anxiety Low-level depressive symptoms and persistent depressive disorder Insecure attachment Poor social skills: communication and problem-solving skills Extreme need for approval and social support Shyness Head injury Alcohol or substance misuse Foetal alcohol syndrome Socioeconomic circumstances for example: Urban setting Poverty
Comparator (200 words)	Children or young people who are not presenting with poor social and emotional wellbeing
Types of study to be included (150 words)	We will include the following study type in the first instance: Systematic reviews of cohort studies

Field	Content
	Cohort studies (prospective or retrospective) that have used multivariable regression analysis to adjust for confounding variables If cohort studies do not cover all the variables in the list of exposures we will look for the following studies on that variable: Cross-sectional studies that have used regression analysis to adjust for confounding variables
Other exclusion criteria (no separate section for this to be entered on PROSPERO – it gets included in the section above so within that word count)	Papers published in languages other than English will be excluded. Studies published before the year 1995 will be excluded. Studies not published in full (e.g. protocols or summaries) will be excluded.
Context (250 words)	Population and setting: Universal population of children and young people in primary, secondary and further education (UK key stages 1 to 4 and post-16 education or equivalent). Within this, there may be differences in context depending on type of school, geographical location or socioeconomic status as well as subgroups of children such as those with special educational needs and disabilities. Social and emotional skills are key during children and young people's development that may help to achieve positive outcomes in health, wellbeing and future success. These skills encompass five core competencies, self-awareness, self-regulation, social awareness, responsible decision-making and relationship skills. These skills can be taught during primary school in a cumulative approach whereby the skills acquired increase in complexity as appropriate to age and act as a foundation for further development in secondary school. Some children may be 'struggling' to develop these skills and may be at risk of poor social, emotional and mental wellbeing outcomes. If risk factors for social, emotional and mental wellbeing could be identified, schools might be able to use this information to give the right kind of support to the children and young people who need it,

Field	Content
Primary outcomes (critical outcomes) (200 words) A separate mandatory box for Timing and Measures of these outcomes needs to be completed within PROSPERO. Please list these under timing and measures heading (200 words)	Poor social, emotional and mental wellbeing outcome with a statistical measure such as adjusted hazard ratios, adjusted risk ratios, adjusted odds ratios
Timings and measures	Not applicable
Secondary outcomes (important outcomes) (200 words) As above a separate entry for the timing and measures of these additional outcomes (200 words)	NA
Data extraction (selection and coding) (300 words)	All references identified by the searches and from other sources will be uploaded into EPPI-R5 and de-duplicated. This review will use the priority screening functionality within the EPPI-reviewer software. At least 50% of the identified abstracts will be screened. After this point, screening will only be terminated if a pre-specified threshold is met for a number of abstracts being screened without a single new include being identified. This threshold is set according to the expected proportion of includes in the review (with reviews with a lower proportion of includes needing a higher number of papers without an identified study to justify termination) and is always a minimum of 500. A random 10% sample of the studies remaining in the database when the threshold is met will be additionally screened, to check if a substantial number of relevant studies are not being correctly classified by the algorithm, with the full database being screened if concerns are identified.

Field	Content
	The full text of potentially eligible studies will be retrieved and will be assessed in line with the eligibility criteria outlined above (see sections 6-10). A standardised EPPI-R5 template will be used when extracting data from studies (this is consistent with the Developing NICE guidelines: the manual section 6.4). Outcome data will be extracted into EPPI-R5 as reported in the full text. Data on how risk factors are associated with poor social, emotional and mental wellbeing will be extracted where reported. Committee experience will be used help to explain the importance of this. Study investigators may be contacted for missing data where time and resources allow.
Risk of bias (quality) assessment (200 words)	Risk of bias will be assessed using the following NICE preferred checklists as described in Developing NICE guidelines: the manual (Appendix H) Prognostic studies: QUIPS Systematic reviews: ROBIS
Strategy for data synthesis (300 words)	Where studies adjust for the same pre-determined variables, then a random effects meta-analysis will be used to pool estimates across studies. Unexplained heterogeneity will be examined where appropriate with a sensitivity analysis based on risk of bias. If the included studies adjust for different variables a narrative synthesis will be carried out and evidence statements used to summarise the findings. Where appropriate, the quality or certainty across all available evidence will be evaluated for each outcome using an the 'Grading of Recommendations Assessment, Development and Evaluation

Field	Content
	(GRADE) toolbox' developed by the international GRADE working group http://www.gradeworkinggroup.org/
Type of method of review	Prognostic
Language	English
Country	England
Named contact	5a. Named contact Public Health Guideline Development Team 5b Named contact e-mail PHAC@nice.org.uk 5c Named contact address National Institute for Health and Care Excellence Level 1A City Tower Piccadilly Plaza Manchester M1 4BD 5d Named contact phone number +44 (0)300 323 0148 5e Organisational affiliation of the review National Institute for Health and Care Excellence (NICE) and NICE Public Health Guideline Development Team.
Review team members	

Field	Content
	From the Centre for Guidelines: Hugh McGuire, Technical Adviser Sarah Boyce, Technical Analyst Lesley Owen, Health economist Rachel Adams, Information Specialist Chris Carmona, Technical Adviser Giacomo De Guisa, Technical Analyst Adam O'Keefe, Project Manager
Funding sources/sponsor	This systematic review is being completed by the Centre for Guidelines which receives funding from NICE.
Conflicts of interest	All guideline committee members and anyone who has direct input into NICE guidelines (including the evidence review team and expert witnesses) must declare any potential conflicts of interest in line with NICE's code of practice for declaring and dealing with conflicts of interest. Any relevant interests, or changes to interests, will also be declared publicly at the start of each guideline committee meeting. Before each meeting, any potential conflicts of interest will be considered by the guideline committee Chair and a senior member of the development team. Any decisions to exclude a person from all or part of a meeting will be documented. Any changes to a member's declaration of interests will be recorded in the minutes of the meeting. Declarations of interests will be published with the final guideline.
Collaborators NB: This section within PROSPERO does not have free text option. Names of committee members to be inserted individually by the project manager and any additional collaborators	Development of this systematic review will be overseen by an advisory committee who will use the review to inform the development of evidence-based recommendations in line with section 3 of Developing NICE guidelines: the manual. Members of the guideline committee are available on the NICE website.
Other registration details (50 words)	None
Reference/URL for published protocol	None

Field	Content	
Dissemination plans	NICE may use a range of different methods to raise awareness of the guideline. These include standard approaches such as: notifying registered stakeholders of publication publicising the guideline through NICE's newsletter and alerts issuing a press release or briefing as appropriate, posting news articles on the NICE website, using social media channels, and publicising the guideline within NICE.	
Keywords	Social, emotional and mental wellbeing, whole-school approaches, children and young people	
Details of existing review of same topic by same authors (50 words)	None	
Current review status	X	Ongoing
	☐	Completed but not published
	☐	Completed and published
	☐	Completed, published and being updated
	☐	Discontinued
Additional information	None	
Details of final publication	https://www.nice.org.uk/	

Appendix B – Literature search strategies

Please see below for Medline strategy. For full search strategies refer to the searches document on the guideline webpage.

Database name: Medline

Database: Ovid MEDLINE(R) <1946 to March 19, 2020>

Search Strategy:

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1 ((Social or emotional or social-emotional or socio or socio-emotional or pro-social or prosocial) adj3 (wellbeing or well-being or wellness)).ti,ab. (7689)

2 (resilien* or coping).ti,ab. (65450)

3 Adaptation, Psychological/ or Resilience, Psychological/ (96910)

4 (self-control or "emotional regulation" or self-aware* or self-efficacy or self-regulat* or self-confiden* or self-management or self-esteem or self-concept or "emotional intelligence" or "zones of regulation").ti,ab. (74173)

5 Emotional Intelligence/ (2055)

6 Self Concept/ or self efficacy/ (74765)

7 Emotional Adjustment/ or Social Adjustment/ (23763)

8 ((social or interpersonal or communication or relationship* or friend*) adj2 (skill* or competence* or attribute*)).ti,ab. (19197)

9 empathy.ti,ab. (9424)

10 Social Behavior/ or Social Values/ or Social Skills/ (71856)

11 ("personal development" or "youth development").ti,ab. (2118)

12 Mental Health/ (36828)

13 (mental adj2 (health or wellbeing or well-being or "well being" or wellness)).ti,ab. (114810)

14 ((psychological or "psycho social" or psycho-social or psychosocial) adj2 (wellbeing or "well being" or well-being)).ti,ab. (9978)

15 ((anxiety or anxious or depression or depressed or depressive or stress*) adj2 (child* or teen* or adolescen* or youth* or "young people" or "young person*")).ti,ab. (15788)

16 "adverse childhood experience*".ti,ab. (1125)

17 ((ACE or ACEs) and child*).ti,ab. (1314)

18 "child* trauma*".ti,ab. (3210)

19 "Child* adversity".ti,ab. (1029)

20 *Life Change Events/ (10418)

21 or/1-20 (479337)

22 Child/ or Child Health/ or Child Welfare/ or Adolescent/ or Adolescent Health/ (2774367)

23 (child* or adolescen* or kid or kids or youth* or youngster* or minor or minors or underage* or under-age* or "under age*" or "young person*" or "young people" or pre-adolescen* or preadolescen* or pre-teen* or preteen* or teen or teens or teenager* or juvenile* or boy or boys or boyhood or girl or girls or girlhood or schoolchild* or "school age*" or school-age* or schoolage* or K-12).ti,ab. (1722814)

24 or/22-23 (3426878)

25 (school* or pupil* or teacher* or headteach* or head-teach* or headmaster* or headmistress*).ti,ab. (279211)

26 ((school* or academy or academies or teacher) adj3 principal*).ti,ab. (431)

27 schools/ or teaching/ or school health services/ or school nursing/ or school teachers/ (103235)

28 (((city or technical) and (academy or academies or college*)) or sixth-form* or "sixth form*" or "6th form*" or "lower six*" or "upper six*" or "post 16" or post-16 or "further education").ti,ab. (4752)

29 ("year one" or "year 1" or "year two" or "year 2" or "year three" or "year 3" or "year four" or "year 4" or "year five" or "year 5" or "year six" or "year 6" or "year seven" or "year 7" or "year eight" or "year 8" or "year nine" or "year 9" or "year ten" or "year 10" or "year eleven" or "year 11" or "year twelve" or "year 12" or "year thirteen" or "year 13" or "key stage one" or "key stage 1" or "key stage two" or "key stage 2" or "key stage three" or "key stage 3" or "key stage four" or "key stage 4" or "key stage five" or "key stage 5" or KS1 or KS2 or KS3 of KS4 or KS5 or "grade one" or "grade 1" or "grade two" or "grade 2" or "grade three" or "grade 3" or "grade four" or "grade 4" or "grade five" or "grade 5" or "grade six" or "grade 6" or "grade seven" or "grade 7" or "grade eight" or "grade 8" or "grade nine" or "grade 9" or "grade ten" or "grade 10" or "grade eleven" or "grade 11" or "grade twelve" or "grade 12" or "first grade" or "1st grade*" or "second grade*" or "2nd grade*" or "third grade*" or "3rd grade*" or "fourth grade*" or "4th grade*" or "fifth grade*" or "5th grade*" or "sixth grade*" or "6th grade*" or "seventh grade*" or "7th grade*" or "eighth grade*" or "8th grade*" or "ninth grade*" or "9th grade*" or "tenth grade*" or "10th grade*" or "eleventh grade*" or "11th grade*" or "twelfth grade*" or "12th grade*").ti,ab. (102492)

30 or/25-29 (417445)

31 (medical or medicine or dental or dentist* or doctor* or physician* or nursing or "teaching hospital*" or undergraduate* or graduate* or postgraduate* or preschool* or pre-school* or nursery or "higher education" or university or universities).ti,ab. (2197699)

32 30 not 31 (278506)

33 24 and 32 (155206)

34 21 and 33 (24029)

35 (risk adj2 (assess* or measure* or tool*)).ti,ab. (89595)

36 ("risk factor*" or "high risk" or "at risk" or "relative risk").ti,ab. (849741)

37 ((education* or social) adj risk*).ti,ab. (1367)

38 *risk/ (4036)

39 Risk Factors/ (808420)

40 risk assessment/ (258239)

41 (protective adj (factor* or characteristic*)).ti,ab. (14669)

42 Protective Factors/ (3923)

43 (predictor* or prevalence* or determinant* or incidence*).ti. (302695)

44 *Prevalence/ or *Incidence/ (1298)

45 ((detrimental or poor* or worse or negative*) adj2 outcome*).ti,ab. (78794)

46 (vulnerab* adj2 (child* or adolescen* or teen* or youth* or "young person*" or "young people" or pupil*)).ti,ab. (2630)

47 Vulnerable populations/ (10086)

48 or/35-47 (1783526)

49 34 and 48 (5975)

50 limit 49 to english language (5686)

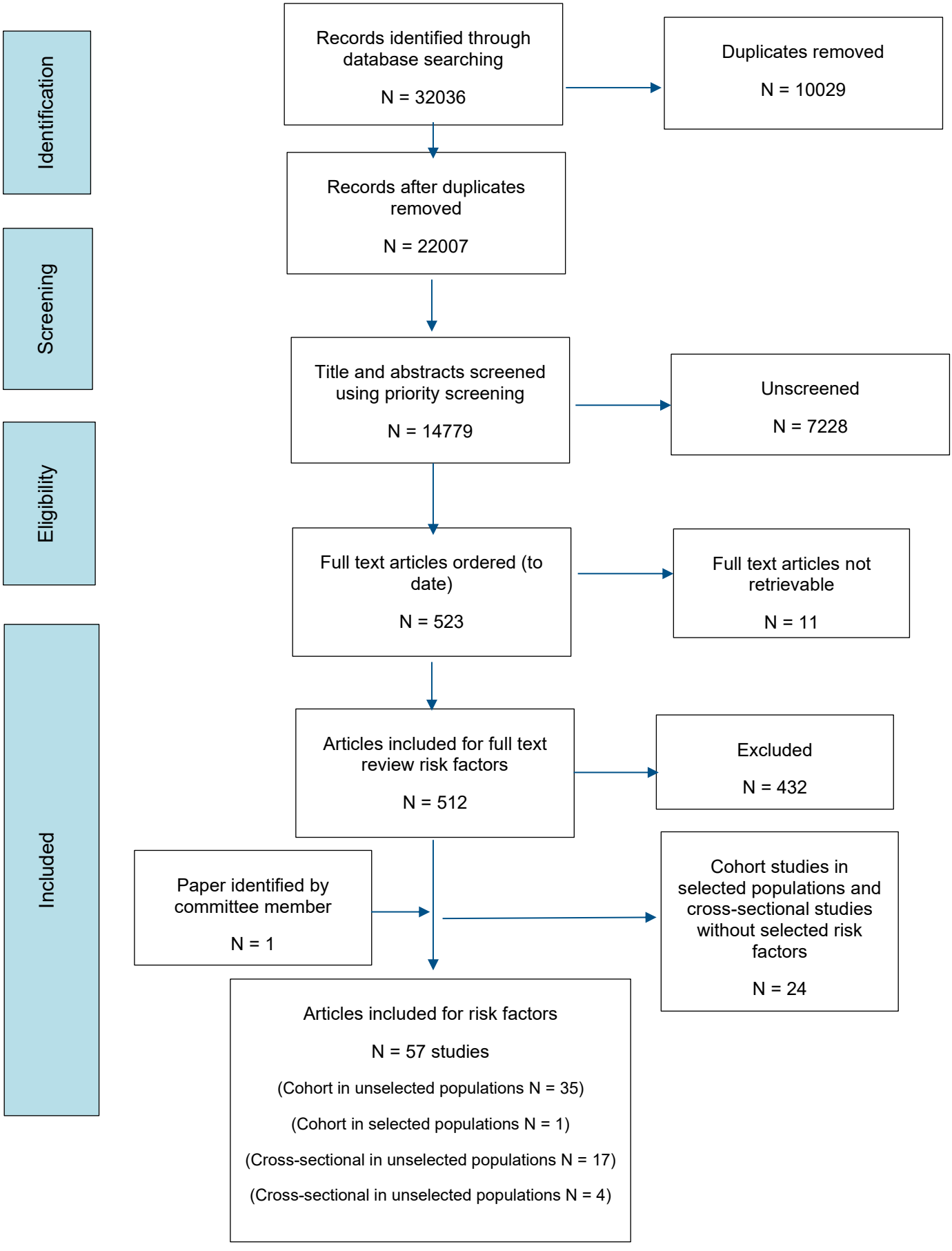
51 limit 50 to (letter or historical article or comment or editorial or news or case reports) (54)

52 50 not 51 (5632)

53 limit 52 to yr="1995 - 2020" (5181)

54 remove duplicates from 53 (5176)

Appendix C –Prognostic evidence study selection



Appendix D – Prognostic evidence

D.1 Adriaanse, 2016

Bibliographic Reference	Adriaanse, M.; Doreleijers, T.; van Domburgh, L.; Veling, W.; Factors associated with psychiatric symptoms and psychiatric disorders in ethnic minority youth; European Child and Adolescent Psychiatry; 2016; vol. 25 (no. 10); 1067-1079

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Study start date	2009
Study end date	2011
Aim	The aim of this study was to explore factors associated with mental health problems at child, family, school, peer, neighbourhood and ethnic minority group level in Moroccan-Dutch youth.
Country/geographical location	The Netherlands
Setting	Primary and secondary schools, and home-based
Inclusion criteria	Students classified as Moroccan-Dutch according to the ethnic categories defined by Statistics Netherlands
Exclusion criteria	Not reported
Study methods	In the screening phase, a total sample of 1563 participants was screened on psychiatric symptoms. 407 children and adolescents was classified as Moroccan-Dutch. Of the participating Moroccan-Dutch youth, 88.7% (n=361) were screened for psychiatric symptoms by both self-report and teacher-report measures.

	In the diagnostic phase, a high-risk and low-risk subgroup were selected for in-depth psychiatric diagnostic assessment. Cut-offs for high-risk and low-risk selection were based on scores on nine sub-scales measuring psychiatric symptoms. Of the 233 eligible Moroccan-Dutch youths, 65.2% (n=152) participated. For the current study, the Moroccan-Dutch children and adolescents were divided into three groups: • Youths who were screen negative • Youths who were screen positive but had no psychiatric disorder • Youths who had a psychiatric disorder
Confounders	Gender and age
Statistical method(s) used to analyse the data	• Differences in demographic characteristics were tested using Chi-square tests for categorical variables and one-way analyses of variance (ANOVA) with post hoc Bonferroni tests for continuous variables. • Logistic regression analyses were used with mental health group status as outcome measure to identify factors associated with mental health problems. • Univariate and multivariate regression analyses were conducted, adjusted for gender and age.
Attrition	152/233 = 34.8% attrition
Study limitations (author)	• The sample size was small and only one specific socially disadvantaged ethnic minority group was included, which precludes generalisation of results across other ethnic groups. • Due to the small sample size, some of the associations with psychiatric disorders may have lost statistical significance when controlling for gender and age. • Questionnaires were developed in Europe or the United States of America and non-validated translations into Moroccan Arabic and Berber languages were used for the patient interviews. • Mental health problems and associated factors were only assessed once and that there was a relatively long time lag between the screening and diagnostic phase. Levels of mental health problems vary over time.

	• Group assignment into absence and presence of psychiatric symptoms can be blurred. Those who screened negative may develop psychiatric symptoms during the meantime part of the study and vice versa. • Because the measurement took place at only one time-point, the authors were unable to determine causal relationships.
Study limitations (reviewer)	Lack of data on the exclusion criteria
Source of funding	This work was supported by the Department of Integration and Society of the Ministry of Social Affairs and Employment of the Government of the Netherlands

Characteristics

Study-level characteristics

Characteristic	**Study (N = 152)**
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 75 ; % = 49.3
Female Sample size	n = 77 ; % = 50.7
Ethnicity Sample size	n = NR ; % = NR

Characteristic	Study (N = 152)
First-generation migrant Sample size	n = 10 ; % = 6.6
Second-generation migrant Sample size	n = 142 ; % = 93.4

Outcomes

Study timepoints

- 13.6 year (Mean age of children at assessment)

Outcomes

Outcome	Study, 13.6 year vs 13.6 year, N = 152
Risk factor for psychiatric symptoms Measured by sub-scales from the strengths and difficulties questionnaire (SDQ), the social and health assessment (SAHA) and the kiddie-schedule for affective dis orders and schizophrenia (K-SADS) (self and teacher-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Self-esteem (comparison not reported) Measured by the Rosenberg Self- Esteem Scale (RSE) (self-reported) Odds ratio/95% CI	0.6 (0.4 to 0.9)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.2 Ahun, 2018

Bibliographic Reference	Ahun, Marilyn N; Consoli, Angele; Pingault, Jean-Baptiste; Falissard, Bruno; Battaglia, Marco; Boivin, Michel; Tremblay, Richard E; Cote, Sylvana M; Maternal depression symptoms and internalising problems in the offspring: the role of maternal and family factors.; European child & adolescent psychiatry; 2018; vol. 27 (no. 7); 921-932

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Aim	• To identify a group of children with high levels of internalising problems (IP) between 6 and 12 years using combined maternal and teacher assessments • To quantify the associations between trajectories of maternal depression symptoms (MDS) during early childhood and children's IP developmental trajectories before and after controlling for family factors associated with MDS
Country/geographical location	Canada
Setting	Home-based
Inclusion criteria	Participants of the Québec Longitudinal Study of Child Development
Exclusion criteria	Not reported

Study methods	Participants were selected via the Québec Birth Registry using a stratified procedure based on living area and birth rate. The initial sample included a total of n = 2120 infants representative of children born in the province of Québec in 1997-1998 and followed yearly from 5 months to 7 years and every two years from 7 to 12 years. The study sample included n=1537 participants for whom the estimation of trajectories of depressive and anxiety symptoms from 6 to 12 years-old was possible (data for at least one IP assessment by both informants). This sample was reduced to n=1218 in regression analyses due to missing data for confounders. Maternal depression symptoms were assessed at 5 months, 1½, 3½ and 5 years using a short version of the Centre for Epidemiologic Studies Depression Scale (CES-D) When the children were aged 6, 7, 8, 10 and 12 years, their home room teacher was asked to rate whether the child never (0), sometimes (1) or often (2) exhibited the following IP (in the past 12 months): 'unhappy, sad, depressed', 'not as happy as other children', 'has difficulties having fun', 'lack of energy', 'appears fearful or anxious', 'appears worried' and 'is nervous or very tense'. Mother-reported IP were also assessed at ages 6 and 8 years.
Confounders	• Mother-child interactions were observed at home by a trained research assistant at age 5 months using the Home Observation Measurement of the Environment. • Parenting. The Parental Cognitions and Conduct toward the Infant Scale PACOTIS [51] was used to assess maternal parenting practices at 5 months. • Family functioning. The General Functioning scale (a sub-scale of the McMaster Family Assessment Device) is a validated instrument completed by the parents at baseline. • Maternal anxiety and antisocial behaviours. • Child and family characteristics. Child sex, and mother-rated difficult temperament at 5 months. • Socio-economic status (SES) of the family was derived from five variables including maternal education (years of schooling), spouse's education and occupational status, maternal occupational status and household income.
Statistical method(s) used to analyse the data	• Multi-group trajectories of mother and teacher internalising problems (IP) ratings were estimated. • Regression models of the association between maternal depressive symptoms (MDS) trajectories and child IP trajectories were also estimated. • Multinomial logistic regression models were used to estimate the association between maternal depressive symptoms and children's internalising problems while controlling for family factors and other confounders.

	• To account for attrition, the authors estimated the regression analyses using the fully conditional specification (FCS) imputation method (number of imputations = 10) in the n=1537.
Attrition	1537/2120 = 27.5% attrition
Study limitations (author)	Models include information on maternal comorbid conditions, quality of the mother child relationship, and socioeconomic conditions. Unmeasured environmental or genetic risk factors may explain part of the associations. Study design did not allow the authors to test for mediation of the family factors in the association between maternal depressive symptoms (MDS) and children's internalising problems (IP) trajectories. This study is correlational and no causal inference can be made about the role of MDS in the development of depressive and anxiety symptoms in the offspring. The authors focused on maternal psychopathology due to the inability to study paternal psychopathology in the sample (because of missing values).
Study limitations (reviewer)	Lack of data on exclusion criteria
Source of funding	• This research was supported by the Québec's Ministry of Health; the Québec's Health Research Fund (FRQ-S); the Québec's Culture and Society Research Fund (FRQ-SC); Canada's Social Science and Humanities Research Council (SSHRC); The Canadian Institutes for Health Research (CIHR); St-Justine Hospital's Research Centre, and the University of Montréal. • A. Consoli was supported by Foundation Pfizer. • J.B. Pingault was supported by a Marie Curie Intra-European Fellowship (n°330699). • Dr Côté was supported by a senior fellowship from the Quebec's Health Research Fund (FRQ-S).

Characteristics

Study-level characteristics

Characteristic	Study (N = 1537)
Gender Characteristics at 5 months Sample size	n = NR ; % = NR
Male Sample size	n = 740 ; % = 48.1
Female Sample size	n = 797 ; % = 51.9
Socioeconomic status Unclear at which timepoint characteristic was reported Mean (SD)	0.005 (1)

Outcomes

Study timepoints

- 12 year (Child internalising problems reported between the ages of 6-12 years)

Outcomes

Outcome	Study, 12 year vs 12 year, N = 1537
Risk factor for high internalising problems trajectory Measured by frequency that child displayed symptoms selected from the Preschool Behaviour Questionnaire (parent and teacher-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
High trajectory of maternal depression symptoms between ages 0 to 5 (compared to low trajectory of maternal depression symptoms) Measured by Centre for Epidemiologic Studies Depression Scale (CES-D) (short version), characterised as scores ≥2.67 (out of 10) (parent-reported) Odds ratio/95% CI	2.6 (1.55 to 4.36)
Male gender at 5 months (comparison not reported) (Reporter unclear) Odds ratio/95% CI	1.21 (0.83 to 1.76)
Young mother at birth (compared to older mother at birth) Characterised as ≤21 years (parent-reported) Odds ratio/95% CI	1.17 (0.46 to 2.93)
High maternal anxiety at 4.5 years (comparison not reported) Measured using validated items inspired by DSM-IV criteria (reporter unclear) Odds ratio/95% CI	1.52 (1.29 to 1.8)
High maternal antisocial behaviour at 5 months (comparison not reported) Measured by a questionnaire (parent-reported) Odds ratio/95% CI	1.09 (0.8 to 1.35)

Outcome	Study, 12 year vs 12 year, N = 1537
Single mother at 5 months (compared to bi-parental families) (Parent-reported) Odds ratio/95% CI	0.59 (0.26 to 1.34)
Low socioeconomic status at age not reported (comparison not reported) Derived from five variables including maternal education (years of schooling), spouse's education and occupational status, maternal occupational status and household income (reporter unclear) Odds ratio/95% CI	0.84 (0.65 to 1.1)
High family at 5 months dysfunction (comparison not reported) Measured by General Functioning scale (parent-reported) Odds ratio/95% CI	1.04 (0.9 to 1.2)
Child difficult temperment at 5 months (comparison not reported) Measured using Infant Characteristics Questionnaire ICQ: difficult temperament subscale (parent-reported) Odds ratio/95% CI	1.06 (0.94 to 1.2)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.3 Ashford, 2008

Bibliographic Reference	Ashford, Janka; Smit, Filip; van Lier, Pol A C; Cuijpers, Pim; Koot, Hans M; Early risk indicators of internalizing problems in late childhood: a 9-year longitudinal study.; Journal of child psychology and psychiatry, and allied disciplines; 2008; vol. 49 (no. 7); 774-80

Study details

Study design	Longitudinal studies
Trial registration number	NR
Study start date	1989
Study end date	1997
Aim	To identify risk indicators at ages 2–3 and 4–5 years that are predictive of internalizing problems at the age of 11 years
Country/geographical location	The Netherlands
Setting	Not reported
Inclusion criteria	A random age and sex stratified sample of children aged 2–3 years was drawn from the inoculation register of the Dutch province of South Holland and from the Rotterdam municipal population register
Exclusion criteria	Not reported
Study methods	Information was obtained for 397 of the 420 children participating at T1 (mean age = 5.3 yrs; response 95%). In 1997 (T3), parents of all children who participated at T1 were approached for participation in a second follow-up. Information was obtained for 358 children (mean age = 10.9 yrs, 85% of T1 participants) in addition to 294 teacher reports.

	For the present study, children with a parent or teacher rating on internalizing problems were included (N = 358). The outcome was measure using the internalizing subscales of the Dutch versions of the Child Behavior Checklist and Teacher's Report Form.
Confounders	• Child health • Single parenthood status • Life events were assessed by the Life Events Questionnaire • Parenting stress • Negative maternal attitude • Family psychopathology • Socio-economic status
Statistical method(s) used to analyse the data	• Simple regression models were conducted to describe the bivariate association between risk indicators and internalizing problems at age 11 years. • All risk indicators were then entered simultaneously in the regression equation to create a complete multivariate model. • Finally, only statistically significant risk indicators were retained after a backward-stepping regression model was employed to produce a 'parsimonious multivariate model'. • Incidence rate ratio (IRR) was obtained under a Poisson regression model.
Attrition	294/420 = 30% attrition
Study limitations (author)	Relatively small sample size, which led to small numbers of children in each category in the analyses of cumulative effects.
Study limitations (reviewer)	Lack of data on inclusion and exclusion criteria
Source of funding	Not reported

Characteristics

Study-level characteristics

Characteristic	**Study (N = 358)**
Age (years) Mean (SD)	10.93 (0.6)
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 182 ; % = 50.8
Female Sample size	n = 176 ; % = 49.2

Outcomes

Study timepoints

- 10.9 year (Mean age of children at T3)

Outcomes

Outcome	Study, 10.9 year, N = 294
Risk factor for internalising problems (Incidence rate ratio (IRR)) Internalising problems measured by internalising scales of the Child Behavior Checklist (CBCL) and Teacher's Report Form (TRF / 4-18) Custom value	NR
Low socioeconomic status at 2-3 years (comparison not reported) Characterised as being unemployed or having a primary-level job (parent-reported) Custom value	1.66 (95%CI: 0.93-2.96)
Single parenthood at 2-3 years (comparison not reported) (Parent-reported) Custom value	NS
Family pschopathology at 2-3 years (comparison not reported) Characterised as poor maternal or paternal health (parent-reported) Custom value	1.81 (95% CI: 0.91-3.61)
Negative life events at 2-3 years (compared to no negative life events) Measured by the Life Events Questionnaire (LEQ) variable was dichotomised into the categories ‘no life event’ and‘1 or more life events within the child's lifetime (parent-reported) Custom value	NS
Parenting stress at 2-3 years (compared to no parenting stress) Characterised as mother reporting being tired from upbringing most of the time on a 4-point scale (parent-reported) Custom value	NS

Outcome	Study, 10.9 year, N = 294
Poor child health at 2-3 years (comparison not reported) Assessed using a single question: ‘How would you rate the health of your child in general?' using a 5-point scale (parent-reported) Custom value	NS
Negative maternal attitude at 2-3 years (comparison not reported) Assessed using two interview items, characterised as mother reporting being irritated by her child several times per week or more often and wanting to hurt the child sometimes or often (parent-reported) Custom value	NS
Externalising problems at 2-3 years (compared to no externalising problems) Measured by Child Behavior Checklist (CBCL / 2-3) with scores dichotomised using Dutch borderline cut-off scores (parent-reported) Custom value	NS
Internalising problems at 2-3 years (compared to no internalising problems) Measured by Child Behavior Checklist (CBCL / 2-3) with scores dichotomised using Dutch borderline cut-off scores (parent-reported) Custom value	NS
Family pschopathology at 4-5 years (comparison not reported) Characterised as poor maternal or paternal health (parent-reported) Custom value	NS
Negative life events at 4-5 years (compared to no negative life events) Measured by the Life Events Questionnaire (LEQ) variable was dichotomised into the categories ‘no life event’ and‘1 or more life events within the last 12 months (parent-reported) Custom value	NS

Outcome	Study, 10.9 year, N = 294
Parenting stress at 4-5 years (compared to no parenting stress) Assessed by the Parenting Stress Index, high levels of parenting stress were based on a score higher than one standard deviation above the mean (parent-reported) Custom value	2.10 (95% CI: 1.12-3.95)
Poor child health at 4-5 years (comparison not reported) Assessed using a single question: 'How would you rate the health of your child in general?' using a 4-point scale (parent-reported) Custom value	NS
Externalising problems at 4-5 years: parent report (compared to no externalising problems) Measured by Child Behavior Checklist (CBCL / 4-18) with scores dichotomised using Dutch borderline cut-off scores (parent-reported) Custom value	NS
Externalising problems at 4-5 years: teacher report (compared to no externalising problems) Measured by Child Behavior Checklist (CBCL / 4-18) with scores dichotomised using Dutch borderline cut-off scores (teacher-reported) Custom value	NS
Internalising problems at 4-5 years: parent report (compared to no internalising problems) Measured by Child Behavior Checklist (CBCL / 4-18) with scores dichotomised using Dutch borderline cut-off scores (parent-reported) Custom value	2.90 (95% CI: 1.59-5.29)
Internalising problems at 4-5 years: teacher report (compared to no internalising problems) Measured by Child Behavior Checklist (CBCL / 4-18) with scores dichotomised using Dutch borderline cut-off scores (teacher-reported)	NS

Outcome	Study, 10.9 year, N = 294
Custom value	

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.4 Baiden, 2020

Bibliographic Reference	Baiden, Philip; LaBrenz, Catherine A; Okine, Lucinda; Thrasher, Shawndaya; Asiedua-Baiden, Gladys; The Toxic Duo: Bullying Involvement and Adverse Childhood Experiences as Factors Associated with School Disengagement among Children; Children and Youth Services Review; 2020; 105383

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Study start date	2016
Study end date	2017
Aim	To examine bullying involvement and adverse childhood experiences as factors associated with school disengagement among children in the US

Country/geographical location	United States
Setting	Not reported
Inclusion criteria	Children and adolescents aged 6-17 years included in the 2016–2017 National Survey of Children's Health (NSCH)
Exclusion criteria	Children under the age of of 6
Study methods	The data used for this study came from the 2016–2017 National Survey of Children's Health (NSCH) conducted by the US Census Bureau on behalf of the US Department of Health and Human Services, Health Resources and Services Administration, and Maternal and Child Health Bureau. The 2016–2017 NSCH covered children ages 0–17 years who live in households nationally and in each state. There was a total of 71,811 (weighted N = 73,387,211) children and adolescents ages 0–17 years in the 2016–2017 NSCH. The overall weighted response rate was 40.7% for 2016 and 37.4% for 2017. The analyses presented in this study are restricted to children and adolescents ages 6–17 years (N = 45,041). The outcome variable investigated in this study is school disengagement and was measured as a binary. The main explanatory variables examined in this study are bullying involvement and ACEs. Bullying involvement was measured as a nominal variable based on two items. ACEs were measured based on primary caregiver reports.
Confounders	Other covariates examined in this study included family structure, household poverty level, difficulty making or keeping friends, participation in organized activities, electronic screen time, TV watching, functional difficulties, and mental health diagnosis of depression, anxiety, behavioural/conduct problems, and developmental delay.
Statistical method(s) used to analyse the data	• The general distribution of all the variables included in the analysis was first conducted using percentages for categorical variables and mean and standard deviation for age. • A bivariate association between school disengagement and the categorical variables was conducted using Pearson Chi-square test of association. • Multivariate analysis used binary logistic regression to examine bullying involvement and ACEs as factors associated with school disengagement. • Adjusted odds ratios (AOR) are reported together with their 95% Confidence Intervals (C.I.).
Attrition	Not applicable

Study limitations (author)	• The use of secondary data limited our ability to evaluate other relevant factors such as the learning environment, intrinsic motivation, career goals, and other supportive factors and relationships that are known to influence student disengagement. • The data is based on parent-reports and may be subject to response error or recall bias. • Parents may underreport the extent to which their child has been involved in bullying behaviour or they may provide socially desirable responses to events such as domestic violence, parental mental illness, or alcohol/drug use. • Each health and mental health condition was assessed based on parent reports, hence does not reflect a clinical diagnosis. • The study combined children and adolescents in the assessment of disengagement. However, studies have shown that student academic motivation and engagement declines as they move from elementary to middle and high school. • Due to the cross-sectional nature of the dataset, the authors could not establish any causal relationships between ACEs, bullying involvement, and school disengagement.
Study limitations (reviewer)	Lack of data on setting
Source of funding	Not reported

Characteristics

Study-level characteristics

Characteristic	**Study (N = 45041)**
Age (years) Mean (SD)	11.49 (3.45)
Gender Sample size	n = NR ; % = NR

Characteristic	Study (N = 45041)
Male Sample size	n = 23139 ; % = 51.4
Female Sample size	n = 21902 ; % = 48.6
Ethnicity Sample size	n = NR ; % = NR
Non-hispanic white Sample size	n = 23514 ; % = 51.2
Black non-hispanic Sample size	n = 5919 ; % = 13.1
Hispanic Sample size	n = 11121 ; % = 24.7
Other Sample size	n = 4487 ; % = 10

Outcomes

Study timepoints

- 11.49 year (Mean age of the children was 11.49 years (SD: 3.45))

Outcomes

Outcome	Study, 11.49 year vs 11.49 year, N = 45041
Risk factor for school disengagement Measured by two questions on doing well in school and doing required homework, characterised as answering 'not true' on both items (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Experienced one ACE (compared to experiencing no ACEs) Based on primary caregiver reports on whether the child had experienced any of 9 selected ACEs (specific ACEs available in the publication) Odds ratio/95% CI	1.32 (1.24 to 1.4)
Experienced two ACEs (compared to experiencing no ACEs) Based on primary caregiver reports on whether the child had experienced any of 9 selected ACEs (specific ACEs available in the publication) Odds ratio/95% CI	1.5 (1.38 to 1.62)
Experienced three or more ACEs (compared to experiencing no ACEs) Based on primary caregiver reports on whether the child had experienced any of 9 selected ACEs (specific ACEs available in the publication) Odds ratio/95% CI	1.77 (1.63 to 1.92)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Low

D.5 Bannink, 2013

Bibliographic Reference	Bannink, R.; Broeren, S.; Van De Looij-Jansen, P.M.; Raat, H.; Associations between parent-adolescent attachment relationship quality, negative life events and mental health; PLoS ONE; 2013; vol. 8 (no. 11); e80812

Study details

Study design	Prospective cohort study
Trial registration number	Not reported
Study start date	Sep-2008
Study end date	Jul-2011
Aim	• To examine the association of negative life events and parent-adolescent attachment relationship quality with mental health problems • To investigate if there is an interaction between the parent-adolescent attachment relationship and one or multiple negative life events on the mental health of adolescents
Country/geographical location	The Netherlands
Setting	Secondary school
Inclusion criteria	Children included in the Rotterdam Youth Monitor (RYM)

Exclusion criteria	Not reported (adolescents were later excluded for non-participation at follow-up)
Study methods	The RYM is used to detect potential individual health risks and problems in order to take necessary preventive measures (including referrals for treatment). The current study used RYM data from students at secondary schools. At baseline, the students were in the first year of secondary education and at follow-up in the third year. Data were collected throughout the school year, except in the months of July and August (Dutch summer holidays). Administration of the questionnaire at schools was conducted by specially trained researchers and school nurses from the Municipal Public Health Service and/or by a teacher.
Confounders	• Age (dichotomized into the categories below 13 years and 13 years or older) • Gender, • Ethnicity (classified as Dutch or non-Dutch. In accordance with the definitions of Statistics Netherlands, adolescents with at least one parent born outside the Netherlands were classified as non-Dutch • Education level of the adolescent (categorized into two groups: basic or theoretical pre-vocational education, and general secondary/pre-university education.
Statistical method(s) used to analyse the data	• Descriptive statistics were calculated for general characteristics of the study population. • Differences in gender, age, ethnicity, education, life events and parent-adolescent attachment among adolescents with and without mental health problems were evaluated by chi-square test. • Binary logistic regression analyses were conducted to assess the association between life events, parent-adolescent attachment and mental health status at follow-up. • Odds ratios (OR) and 95% confidence intervals (95% CI) were calculated. • Interaction effects were analysed on the additive scale to study if and to what extent parent-adolescent attachment modified the effect of one life event or multiple life events on mental health status. • The proportion attributable to interaction (proportion of the combined effect that is due to interaction) was calculated.
Attrition	3181/8272 = 61.5% attrition
Study limitations (author)	• Excluded non-respondents was lower educated, older and more often of Dutch ethnicity, meaning current findings should be generalised with caution.

	• Adolescents' self-report could be biased. • Total life event score was calculated, which makes it not possible to distinguish, for example, the interaction between parent-adolescent attachment and life events that are (at least partly) related to the adolescents' own behaviour (behaviour-dependent events), and those that are independent of their behaviour (behaviour-independent). • due to the nature of • The research question (i.e. about the occurrence of mental health), and not changes in mental health (i.e. incidence), mental health at baseline was not adjusted in this study. causality cannot be inferred from these analyses, because it is unknown for example whether mental health problems were already present when life events occurred or whether life events, parent-adolescent attachment and mental health problems have mutually influenced each other.
Study limitations (reviewer)	Lack of detail regarding exclusion criteria
Source of funding	This study was supported by a grant of the Netherlands Organization for Scientific Research (NWO)

Characteristics

Study-level characteristics

Characteristic	**Study (N = 3181)**
Age (years) Characteristics at baseline of children who also participated at follow-up Mean (SD)	12.5 (0.62)
Gender Characteristics at baseline of children who also participated at follow-up Sample size	n = NR ; % = NR

Characteristic	Study (N = 3181)
Male Sample size	n = 1622 ; % = 51
Female Sample size	n = 1559 ; % = 49
Ethnicity Characteristics at baseline of children who also participated at follow-up Sample size	n = NR ; % = NR
Dutch Sample size	n = 1540 ; % = 48.4

Outcomes

Study timepoints

- 14.3 year (Mean age of children at follow-up)

Outcomes

Outcome	**Study, 14.3 year vs 14.3 year, N = 3181**
Risk factor for mental health problems Measured by Dutch Strengths and Difficulties Questionnaire (SDQ), dichotomised using cut-off score ≥13 (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Chronic or severe illness of parent at mean age 12.5 years (compared to no chronic or severe illness of parent) Measured by true or false question (self-reported) Odds ratio/95% CI	1.34 (0.94 to 1.9)
Chronic or severe illness of sibling at mean age 12.5 years (compared to no chronic or severe illness of sibling) Measured by true or false question (self-reported) Odds ratio/95% CI	1.23 (0.75 to 2.04)
Mental illness of parent at mean age 12.5 years (compared to no mental illness of parent) Measured by true or false question (self-reported) Odds ratio/95% CI	1.86 (1.08 to 3.21)
Mental illness of sibling at mean age 12.5 years (compared to no mental illness of sibling) Measured by true or false question (self-reported) Odds ratio/95% CI	1.91 (0.98 to 3.73)
Addiction of parent at mean age 12.5 years (compard to no addiction of parent) Measured by true or false question (self-reported) Odds ratio/95% CI	2.34 (1.45 to 3.79)

Outcome	Study, 14.3 year vs 14.3 year, N = 3181
Addiction of sibling at mean age 12.5 years (compared to no addiction of sibling) Measured by true or false question (self-reported) Odds ratio/95% CI	0.82 (0.39 to 1.71)
Conflicts between parents at mean age 12.5 years (compared to no conflict between parents) Measured by answering not experienced, experienced >2 years ago and experienced ≤2 years ago, dichotomised to experienced or not experienced (self-reported) Odds ratio/95% CI	1.51 (1.21 to 1.88)
Parental divorce at mean age 12.5 years (compared to no parental divorce) Categorised as no and yes (self-reported) Odds ratio/95% CI	1.25 (0.97 to 1.62)
Unwanted pregnancy at mean age 12.5 years (compared to no unwanted pregnancy) Categorised as no and yes (self-reported) Odds ratio/95% CI	2.17 (0.63 to 7.45)
Victim of sexual abuse at mean age 12.5 years (compared to not a victim of sexual abuse) Categorised as no and yes (self-reported) Odds ratio/95% CI	1.11 (0.5 to 2.5)
Victim of violence at mean age 12.5 years (compared to not a victim of violence) Categorised as no and yes (self-reported) Odds ratio/95% CI	2.51 (1.69 to 3.7)
Unfavourable parent-adolescent attachment at mean age 12.5 years (compared to favourable parent-adolescent attachment)	2.03 (1.55 to 2.65)

Outcome	Study, 14.3 year vs 14.3 year, N = 3181
Measured using the 'Family attachment scale' of The Communities That Care Youth Survey, characterised as score <2.00 (self-reported) Odds ratio/95% CI	

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	High

D.6 Bannink, 2014

Bibliographic Reference	Bannink, Rienke; Broeren, Suzanne; van de Looij-Jansen, Petra M; de Waart, Frouwkje G; Raat, Hein; Cyber and traditional bullying victimization as a risk factor for mental health problems and suicidal ideation in adolescents.; PloS one; 2014; vol. 9 (no. 4); e94026

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study start date	Sep-2008
Study end date	Jul-2011

Aim	To examine whether traditional and cyber bullying victimization were associated with mental health problems and suicidal ideation at two-year follow up (when controlling for mental health problems or suicidal ideation at baseline) in a large sample of adolescents.
Country/geographical location	The Netherlands
Setting	Secondary school
Inclusion criteria	Participants of the Rotterdam Youth Monitor (RYM), a longitudinal youth health surveillance system
Exclusion criteria	Not reported
Study methods	The current study used RYM data from students at secondary schools. At baseline, the students were in their first year of secondary education, and at follow-up in their third year. Administration of the questionnaire took place at schools and was conducted by specially trained researchers and school nurses from the Municipal Public Health Service and/or by a teacher.
Confounders	• Age (dichotomized into the categories below 13 years and 13 years or older) • Gender • Ethnicity (classified as Dutch or non-Dutch. In accordance with the definitions of Statistics Netherlands, adolescents with at least one parent born outside the Netherlands were classified as non-Dutch • Education level of the adolescent (categorized into two groups: basic or theoretical pre-vocational education, and general secondary/pre-university education.
Statistical method(s) used to analyse the data	• Descriptive statistics were used to describe general characteristics of the study population. • Chi-square test was conducted to assess the association between traditional and cyber bullying victimization. • Binary logistic regression analyses were used to assess the association between bullying victimization and mental health status or suicidal ideation at follow-up. • Odds ratios (OR) and their corresponding 95% confidence intervals (95% CI) were calculated. • Results were considered significant at $p<0.05$, with the exception of interactions which were considered significant at $p<0.10$, in line with recommendations of Twisk.
Attrition	3181/8271 = 61.5% attrition

Study limitations (author)	• Not all adolescents in the study were available for analyses due to non-participation at follow-up. It is possible that this selective drop out led to underestimation of the size of the association between bullying victimisation and mental health problems or suicidal ideation, since a vulnerable group (i.e. a group with a high risk of mental health problems and suicidal ideation) dropped out. • Traditional and cyber bullying victimisation were assessed using single, self-reported items. Moreover, there is currently no consensus among researchers how to measure cyber bullying, and the changing nature of communication technology makes it difficult to establish a fixed definition. • Mental health and suicidal ideation were also assessed using self-reported items, which may have resulted in less reliable outcomes.
Study limitations (reviewer)	Lack of data on exclusion criteria
Source of funding	The publication of this study was supported by the Netherlands Organization for Scientific Research (NWO)

Characteristics

Study-level characteristics

Characteristic	**Study (N = 8271)**
Gender Characteristics at baseline Sample size	n = NR ; % = NR
Male Includes both participants and those lost to follow-up Sample size	n = 4268 ; % = 51.6
Female Includes both participants and those lost to follow-up	n = 4003 ; % = 48.4

Characteristic	Study (N = 8271)
Sample size	
Ethnicity Characteristics at baseline Sample size	n = NR ; % = NR
Dutch: boys who participated Sample size	n = 818 ; % = 50.4
Dutch: boys lost to follow-up Sample size	n = 1505 ; % = 56.9
Dutch: girls who participated Sample size	n = 721 ; % = 46.3
Dutch: girls lost to follow-up Sample size	n = 1355 ; % = 55.4

Outcomes

Study timepoints

- 14.31 year (Mean age of children at follow-up)

Outcomes

Outcome	Study, 14.31 year vs 14.31 year, N = 3181
Risk factor for mental health problems: Total sample Measured by Dutch version of the Strengths and Difficulties Questionnaire (SDQ), borderline/abnormal score characterised as >80th percentile (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Traditional bullying victim at mean age 12.50 years (compared to never being victimised) Characterised as having been bullied at school at least once or twice (self-reported) Odds ratio/95% CI	1.45 (1.06 to 2)
Cyberbullying victim at mean age 12.50 years (compared to never being victimised) Characterised as having been bullied via internet/phone/SMS at least once or twice (self-reported) Odds ratio/95% CI	2.53 (1.55 to 4.12)
Risk factor for mental health problems: Boys Measured by Dutch version of the Strengths and Difficulties Questionnaire (SDQ), borderline/abnormal score characterised as >80th percentile (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Traditional bullying victim at mean age 12.50 years (compared to never being victimised) Characterised as having been bullied at school at least once or twice (self-reported) Odds ratio/95% CI	1.03 (0.72 to 1.47)
Cyberbullying victim at mean age 12.50 years (compared to never being victimised) Characterised as having been bullied via internet/phone/SMS at least once or twice (self-reported) Odds ratio/95% CI	1.18 (0.64 to 2.17)

Outcome	Study, 14.31 year vs 14.31 year, N = 3181
Risk factor for mental health problems: Total sample Measured by Dutch version of the Strengths and Difficulties Questionnaire (SDQ), borderline/abnormal score characterised as >80th percentile (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Traditional bullying victim at mean age 12.50 years (compared to never being victimised) Characterised as having been bullied at school at least once or twice (self-reported) Odds ratio/95% CI	1.41 (1.02 to 1.96)
Cyberbullying victim at mean age 12.50 years (compared to never being victimised) Characterised as having been bullied at school at least once or twice (self-reported) Odds ratio/95% CI	2.38 (1.45 to 3.91)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.7 Bond, 2007

Bibliographic Reference	Bond, Lyndal; Butler, Helen; Thomas, Lyndal; Carlin, John; Glover, Sara; Bowes, Glenn; Patton, George; Social and school connectedness in early secondary school as predictors of late teenage substance use, mental health, and academic outcomes.; The Journal of adolescent health : official publication of the Society for Adolescent Medicine; 2007; vol. 40 (no. 4); 357e9-18

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Aim	The aim of this paper is to examine the extent to which social connectedness and connectedness to school in early secondary school is associated with mental health and substance use two years later and educational achievement four years later, adjusting for mental health and behaviours in the earlier years.
Country/geographical location	Australia
Setting	Secondary school
Inclusion criteria	All Year 8 students in the 26 schools participating in the Gatehouse Project
Exclusion criteria	Not reported
Study methods	We used data collected from students at the beginning of the second year of secondary school, at the end of Year 10 (the last year of compulsory secondary school) and 1 year post secondary school. Students completed a questionnaire using laptop computers at school supervised by the research team. Telephone interviews were completed with students who had left the project schools (4%). For the final survey, computer-assisted telephone interviews were conducted.
Confounders	Sociodemographic variable (no further details provided)
Statistical method(s) used to analyse the data	• Prevalence estimates and logistic regressions were performed using robust “information-sandwich” estimates of standard errors to account for clustering within schools. • All multivariate analyses were adjusted for the intervention effect.

	• Interactions between the intervention effect and school and social connectedness in the later years were examined adjusting for these variables at baseline (Year 8).
Attrition	Attrition from Year 8 to Year 10 surveys was 10%
Study limitations (author)	• Of those who did not participate in the final wave, significantly more reported low school engagement and higher rates of substance use in early Year 8. These young people are likely to be at higher risk of not completing Year 12. • Assessment of educational outcomes was limited to school completion and a tertiary entrance score. These may not be comprehensive indicators of success. • There was no measure of school achievement for the participants in Year 8 and were therefore unable to adjust for prior achievement in our analyses.
Study limitations (reviewer)	Lack of data on exclusion criteria
Source of funding	The Gatehouse Project was supported by grants from the Queen's Trust for Young Australians, Victorian Health Promotion Foundation, National Health and Medical Research Council and Department of Human Services, Victoria; Murdoch Children's Research Institute, Sidney Myer Fund; and the Melbourne Catholic Education Office. Lyndal Bond was funded by a Victorian Health Promotion Foundation Public Health Fellowship.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 2400)**
Gender Characteristics at baseline Sample size	n = NR ; % = NR
Male	n = 1124 ; % = 46.8

Characteristic	Study (N = 2400)
Sample size	
Female Sample size	n = 1276 ; % = 53.2
Ethnicity Characteristics at baseline, percentage calculated on valid responses Sample size	n = NR ; % = NR
Language other than English spoken at home Sample size	n = 242 ; % = 21.5

Outcomes

Study timepoints

- 16 year (Mean age of children at follow-up)

Outcomes

Outcome	Study, 16 year vs 16 year, N = 1902
Risk factor for anxiety/depressive symptoms Measured by the Clinical Interview Schedule – Revised (computerised version), characterised as a score >12 reflecting a level of minor psychiatric morbidity (self-reported)	NR (*empty data* to *empty data*)

Outcome	Study, 16 year vs 16 year, N = 1902
Odds ratio/95% CI	
Female at mean age 14 years (comparison not reported) (Self-reported) Odds ratio/95% CI	2.54 (1.69 to 3.83)
Not living with both parents at mean age 14 years (comparison not reported) (Self-reported) Odds ratio/95% CI	1.3 (0.89 to 1.88)
Good school/poor social connectedness at mean age 14 years (compared to good school/social connectedness) Social connectedness: Assessed with three questions adapted from the Interview Schedule for Social Interaction, dichotomised as having either good social connectedness (yes to all 3 questions), or poor connectedness. School connectedness: Assessed using the school connectedness scale, categories were defined based on the quintiles of the Year 8 data (self-reported) Odds ratio/95% CI	1.4 (0.88 to 2.28)
Low school/good social connectedness at mean age 14 years (compared to good school/social connectedness) Social connectedness: Assessed with three questions adapted from the Interview Schedule for Social Interaction, dichotomised as having either good social connectedness (yes to all 3 questions), or poor connectedness. School connectedness: Assessed using the school connectedness scale, categories were defined based on the quintiles of the Year 8 data (self-reported) Odds ratio/95% CI	1.34 (1.04 to 1.76)
Low school/poor social connectedness at mean age 14 years (compared to good school/social connectedness) Social connectedness: Assessed with three questions adapted from the Interview Schedule for Social Interaction, dichotomised as having either good social connectedness (yes to all 3 questions), or poor connectedness. School connectedness: Assessed using the school connectedness scale, categories were defined based on the quintiles of the Year 8 data (self-reported) Odds ratio/95% CI	1.27 (0.86 to 1.88)

Outcome	Study, 16 year vs 16 year, N = 1902
Arguments with others at mean age 14 years (comparison not reported) Odds ratio/95% CI	1.39 (1.04 to 1.85)
Bullied at mean age 14 years (comparison not reported) Odds ratio/95% CI	1.29 (1 to 1.68)
Anxiety/depressive symptoms at mean age 14 years (comparison not reported) Odds ratio/95% CI	3.17 (2.31 to 4.35)
Smoker at at mean age 14 years (comparison not reported) Regular smoking was defined as smoking on 6 or more days in the previous week (self-reported) Odds ratio/95% CI	1.06 (0.88 to 1.64)
Drinker at mean age 14 years (comparison not reported) Regular drinking was defined as drinking on three or more days in the previous week (self-reported) Odds ratio/95% CI	1.22 (0.83 to 1.79)
Tried marijuana at mean age 14 years (comparison not reported) Marijuana use was defined as any use in the previous 6 months (self-reported) Odds ratio/95% CI	1 (0.66 to 1.53)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.8 Brady, 2020

Bibliographic Reference	Brady, Ann Marie; Deighton, Jessica; Stansfeld, Stephen; Chronic illness in childhood and early adolescence: A longitudinal exploration of co-occurring mental illness.; Development and psychopathology; 2020; 1-14

Study details

Trial registration number	Not reported
Aim	To thoroughly test the hypothesis that chronic health conditions disrupt the typical trajectory of child and adolescent development, and subsequently lead to increased levels of mental illness
Country/geographical location	United Kingdom
Setting	Not reported
Inclusion criteria	Participants in the Avon Longitudinal Study of Parents and Children (ALSPAC)
Exclusion criteria	Not reported (in the longitudinal analyses participants were excluded if they indicated to ill be at 128 months (10 years) but subsequently be healthy on the 166-month (13 years) questionnaire)
Study methods	Data from this study was taken from the Avon Longitudinal Study of Parents and Children (ALSPAC), a longitudinal birth cohort study of children born in Avon county from April 1, 1991 to December 31, 1992. Measures were selected from the ALSPAC data set prior to the analysis..

Confounders	Models were adjusted for • Gender • Socio-economic status • Parental history of mental illness
Statistical method(s) used to analyse the data	• Odds ratios (ORs) and 95% confidence intervals (CIs) indicative of the association between chronic illness and prevalence of psychiatric disorders were estimated using binomial logistic regression models in both the cross-sectional and longitudinal analyses. • A final model was calculated for all analyses that adjusted for the effects of all three covariates with imputed data, created based on chained equations (MICE) to account for missing data on the SES and parental mental health measure. • Monte Carlo estimate error terms and convergence graphs were within acceptable guidelines. • Three separate imputed data sets were created for each of the cross-sectional samples, and the longitudinal sample to account for missing data on the measure of SES, parental mental health, and DAWBA at 15 years.
Attrition	Unclear as multiple different participant numbers reported for different outcomes
Study limitations (author)	• A proportion of children indicated to have chronic illness diagnoses, such as asthma, were not identified. • The longitudinal associative analyses excluded children who were ill at 128 months but not in the 166-month questionnaire. Therefore, the longitudinal nature of the association of chronic ill health at 10 years to mental health outcomes at 13 years was compromised. • It was not possible to maintain consistency with an exclusion of children indicated to be healthy at 15 years, compromising the reliability of the associative analyses and perhaps underlying the weaker associations found at this later wave. • A bias to families from higher socioeconomic and White backgrounds. It is possible that different, or additional, outcomes of chronic health problems may be identified as playing a more pivotal mediating role in more heterogeneous population groups. • The timeline for the study was determined by a lack of consistency in the Avon Longitudinal Study of Parents and Children (ALSPAC), measures in middle to late adolescence, as questionnaires were shortened to improve response rates. • Lack of consistent measurement of many variables, such as peer victimisation and school absenteeism, in the period from 13 to 15 years limited the mediation analyses and constrained the scope of the study.

	• The study was constrained to the measures administered. As a result, a number of the scales used were novel to this study and a minority indicated weak psychometric properties. • Low rates of mental illness in the ALSPAC data set meant that it was not possible to use rates of specific psychiatric disorders as the outcome measure.
Study limitations (reviewer)	• Lack of data on setting and exclusion criteria • Lack of clarity regarding attrition
Source of funding	• This work was supported by the National Institute of Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care (CLAHRC) North Thames at Bart's Health NHS Trust. • The UK Medical Research Council and Wellcome (Grant ref: 102215/2/13/2) and the University of Bristol provide core support for ALSPAC.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 3984)**
Gender Characteristics at baseline for longitudinal sample (extracted from supplementary material) Sample size	n = NR ; % = NR
Male: Healthy comparative sample Sample size	n = 1424 ; % = 53.11
Female: Healthy comparative sample Sample size	n = 1257 ; % = 46.89

Characteristic	Study (N = 3984)
Male: Chronically ill sample Sample size	n = 615 ; % = 47.2
Female: Chronically ill sample Sample size	n = 688 ; % = 52.8
Average/High income: Healthy comparative sample Sample size	n = 727 ; % = 27.12
Low income: Healthy comparative sample Sample size	n = 166 ; % = 6.19
Missing data: Healthy comparative sample Sample size	n = 1788 ; % = 66.69
Average/High income: Chronically ill sample Sample size	n = 332 ; % = 25.28
Low income: Chronically ill sample Sample size	n = 68 ; % = 5.22
Missing data: Chronically ill sample Sample size	n = 903 ; % = 69.3

Outcomes

Study timepoints

- 15 year (Age of children at follow-up)

Outcomes

Outcome	Study, 15 year vs 15 year, N = 4011
Risk factor for mental illness Measured by the Development and Well-Being Assessment (DAWBA) (parent and self-reported) Sample size	n = NR
Risk factor for mental illness Measured by the Development and Well-Being Assessment (DAWBA) (parent and self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Chronic illness at 10 years / 128 months and 13 years / 166 months (compared to children free from health problems) Measured by maternal ratings of the child's health over the past 12 months (parent reported) Sample size	n = 3984 ; % = NR
Chronic illness at 10 years / 128 months and 13 years / 166 months (compared to children free from health problems) Measured by maternal ratings of the child's health over the past 12 months (parent reported) Odds ratio/95% CI	1.6 (1.14 to 2.25)

Outcome	Study, 15 year vs 15 year, N = 4011
Asthma at 10 years / 128 months and 13 years / 166 months (compared to children free from health problems) Based on answer to “Has a doctor actually said that your child has asthma or eczema?" (parent-reported) Sample size	n = 4011 ; % = NR
Asthma at 10 years / 128 months and 13 years / 166 months (compared to children free from health problems) Based on answer to “Has a doctor actually said that your child has asthma or eczema?" (parent-reported) Odds ratio/95% CI	1.85 (1.32 to 2.58)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.9 Briggs-Gowan, 2012

Bibliographic Reference	Briggs-Gowan, Margaret J; Carter, Alice S; Ford, Julian D; Parsing the effects violence exposure in early childhood: modeling developmental pathways.; Journal of pediatric psychology; 2012; vol. 37 (no. 1); 11-22

Study details

Study design	Longitudinal studies

Trial registration number	Not reported
Aim	To examine prospective patterns in the representative longitudinal birth cohort previously studied cross-sectionally, and to test the following hypotheses: • Both family and neighbourhood violence exposure between birth and age 3 years will be uniquely associated with trauma-related symptoms at age 3 years. • Early childhood violence exposure will uniquely predict emotional problems in early elementary school, independent of recent violence exposure and sociodemographic risk • Early childhood trauma-related symptoms will mediate the effect of early family and neighbourhood violence exposure on later emotional problems and competencies.
Country/geographical location	United States
Setting	Home-based
Inclusion criteria	Children were initially randomly selected from birth records from the State of Connecticut Department of Public Health for births at Yale-New Haven Hospital from July 1995 to September 1997. Eligible children were 11 to 35 months old and born healthy in the New Haven-Meriden Standard Metropolitan Statistical Area of the 1990 Census.
Exclusion criteria	Children likely to have developmental delays due to low birthweight (<2,200g), prematurity (<36 weeks), low APGAR scores (both scores below 5), or birth complications (e.g., need for resuscitation and anoxia) were excluded.
Study methods	Data are from a subsample of a longitudinal representative birth cohort. Children were initially randomly selected from birth records from the State of Connecticut Department of Public Health for births at Yale-New Haven Hospital from July 1995 to September 1997. This sample was stratified to have equal representation of girls and boys from 11 to 35 months of age. Parents were invited by mail to complete surveys and received $25–$35 for each completed survey. Analyzed data were restricted to participants with maternal respondents in all surveys and complete data on key variables

Confounders	Independent variables were • age, • sex, • early exposures, • school-age exposures, • early trauma symptoms, • sociodemographic risk.
Statistical method(s) used to analyse the data	• Primary analyses consisted of two series of multivariate linear regression models. • Clinical significance of longitudinal models was examined with logistic regressions predicting clinical status on the Child Behavior Checklist (CBC)L and Adaptive Social Behavior Ratings Scale (ASBR). • Bonferroni-adjusted p-values were used to reduce the likelihood of chance findings due to multiple comparisons.
Attrition	437/1329 = 67.1% attrition
Study limitations (author)	• Only lifetime violence exposure was assessed in early childhood. Thus, the influence of other aspects of violence exposure on pathways could not be examined. • The study relied on maternal reports of exposure, symptoms, and social competencies. Some mothers may have denied that their children had witnessed violence, due to concerns about adverse consequences of disclosure (e.g., triggering investigation). This may have caused underreporting. • Mothers' own histories of violence or other traumas may have influenced their reports, making them more (or perhaps less) attuned to the presence of trauma-related symptoms in their young children. • The effects of being the victim of violence (e.g., physical abuse; assaults in the neighbourhood or school in the context of bullying or crimes) also require study. • Important family processes known to influence outcomes in young children, such as parental psychological functioning (affective symptoms, alcohol or substance use, trauma history) and the quality of the parent–child relationship were not examined.
Study limitations (reviewer)	Lack of data on setting
Source of funding	• The original study was funded by the National Institute of Mental Health (R01MH55278 to A. S. C.)

	• Additional funding from the National Institute of Mental Health partially supported the writing of this manuscript (R01MH090301, PI M. J. B.-G.)

Characteristics

Study-level characteristics

Characteristic	**Study (N = 437)**
Age (Months) Characteristics at school age (follow-up) Mean (SD)	71.4 (5.2)
Gender Characteristics at school age (follow-up) Sample size	n = NR ; % = NR
Male Sample size	n = 218 ; % = 49.9
Female Sample size	n = 219 ; % = 50.1
Ethnicity Characteristics at school age (follow-up) Sample size	n = NR ; % = NR
Caucasian/white Sample size	n = 301 ; % = 68.9

Characteristic	Study (N = 437)
African American/Black Sample size	n = 62 ; % = 14.2
Hispanic Sample size	n = 22 ; % = 5
Asian Sample size	n = 9 ; % = 2.1
Multi-ethnic minority Sample size	n = 38 ; % = 8.7
Other Sample size	n = 5 ; % = 1.1

Outcomes

Study timepoints

- 71.4 month (Mean age of children at follow-up)

Outcomes

Outcome	Study, 71.4 month vs 71.4 month, N = 437
Risk factor for internalising symptoms Measured by the Child Behavior Checklist (CBCL/6–18), characterised as T-score ≥60 (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Trauma-related symtoms above the cut-off at age 3 (compared to scores below the cut-off) Measured by the Infant-Toddler Social and Emotional Assessment Trauma-Related Symptoms (ITSEA-TRSS), characterised as scores ≥80th percentile (parent-reported) Odds ratio/95% CI	6.8 (3.1 to 14.8)
Trauma-related symtoms above the cut-off at age 3 (compared to scores below the cut-off) Measured by the Infant-Toddler Social and Emotional Assessment Trauma-Related Symptoms (ITSEA-TRSS), characterised as scores ≥80th percentile (parent-reported) Odds ratio/95% CI	3.1 (1.4 to 6.5)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.10 Bulhoes, 2019

Bibliographic Reference	Bulhoes, Claudia; Ramos, E; Dias, S; Barros, H; Depressive symptoms at 13 years as predictors of depression in older adolescents: a prospective 4-year follow-up study in a nonclinical population.; European child & adolescent psychiatry; 2019; vol. 28 (no. 4); 595-599

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Study start date	Oct-2003
Study end date	Jun-2004
Aim	To assess the prevalence of depressive symptoms in school students at 13 years of age and secondly, to identify individual and family factors associated with adolescents' depressive symptoms
Country/geographical location	Portugal
Setting	School and home-based
Inclusion criteria	Urban adolescents born in 1990
Exclusion criteria	Inability to reach participants or did not return consent form. For the present analysis, adolescents were excluded because of missing Beck Depression Inventory II (BDI-II) information.
Study methods	Participants were evaluated from October 2003 to June 2004. The authors identified 2,787 eligible adolescents (2,126 in public and 661 in private schools). The information was obtained using two self-administered questionnaires, created by the research team, and through a physical examination. One questionnaire was completed at school before physical examination, during the field team visit, and another was completed at home. The school questionnaire comprised information about health-related behaviours, namely tobacco and alcohol consumption, and physical activity.

	To assess depressive symptoms, the Beck Depression Inventory II (BDI-II) was employed. It is a self-report instrument for measuring depression in adults and adolescents aged 13 years and older. The cut-off used to define adolescents presenting depressive problems was >13. Body mass index (BMI) was classified according to the age- and sex-specific BMI percentiles, elaborated by the United States Centers for Disease Control and Prevention, as overweight (BMI between the 85th and the 95th percentile) and obesity (BMI above the 95th percentile). Age at menarche was self-reported and considered an indicator of pubertal development.
Confounders	Parent's education and parent's depression
Statistical method(s) used to analyse the data	• Data was compared with Mann Whitney, Kruskal-Wallis and Chi-Square tests. • Odds ratios and 95% confidence interval (95%CI) were estimated using unconditional logistic regression. • P-values less than 0.05 were considered statistically significant.
Attrition	1988/2160 = 8.0% attrition
Study limitations (author)	• Self-reported data regarding family history of depression's variable was used. • A relatively small number of boys presented with depressive symptoms. • Though depressive symptoms exist as a continuum in the population, it was not possible to utilise these as continuous data due to the highly positively skewed distribution of scores. • There was no formal diagnosis of depression, and the self-report measure for screening depression does not necessarily refer to depression of clinical relevance.
Study limitations (reviewer)	Lack of detail regarding inclusion criteria
Source of funding	This work was granted by the Portuguese Foundation for Science and Technology (PTDC/SAU-EPI/115254/2009 and SFRH/SINTD/60138/2009 to C.B.)

Characteristics

Study-level characteristics

Characteristic	Study (N = 1988)
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 951 ; % = 47.8
Female Sample size	n = 1037 ; % = 52.2

Outcomes

Study timepoints

- 13 year (Age of children was 13 years)

Outcomes

Outcome	Study, 13 year vs 13 year, N = 1988
Risk factor for depressive symptoms: Girls Measured by the Beck Depression Inventory II (BDI-II), characterised as scores >13 (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)

Outcome	Study, 13 year vs 13 year, N = 1988
Menarche at ≥13 years (compared to pre-menarche) Age at menarche was self-reported Odds ratio/95% CI	2.89 (1.02 to 8.22)
Menarche at 12 years (compared to pre-menarche) Age at menarche was self-reported Odds ratio/95% CI	3.59 (1.36 to 9.51)
Menarche at 11 years (compared to pre-menarche) Age at menarche was self-reported Odds ratio/95% CI	4.12 (1.51 to 11.21)
Menarche at ≤10 years (compared to pre-menarche) Age at menarche was self-reported Odds ratio/95% CI	6.07 (2 to 18.46)
Physical activity <1 time/week (compared to never) Adolescents were asked if they practice any activity, excluding school activities, and how many times per week (self-reported) Odds ratio/95% CI	0.61 (0.31 to 1.22)
Physical activity 2-3 time/week (compared to never) Adolescents were asked if they practice any activity, excluding school activities, and how many times per week (self-reported) Odds ratio/95% CI	0.93 (0.54 to 1.62)

Outcome	Study, 13 year vs 13 year, N = 1988
Physical activity ≥4 time/week (compared to never) Adolescents were asked if they practice any activity, excluding school activities, and how many times per week (self-reported) Odds ratio/95% CI	0.67 (0.22 to 2.02)
Risk factor for depressive symptoms: Boys Measured by the Beck Depression Inventory II (BDI-II), characterised as scores >13 (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Physical activity <1 time/week (compared to never) Adolescents were asked if they practice any activity, excluding school activities, and how many times per week (self-reported) Odds ratio/95% CI	0.52 (0.11 to 2.5)
Physical activity 2-3 time/week (compared to never) Adolescents were asked if they practice any activity, excluding school activities, and how many times per week (self-reported) Odds ratio/95% CI	1 (0.36 to 2.79)
Physical activity ≥4 time/week (compared to never) Adolescents were asked if they practice any activity, excluding school activities, and how many times per week (self-reported) Odds ratio/95% CI	2.59 (0.89 to 7.54)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.11 BURKE Nadine, 2011

Bibliographic Reference	BURKE Nadine, J.; et, al; The impact of adverse childhood experiences on an urban pediatric population; Child Abuse and Neglect; 2011; vol. 35 (no. 6); 408-413

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Study start date	Apr-2009
Aim	To investigate the adverse childhood experiences (ACEs) in youth in a low-income, urban community
Country/geographical location	United States
Setting	Bayview Child Health Center
Inclusion criteria	All paediatric patients seen at the Bayview Child Health Center (BCHC) in its first 2 years of operation (April 2007–April 2009)
Exclusion criteria	Not reported
Study methods	Data collection for this retrospective chart review started in April, 2009. all chart documentation was completed by one of two paediatricians within the same practice, a standard abstraction form was used, inter rater reliability was calculated, researchers were trained and monitored by experts, and meetings were held to discuss clinical discrepancies between

	the research team members. Individual charts were reviewed according to published ACEs guidelines and approved by the principal investigators. Each category endorsed as a traumatic event received a score of 1, hence potential scores range from 0 to 9. Documentation of learning/behaviour problems and overweight/obesity was taken from the medical charts. Data were collected and entered on Microsoft Excel and analysed with SPSS v.17.
Confounders	Age, gender, ethnicity
Statistical method(s) used to analyse the data	• Inter-rater reliability was established by a second rater reviewing every fifth chart reviewed by a research assistant. • The Inter-Class Correlation Coefficient was calculated to be .81. Demographic information for individual participants was collected from the participant's intake forms included in the medical chart. • separate logistic regressions to calculate the risk (Odds ratio) of having learning/behaviour and obesity (BMI = 85%) problems in association with an ACE score = 1 and = 4 (as compared to ACE score = 0).
Attrition	Not applicable
Study limitations (author)	• The history of ACEs was obtained from the caregiver, whereas the original ACE Study used self-report. This creates an almost certain sampling bias. • Paediatrician-reported measure of learning/behaviour problems may not truly reflect the child's actual learning abilities (or disabilities), as well as behavioural problems considering no formal assessment was conducted. • Cross-sectional design of this study limits the ability to infer causation in regards to the associations between ACES (risks) and both learning/behaviour problems and obesity (outcomes) considering both are likely to be occurring at the same point in time. • Prospective chart review design of this study also leads to certain limitations, such as possible selection bias (i.e., whose charts were reviewed), the possibility of relevant information being excluded from analyses (e.g., marital discord), and other possible confounding variables (socio-economic status).
Study limitations (reviewer)	Lack of data on exclusion criteria
Source of funding	This research was funded by the Lennar Urban Corporation

Characteristics

Study-level characteristics

Characteristic	**Study (N = 701)**
Age (years) Mean (SD)	8.13 (NR)
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 381 ; % = 54.3
Female Sample size	n = 320 ; % = 45.7
Ethnicity Sample size	n = NR ; % = NR
African American Sample size	n = 407 ; % = 58
Hispanic Sample size	n = 102 ; % = 14.5
Pacific Islander Sample size	n = 88 ; % = 12.5

Characteristic	Study (N = 701)
Multiracial Sample size	n = 57 ; % = 8.1
White Sample size	n = 18 ; % = 2.6
Asian Sample size	n = 16 ; % = 2.3
Native American Sample size	n = 1 ; % = 0.1
Unknown / Other Sample size	n = 13 ; % = 1.8

Outcomes

Study timepoints

- 8.13 year (The mean age of children was 8.13 years)

Outcomes

Outcome	Study, 8.13 year vs 8.13 year, N = 701
Risk factor for learning / behaviour problems Obtained from a clinical measure based on objective learning and behavioural data (paediatrician-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
ACEs ≥1 (compared to ACEs = 0) An ACE corresponds to any of the nine categories identified and used in previous ACE Studies (paediatrician-reported) Odds ratio/95% CI	10.3 (4.66 to 22.77)
ACEs ≥4 (compared to ACEs = 0) An ACE corresponds to any of the nine categories identified and used in previous ACE Studies (paediatrician-reported) Odds ratio/95% CI	32.6 (13 to 81.78)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.12 Cabaj, 2014

Bibliographic Reference	Cabaj, Jason L; McDonald, Sheila W; Tough, Suzanne C; Early childhood risk and resilience factors for behavioural and emotional problems in middle childhood.; BMC pediatrics; 2014; vol. 14; 166

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study end date	Jun-2010
Aim	To use data from the third Community Perinatal Care follow-up (CPC-8) to identify the combination of current and past demographic, familial and environmental factors associated with emotional or behavioural problems in middle childhood, and the predictors of resilience in the presence of previously identified risk factors for delayed development.
Country/geographical location	Canada
Setting	Home-based
Inclusion criteria	Participants of the the longitudinal Community Perinatal Care (CPC) who participated at the third follow-upstage (CPC-8)
Exclusion criteria	The inability to complete the questionnaire in English and lack of current mailing information after exhaustive searching
Study methods	Part of the longitudinal Community Perinatal Care (CPC) cohort that had been followed since pregnancy. The initial sample for the CPC study included pregnant women over 18 years of age who attended one of three family physician low-risk maternity practices in the Calgary Health Region. The CPC-8 survey (consisting of a 21-page questionnaire) included questions on demographics, children's health, development, activities, media and technology, family, friends, community, school life, and mother's health. Reminder phone calls were made at one and two months after the survey mail-out to mothers with outstanding questionnaires, and letters were sent at 3 months to women who could not be contacted by phone reminding them of the study and requesting they call study investigators if they required another copy of the questionnaire. A second copy of the questionnaire was sent to women who had expressed a commitment to return the questionnaire and to those who research assistants had not been able to speak with on the phone. Finally, further phone calls were made to mothers with outstanding questionnaires that had received a second copy and/or had expressed intent to complete the questionnaire.
Confounders	Predictor variables fell into three groups: • demographic factors (marital status, education, annual household income, ethnicity, and household composition.)

	• child characteristics (Child gender, health status, body mass index, history of specialist referral, school performance, and history of stressful or traumatic childhood events) • and maternal characteristics (maternal physical and emotional health status, (excellent, good, fair, poor, or terrible) [31], history of abuse (any abuse prior to pregnancy), and adequacy of social support
Statistical method(s) used to analyse the data	• Descriptive methods for categorical and continuous variables as well as bivariate and multivariable methods. • A predictive model was developed for each behavioural dimension using a manual stepwise model building approach that considered current (age 8) risk factors in the first block, followed by incorporation of previous risk factors (age 3 and age 5), to produce a final, parsimonious model. This allowed assessment of independent effects of current influences while accounting for risk factors that occurred earlier in child hood. • Predictor variables were included in the regression models if they were significantly associated with the out come in bivariate analysis or there was theoretical rationale. • A subsample of mothers was selected from based on having either demographic or mental health risk when their child was three years old. • Chi square analysis was carried out to assess the influence of potential protective factors that discriminated children scoring in the low vs. high externalizing or internalizing behaviour categories.
Attrition	450/791 = 43.1% attrition
Study limitations (author)	• The relatively high level of education and income in this group potentially raises concerns about the generalisability of study results to those of lower socioeconomic status and to marginalised groups. • Absence of data on fathers in this study and many others regrettably perpetuates the substantial bias toward mother-child interactions that exists in the parenting literature. • Women who were younger, had lower education and income, and were in poor physical health, were single or divorced, and who smoked were less likely to be represented in the follow-up CPC surveys. • Potential for selection bias does exist given attrition of lower SES women across time. • If the demographic factors related to a lower likelihood of study participation adversely influenced child outcomes, this data will have underestimated the proportion of children with emotional and behavioural disorders. • Dichotomous classification used in this study (internalising/ externalising behaviours) is simplistic and does not capture all emotional and behavioural problems in children. • Although study outcomes were considered in isolation, this is an artificial distinction as children with externalising disorders may have co-occurring internalising disorders. • Resilience factors identified reflect associations only, and due to the timing of assessment for some, it is possible that the protective factors were manifestations of good mental health.

	• Because the study results were based on questionnaires, parents may have underestimated behavioural problems in their children, and it is not possible to determine if the children in whom parents reported problems have any psychiatric disorders.
Study limitations (reviewer)	None to add
Source of funding	Study funded by UpStart of United Way of Calgary and Area

Characteristics

Study-level characteristics

Characteristic	**Study (N = 450)**
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 209 ; % = 47.8
Female Sample size	n = 228 ; % = 5.2
Ethnicity Sample size	n = NR ; % = NR
White/Caucasian Sample size	n = 394 ; % = 87.6

Characteristic	Study (N = 450)
Other Sample size	n = 56 ; % = 12.4

Outcomes

Study timepoints

- 7 year (Children were aged between 6-8 years at the final follow-up time)

Outcomes

Outcome	Study, 7 year vs 7 year, N = 450
Risk factor for externalising problems Measured using the National Longitudinal Survey of Children and Youth (NLSCY) Child Behavioural Scale, characterised as children scoring in the 80th percentile of the distribution (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Male (comparison not reported) (Parent-reported) Odds ratio/95% CI	2.64 (1.5 to 4.65)

Outcome	Study, 7 year vs 7 year, N = 450
Demographic risk at age 3 (comparison not reported) Characterised as at least one of: single marital status, less than 25 years old, less than a high school education, household income less than $40,000, or moved two or more times in the past two years (parent-reported) Odds ratio/95% CI	NR (NR to NR)
Maternal mental health risk during pregnancy or at age 3 (comparison not reported) Characterised as at least one of: Maternal mental health risk indicators were developed to describe risk during pregnancy abuse prior to pregnancy or up to 6–8 weeks postpartum, de pression prior to pregnancy, suicidal thoughts prior to pregnancy, poor social support in first trimester, poor network orientation in first trimester, or poor emotional health in first trimester, experience of abuse since child was born, depression for six or more months after giving birth, poor social support, or poor emotional health (parent-reported) Odds ratio/95% CI	2.02 (1.02 to 4.01)
Low parental sense of competence at age 5 (comparison not reported) Characterisation not reported (parent reported) Odds ratio/95% CI	2.83 (1.58 to 5.06)
Hostile parenting style at age 3 (comparison not reported) Assessed using two subscales (hostile/ineffective and aversion) of the National Longitudinal Survey of Children and Youth (parent-reported) Odds ratio/95% CI	2.24 (1.12 to 4.5)
Low parenting morale at age 3 (comparison not reported) Assessed using the Parenting Morale Index (parent-reported) Odds ratio/95% CI	NR (NR to NR)

Outcome	Study, 7 year vs 7 year, N = 450
Developmental referal history at age 3 (comparison not reported) (Parent-reported) Odds ratio/95% CI	1.99 (1.04 to 3.83)
Risk factor for internalising problems Measured using the National Longitudinal Survey of Children and Youth (NLSCY) Child Behavioural Scale, characterised as children scoring in the 80th percentile of the distribution (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Male (comparison not reported) (Parent-reported) Odds ratio/95% CI	1.7 (1.02 to 2.82)
Demographic risk at age 3 (comparison not reported) Characterised as at least one of: single marital status, less than 25 years old, less than a high school education, household income less than $40,000, or moved two or more times in the past two years (parent-reported) Odds ratio/95% CI	2.82 (1.27 to 6.26)
Maternal mental health risk during pregnancy or at age 3 (comparison not reported) Characterised as at least one of: Maternal mental health risk indicators were developed to describe risk during pregnancy abuse prior to pregnancy or up to 6–8 weeks postpartum, de pression prior to pregnancy, suicidal thoughts prior to pregnancy, poor social support in first trimester, poor network orientation in first trimester, or poor emotional health in first trimester, experience of abuse since child was born, depression for six or more months after giving birth, poor social support, or poor emotional health (parent-reported) Odds ratio/95% CI	NR (NR to NR)

Outcome	Study, 7 year vs 7 year, N = 450
Low parental sense of competence at age 5 (comparison not reported) Characterisation not reported (parent reported) Odds ratio/95% CI	NR (NR to NR)
Hostile parenting style at age 3 (comparison not reported) Assessed using two subscales (hostile/ineffective and aversion) of the National Longitudinal Survey of Children and Youth (parent-reported) Odds ratio/95% CI	NR (NR to NR)
Low parenting morale at age 3 (comparison not reported) Assessed using the Parenting Morale Index (parent-reported) Odds ratio/95% CI	2.62 (1.43 to 4.82)
Developmental referal history at age 3 (comparison not reported) (Parent-reported) Odds ratio/95% CI	NR (NR to NR)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.13 Cong, 2020

Bibliographic Reference	Cong, Xiao; Hosler, Akiko S; Tracy, Melissa; Appleton, Allison A; The relationship between parental involvement in childhood and depression in early adulthood.; Journal of affective disorders; 2020; vol. 273; 173-182

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Aim	To prospectively inspect the relation ship between parental involvement received in early life as potentially reducing depression risk in young adulthood.
Country/geographical location	United Kingdom
Setting	Avon County, Southwest England
Inclusion criteria	Children of Pregnant women, residing in Avon County, Southwest England, with estimated delivery dates between April 1st, 1991 and December 31st, 1992. (Women/children were included in the the Avon Longitudinal Study of Parents and Children)
Exclusion criteria	• Multiple births • Children not alive at 1 year • Children with parenting score missing in at least one of the 3 stages during childhood (age 0-2, 3-4 and 5-7) • Children with diagnosis of depressive disorders without information for depression status at baseline (age 7.5 years)
Study methods	The current study utilizes data from a subsample of Avon Longitudinal Study of Parents and Children (ALSPAC), specifically participants (offspring of the enrolled mothers) who were singletons alive at 1 year of age with at least one assessment for both maternal and paternal involvement in each of three stages during childhood and who were free of DSMIV clinical diagnosis of depressive disorders.

	During a clinic visit at the age of about 18 years, 3322 participants (46.7% of the total sample of 7120) finished a computerized version of the Clinical Interview Schedule-Revised (CIS-R) to identify depression cases. The binary outcome was utilized in logistic models. Parental involvement was measured as frequencies of parenting activities that mother and her partner took part in as reported by the mother via questionnaire at seven occasions during the offspring's childhood. The averaged value of all available parenting scores across the seven assessments (range 0–10).
Confounders	• Parental marital status (married vs. other) • Maternal age at delivery (<25, 25–29, 30–34, 35-) • Maternal smoking status (yes vs. no) • Maternal mental health (CCEI anxiety score and depression score) • Paternal smoking status (yes vs. no) • Paternal mental health (CCEI anxiety score and depression score)
Statistical method(s) used to analyse the data	• Multiple imputation (MI) was conducted to decrease potential selection bias while increasing statistical power. • Bivariate analyses were conducted to evaluate associations between exposure and outcome and associations between each covariate and exposure or outcome. • For categorical variables, p-values were calculated based on pooled statistics from Chi-square tests over four parental involvement trajectory groups (exposure) or depression status (outcome) across multiply imputed data sets. • For continuous variables, p-values were calculated based on type 3 analyses (over levels of exposure or outcome pooled across multiply imputed data sets. • Logistic regression models were constructed to investigate the effect of parental involvement on depression.
Attrition	3322/7120 = 53.3% attrition
Study limitations (author)	• Loss to follow-up • Multilevel measurements, such as contextual factors in school and community, were not included.

	• Measurements of parental involvement for children were based on maternal report and may be less accurate than those from direct observational approaches. • Childhood temperament, which may affect parental involvement in childhood and depression later in life, has not been included in the statistical model. childhood temperament (e.g. children SDQ • scores, etc.) was included in the imputation model to recover missing data problem but residual confounding cannot be completely ruled out. • As 95% of participants are White and all of them are British, this study has limited generalizability to other racial/ethnic and nationality groups.
Study limitations (reviewer)	None to add
Source of funding	• The UK Medical Research Council and the Wellcome Trust (Grant ref: 102215/2/13/2) and the University of Bristol provide core support for ALSPAC. • The Wellcome Trust (Grant ref: 08426812/Z/07/Z) funds CIS-R assessment.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 7120)**
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 3656 ; % = 51.3
Female Sample size	n = 3464 ; % = 48.7

Characteristic	Study (N = 7120)
Ethnicity Sample size	n = NR ; % = NR
White Sample size	n = 6889 ; % = 96.8
Non-white Sample size	n = 231 ; % = 3.2
Socioeconimic status Measured by parental education level Sample size	n = NR ; % = NR
Below O-level Sample size	n = 929 ; % = 13
O-level Sample size	n = 1837 ; % = 25.8
A-level Sample size	n = 2465 ; % = 34.6
Above A-level Sample size	n = 1890 ; % = 26.5

Outcomes

Study timepoints

- 18 year (Depression outcomes measured when children were 18)

Outcomes

Outcome	Study, 18 year vs 18 year, N = 3322
Risk factors for depressive symptoms Measured by the Clinical Interview Schedule-Revised (CIS-R); dichotomised using cut-off score of 9 combined with ICD-10 diagnosis of probable depression (self-reported) Odds ratio/95% CI	NR (NR to NR)
More parental involvement between 0-7 years (compared to least parental involvement) Characterised as average parenting score of 8.6 (parent-reported) Odds ratio/95% CI	0.71 (0.46 to 1.09)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.14 Datar, 2004

Bibliographic Reference	Datar, Ashlesha; Sturm, Roland; Childhood overweight and parent- and teacher-reported behavior problems: evidence from a prospective study of kindergartners.; Archives of pediatrics & adolescent medicine; 2004; vol. 158 (no. 8); 804-10

Study details

Study design	Prospective cohort study
Trial registration number	Not reported
Study start date	1998
Aim	• To examine whether overweight status is associated with greater behaviour problems at the beginning of kindergarten • To examine whether overweight status at the beginning of kindergarten is a significant predictor of behaviour problems after 2 years in school among children with no significant behaviour problems when they entered kindergarten
Country/geographical location	United States
Setting	Not reported
Inclusion criteria	Participants in the Early Childhood Longitudinal Study–Kindergarten (ECLS-K) class
Exclusion criteria	Not reported
Study methods	Data was collected as part of the Early Childhood Longitudinal Study–Kindergarten (ECLS-K) class (a nationally representative cohort of kindergartners from about 1000 kindergarten programs in the United States in the fall and spring of the 1998-1999 school year. The behavior problem variables came from the parent and teacher questionnaires. Typically, the respondent for parent interviews was the child's mother. If the mother was not available, then the next selected respondent was another parent or guardian, followed by another household member.

Confounders	Models adjusted for • sociodemographic characteristics, • parent-child interaction, • birth weight • maternal depression.
Statistical method(s) used to analyse the data	• Descriptive statistics and associations adjusted for potentially confounding factors that may be correlated with childhood overweight and children's mental health were presented. • For a multivariate analysis, logit model was estimated with behaviour problem as the dependent variable and baseline overweight status as the right-hand side predictor variable. • Separate regression models were estimated for the 3 behaviour problem measures. • Separate models were also estimated for boys and girls. • Standard errors are corrected using the Huber-White correction to account for the correlation between children from the same school.
Attrition	Follow-up data in the spring of first grade on behaviour problems were only available for 82.1% of children. Equates to 17.9% attrition
Study limitations (author)	• The onset of new significant behaviour problems were focussed on, but there may also be deterioration of emotional health among overweight children who already had significant problems at baseline. • Including measures of parent-child interaction, birth weight, and maternal depression in the multivariate regression analyses may overcontrol for differences between overweight and not overweight children if the purpose is to identify children at risk of developing behaviour problems. • Overweight status measured at one point may not be a significant risk factor for subsequent behaviour problems among children, but persis tent or long-term overweight may result in later mental health problems, as suggested by one study.
Study limitations (reviewer)	Lack of data on setting and exclusion criteria
Source of funding	This study was supported by the National Institute for Health Care Management, Washington, DC.

Characteristics

Study-level characteristics

Characteristic	Study (N = 9949)
Gender Characteristics at kindergarten Sample size	n = NR ; % = NR
Male Sample size	n = 4999 ; % = 50.2
Female Sample size	n = 4950 ; % = 49.8
Socioeconimic status Characteristics at kindergarten Sample size	n = NR ; % = NR
Not overweight girls: annual family income<$25,000 Sample size	n = 1012 ; % = 22.86
Overweight girls: annual family income<$25,000 Sample size	n = 152 ; % = 29.06
Not overweight boys: annual family income<$25,000 Sample size	n = 984 ; % = 22.29
Overweight boys: annual family income<$25,000	n = 146 ; % = 25

Characteristic	Study (N = 9949)
Sample size	

Outcomes

Study timepoints

- 2 year (Length of follow-up (children were in spring of 1st grade))

Outcomes

Outcome	Study, 2 year vs 2 year, N = 9949
Risk factor for internalising problems: Teacher report (girls) Measured by the Social Rating Scale (SRS), characterised as scores ≥95th percentile (teacher-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Overweight at kindergarten (compared to not overweight) Measured by BMI, characterised as BMI ≥95th percentile (reporter unclear) Odds ratio/95% CI	1.34 (0.88 to 2.03)
Race: Black at kindergarten (compared to white) (Reporter unclear) Odds ratio/95% CI	0.79 (0.49 to 1.26)
Race: Hispanic at kindergarten (compared to white) (Reporter unclear)	0.76 (0.49 to 1.18)

Outcome	Study, 2 year vs 2 year, N = 9949
Odds ratio/95% CI	
Race: Asian at kindergarten (compared to white) (Reporter unclear) Odds ratio/95% CI	1.14 (0.69 to 1.89)
Socioeconomic status: Family income quartile 2 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear) Odds ratio/95% CI	0.69 (0.46 to 1.04)
Socioeconomic status: Family income quartile 3 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear) Odds ratio/95% CI	0.68 (0.43 to 1.08)
Socioeconomic status: Family income quartile 4 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear) Odds ratio/95% CI	0.53 (0.31 to 0.9)
Belongs to single-parent family at kindergarten (comparison not reported) (Reporter unclear) Odds ratio/95% CI	1.27 (0.86 to 1.88)
Mother's education level: Some college at kindergarten (compared to high school diploma or less) (Reporter unclear) Odds ratio/95% CI	0.85 (0.63 to 1.16)
Mother's education level: ≥Bachelor's degree at kindergarten (compared to high school diploma or less) (Reporter unclear)	0.71 (0.44 to 1.12)

Outcome	Study, 2 year vs 2 year, N = 9949
Odds ratio/95% CI	
Standardised maternal depression scale score at kindergarten (comparison not reported) Measured by 12 items from the Center for Epidemiological Studies Depression Scale, authors were unable to suggest a cut-off score (parent-reported) Odds ratio/95% CI	1.14 (1.01 to 1.29)
Risk factor for internalising problems: Parent report (girls) Measured by the Social Rating Scale (SRS), characterised as scores ≥95th percentile (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Overweight at kindergarten (compared to not overweight) Measured by BMI, characterised as BMI ≥95th percentile (reporter unclear) Odds ratio/95% CI	1.29 (0.82 to 2.01)
Race: Black at kindergarten (compared to white) (Reporter unclear) Odds ratio/95% CI	1.71 (1.1 to 2.66)
Race: Hispanic at kindergarten (compared to white) (Reporter unclear) Odds ratio/95% CI	1.25 (0.81 to 1.94)
Race: Asian at kindergarten (compared to white) (Reporter unclear) Odds ratio/95% CI	2.03 (1.26 to 3.27)

Outcome	Study, 2 year vs 2 year, N = 9949
Socioeconomic status: Family income quartile 2 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear) Odds ratio/95% CI	0.84 (0.56 to 1.26)
Socioeconomic status: Family income quartile 3 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear) Odds ratio/95% CI	0.6 (0.36 to 0.98)
Socioeconomic status: Family income quartile 4 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear) Odds ratio/95% CI	0.62 (0.36 to 1.07)
Belongs to single-parent family at kindergarten (comparison not reported) (Reporter unclear) Odds ratio/95% CI	0.84 (0.55 to 1.29)
Mother's education level: Some college at kindergarten (compared to high school diploma or less) (Reporter unclear) Odds ratio/95% CI	1.09 (0.77 to 1.54)
Mother's education level: ≥Bachelor's degree at kindergarten (compared to high school diploma or less) (Reporter unclear) Odds ratio/95% CI	0.75 (0.46 to 1.24)
Standardised maternal depression scale score at kindergarten (comparison not reported) Measured by 12 items from the Center for Epidemiological Studies Depression Scale, authors were unable to suggest a cut-off score (parent-reported)	1.42 (1.26 to 1.6)

Outcome	Study, 2 year vs 2 year, N = 9949
Odds ratio/95% CI	
Risk factor for internalising problems: Teacher report (boys) Measured by the Social Rating Scale (SRS), characterised as scores ≥95th percentile (teacher-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Overweight at kindergarten (compared to not overweight) Measured by BMI, characterised as BMI ≥95th percentile (reporter unclear) Odds ratio/95% CI	1.02 (0.68 to 1.52)
Race: Black at kindergarten (compared to white) (Reporter unclear) Odds ratio/95% CI	0.89 (0.54 to 1.45)
Race: Hispanic at kindergarten (compared to white) (Reporter unclear) Odds ratio/95% CI	0.76 (0.5 to 1.17)
Race: Asian at kindergarten (compared to white) (Reporter unclear) Odds ratio/95% CI	0.83 (0.49 to 1.4)
Socioeconomic status: Family income quartile 2 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear) Odds ratio/95% CI	0.78 (0.52 to 1.16)
Socioeconomic status: Family income quartile 3 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear)	0.62 (0.4 to 0.96)

Outcome	Study, 2 year vs 2 year, N = 9949
Odds ratio/95% CI	
Socioeconomic status: Family income quartile 4 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear) Odds ratio/95% CI	0.54 (0.32 to 0.89)
Belongs to single-parent family at kindergarten (comparison not reported) (Reporter unclear) Odds ratio/95% CI	0.89 (0.57 to 1.37)
Mother's education level: Some college at kindergarten (compared to high school diploma or less) (Reporter unclear) Odds ratio/95% CI	1.03 (0.76 to 1.38)
Mother's education level: ≥Bachelor's degree at kindergarten (compared to high school diploma or less) (Reporter unclear) Odds ratio/95% CI	0.99 (0.67 to 1.47)
Standardised maternal depression scale score at kindergarten (comparison not reported) Measured by 12 items from the Center for Epidemiological Studies Depression Scale, authors were unable to suggest a cut-off score (parent-reported) Odds ratio/95% CI	1.15 (1.02 to 1.29)
Risk factor for internalising problems: Parent report (boys) easured by the Social Rating Scale (SRS), characterised as scores ≥95th percentile (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)

Outcome	Study, 2 year vs 2 year, N = 9949
Overweight at kindergarten (compared to not overweight) Measured by BMI, characterised as BMI ≥95th percentile (reporter unclear) Odds ratio/95% CI	1.42 (0.94 to 2.15)
Race: Black at kindergarten (compared to white) (Reporter unclear) Odds ratio/95% CI	0.92 (0.57 to 1.5)
Race: Hispanic at kindergarten (compared to white) (Reporter unclear) Odds ratio/95% CI	0.99 (0.64 to 1.47)
Race: Asian at kindergarten (compared to white) (Reporter unclear) Odds ratio/95% CI	0.8 (0.44 to 1.47)
Socioeconomic status: Family income quartile 2 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear) Odds ratio/95% CI	0.45 (0.29 to 0.69)
Socioeconomic status: Family income quartile 3 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear) Odds ratio/95% CI	0.49 (0.3 to 0.79)
Socioeconomic status: Family income quartile 4 at kindergarten (compared to 1 (or lowest) quartile) (Reporter unclear) Odds ratio/95% CI	0.44 (0.26 to 0.75)

Outcome	Study, 2 year vs 2 year, N = 9949
Belongs to single-parent family at kindergarten (comparison not reported) (Reporter unclear) Odds ratio/95% CI	1.19 (0.79 to 1.77)
Mother's education level: Some college at kindergarten (compared to high school diploma or less) (Reporter unclear) Odds ratio/95% CI	1.16 (0.83 to 1.62)
Mother's education level: ≥Bachelor's degree at kindergarten (compared to high school diploma or less) (Reporter unclear) Odds ratio/95% CI	0.75 (0.45 to 1.23)
Standardised maternal depression scale score at kindergarten (comparison not reported) Measured by 12 items from the Center for Epidemiological Studies Depression Scale, authors were unable to suggest a cut-off score (parent-reported) Odds ratio/95% CI	1.36 (1.22 to 1.51)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.15 DENHAM, 2016

Bibliographic Reference	DENHAM, Renee; et, al; Frequent peer problems in Australian children and adolescents; Journal of Aggression Conflict and Peace Research; 2016; vol. 8 (no. 3); 162-173

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Aim	To examine the prevalence, demographic, and clinical correlates of frequent peer problems in children and adolescents who participated in the Australian National Survey of Mental Health and Well-Being.
Country/geographical location	Australia
Setting	Home-based
Inclusion criteria	Children (6-12 years) and adolescents (13-17 years) who participated in the child and adolescent component of the Australian National Survey of Mental Health and Wellbeing
Exclusion criteria	Not reported
Study methods	This nationally representative sample consisted of 2,107 children (6-12 years) and 1,490 adolescents (13-17 years) who participated in the child and adolescent component of the Australian National Survey of Mental Health and Wellbeing. Multistage probability sampling of households with children was used to obtain a representative Australian sample. Demographic information about the participants was obtained from an interviewer-administered questionnaire. Completed questionnaires were placed in a sealed envelope to ensure confidentiality. The parents of all subjects completed the Child Behaviour Checklist (CBCL), a widely used parent report instrument for assessing emotional and behavioural problems in children and adolescents. Subjects aged 11 and over completed the Youth Self-Report (YSR). The demographic variables measured were gender, age, urbanicity, family composition, and

	household income. Internalising and externalising problems were assessed using the internalising (anxiety and depression) and externalising (aggression and delinquency) subscales of the CBCL for children (6-12) and the YSR for adolescents (13-17). Parents completed the Diagnostic Interview Schedule for Children-IV to ascertain if their offspring had suffered a mental illness in the previous year. Parents and adolescents completed the CBCL and YSR measure for being regarded as "overweight". This was analysed in its three categories "not true", "somewhat true", or "very true". Parents completed the Child Health Questionnaire (Landgraf, 1996), a 28-item measure of child and adolescent health and well-being. In this study, the subject's self-esteem over a four-week recall period was measured using the six-item subscale. The Youth Risk Behaviour Questionnaire (YRBQ) is a well validated self-report instrument. It was used to assess suicide risk factors in participants aged 13 years and over. Any marijuana or alcohol use was determined from participant responses to associated YRBQ items.
Confounders	Age, gender, family structure and income
Statistical method(s) used to analyse the data	• The association between demographic and clinical variables and frequent peer problems was examined using unadjusted logistic regressions incorporating weights. • The association between clinical variables and frequent peer problems were adjusted for any demographic variables significantly associated with child or adolescent frequent peer problems. • The correlation between parent reports and adolescent self-reports of frequent peer problems was examined.
Attrition	Children: 1964/2107 = 6.8% attrition Adolescents: 1261/1490 = 15.5% attrition
Study limitations (author)	• As a cross-sectional study, all associations are only correlational, and the direction of causation remains undefined. Many of the relationships are likely to be bidirectional, however longitudinal studies are needed to confirm this. • The instruments of the Australian National Child and Youth Survey of Mental Health and Well-Being were not specifically designed for measuring frequent peer problems. • The overweight variable was based on self or parental report rather than any objective weight measure. • Due to the age limits for the YSR, self-reported frequent peer problems were not measured in the children. • Some important factors associated with an increased risk of bullying were not available in this study.

	• This survey was conducted before the widespread availability of the internet. The survey did not examine experiences of peer problems online, a challenge that is faced by many children and young people today.
Study limitations (reviewer)	Lack of data on exclusion criteria
Source of funding	• Component of the National Survey of Mental Health and Well-Being was funded by the Commonwealth Department of Health and Aged Care. • John McGrath is supported by grant APP1056929 from the John Cade Fellowship from the National Health and Medical Research Council. • James Scott is supported by a Clinical Practitioner Fellowship (grant no. 1105807) from the National Health and Medical Research Council.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 3225)**
Age (years) Mean (SD)	NR (NR)
Children Mean (SD)	9 (2.02)
Adolescents Mean (SD)	14.8 (1.32)
Gender Sample size	n = NR ; % = NR

Characteristic	Study (N = 3225)
Male: Children Sample size	n = NR ; % = NR
Females: Children Sample size	n = NR ; % = NR
Male: Adolescents Sample size	n = 603 ; % = 47.8
Female: Adolescents Sample size	n = 658 ; % = 52.2

Outcomes

Study timepoints

- 9.0 year (The mean age of the children was 9.0 years (SD 2.02))
- 14.8 year (The mean age of the adolescents was 14.8 years (SD 1.32))

Outcomes

Outcome	Study, 9.0 year vs 9.0 year, N = 1964	Study, 14.8 year vs 14.8 year, N = 1261
Risk factor for frequent peer problems: Child parent-report Measured by the Child Behaviour Checklist (CBCL), characterised as parents responding “very true/often true” to either being teased or not liked Odds ratio/95% CI	NR (*empty data* to *empty data*)	NR (*empty data* to *empty data*)
ADHD diagnosis (compared to no ADHD diagnosis) Measured by the Diagnostic Interview Schedule for Children-IV (parent-reported) Odds ratio/95% CI	6.15 (3.55 to 10.67)	NR (NR to NR)
Mild self-esteem (compared to high self-esteem) Measured by the Child Health Questionnaire self-esteem sub-scale, participant’s self-esteem was divided into tertiles: high, medium, or low self-esteem (parent-reported) Odds ratio/95% CI	3.15 (0.88 to 11.19)	NR (NR to NR)
Low self-esteem (compared to high self-esteem) Measured by the Child Health Questionnaire self-esteem sub-scale, participant’s self-esteem was divided into tertiles: high, medium, or low self-esteem (parent-reported) Odds ratio/95% CI	13.92 (4.37 to 44.36)	NR (NR to NR)
Risk factor for frequent peer problems: Adolescent self-report Measured by the Youth Self-Report, characterised as parents responding “very true/often true” to either being teased or not liked Odds ratio/95% CI	NR (*empty data* to *empty data*)	NR (*empty data* to *empty data*)
ADHD diagnosis (compared to no ADHD diagnosis) Measured by the Diagnostic Interview Schedule for Children-IV (parent-reported) Odds ratio/95% CI	NR (NR to NR)	2.12 (0.96 to 4.67)

Outcome	Study, 9.0 year vs 9.0 year, N = 1964	Study, 14.8 year vs 14.8 year, N = 1261
Mild self-esteem (compared to high self-esteem) Measured by the Child Health Questionnaire self-esteem sub-scale, participant's self-esteem was divided into tertiles: high, medium, or low self-esteem (parent-reported) Odds ratio/95% CI	NR (NR to NR)	1.4 (0.56 to 3.54)
Low self-esteem (compared to high self-esteem) Measured by the Child Health Questionnaire self-esteem sub-scale, participant's self-esteem was divided into tertiles: high, medium, or low self-esteem (parent-reported) Odds ratio/95% CI	NR (NR to NR)	2.92 (1.26 to 6.74)
Risk factor for frequent peer problems: Adolescent parent-report Measured by the Child Behaviour Checklist (CBCL), characterised as parents responding "very true/often true" to either being teased or not liked Odds ratio/95% CI	NR (*empty data* to *empty data*)	NR (*empty data* to *empty data*)
ADHD diagnosis (compared to no ADHD diagnosis) Measured by the Diagnostic Interview Schedule for Children-IV (parent-reported) Odds ratio/95% CI	NR (NR to NR)	6.93 (2.98 to 16.09)
Mild self-esteem (compared to high self-esteem) Measured by the Child Health Questionnaire self-esteem sub-scale, participant's self-esteem was divided into tertiles: high, medium, or low self-esteem (parent-reported) Odds ratio/95% CI	NR (NR to NR)	2.45 (0.5 to 11.99)
Low self-esteem (compared to high self-esteem) Measured by the Child Health Questionnaire self-esteem sub-scale, participant's self-esteem was divided into tertiles: high, medium, or low self-esteem (parent-reported) Odds ratio/95% CI	NR (NR to NR)	6.11 (1.4 to 26.8)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.16 Gabalda, 2010

Bibliographic Reference	Gabalda, Megan K; Thompson, Martie P; Kaslow, Nadine J; Risk and protective factors for psychological adjustment among low-income, African American children.; Journal of Family Issues; 2010; vol. 31 (no. 4); 423-444

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Aim	To fill a gap in the literature by determining the individual and cumulative effects of risk and protective factors on the manifestation of internalizing and externalizing problems among urban, African American, primarily low-income children whose mothers visited a large public hospital.
Country/geographical location	United States
Setting	A large, inner-city, Level 1 trauma centre that provides medical and mental health services to a predominantly low-income, African American population in the South-Eastern United States
Inclusion criteria	Participants were children of women who were in a relationship in the prior 12 months, had a child aged 8 to 12 years old for whom she was the legal guardian and who had lived with her at least 50% of the time during the prior year, and was willing to complete the assessment protocol with her child.

Exclusion criteria	Mothers who did not meet the inclusion criteria or did not complete the protocol
Study methods	Mothers were recruited in the waiting areas of this comprehensive health system or were referred to the project by hospital staff after seeking care following an intimate partner violence (IPV) incident. Once recruited, the screening process had two components First, the interviewer ascertained if the woman met study inclusion criterion. Second, when the women came to complete surveys, the project was explained and informed written consent from the mothers and written assent from the children were secured. Mothers and children were assessed simultaneously by two different trained research team members. All measures were presented orally. There were two outcome measures of internalising and externalising problems in the children, the Child Behavior Checklist and the Youth Self Report. Risk factor measures were dichotomised such that a 1 indicated the presence of the risk factor and 0 indicated the absence of the risk factor. Four of the risk factor constructs were based on mother reports: receipt of food stamps, mother's psychological distress, mother's IPV, and transience. One risk factor construct, children's history of maltreatment, was based on child report. Protective factor measures were dichotomised such that a 1 indicated the presence of the protective factor and 0 indicated its absence.
Confounders	Sex and age
Statistical method(s) used to analyse the data	• Chi square examined the bivariate associations between the risk and protective factors with the outcome measures—internalising and externalising problems. • Bonferroni's adjustment for multiple comparisons was made to prevent Type I errors. • Two parallel multivariable logistic regression analyses were conducted to determine the unique contribution of each of the risk and protective factors in predicting children's internalising and externalising symptoms. • A cumulative risk factor model was also tested, to ascertain if the accumulation of risk factors was associated with greater odds of a child being above the clinical threshold for internalising and externalising problems.
Attrition	152/181 = 16.0% attrition
Study limitations (author)	• Several features of the study design constrained clear interpretation of the results. The cross-sectional design prevented making causal inferences or establishing temporal sequence. Therefore, the assertion that risk and protective factors temporally preceded and played a causal role in the development (or lack thereof) of problems remains speculative. • The set of variables clearly does not completely or coherently capture all factors leading to the development of internalising and externalising problems in children.

	• Dichotomising the risk and protective factor and outcome measures creates disadvantages such as a lack of information about the relative contribution of each risk and protective factor. • Reliance on parent-report data some of the risk and protective factors may have skewed parent perceptions, thereby causing spurious relations between predictor and outcome variables. • This study involved a unique sample of urban, low-income, African American children whose mothers had experienced high rates of IPV; therefore, generalizability is significantly limited to groups with these specific characteristics.
Study limitations (reviewer)	None to add
Source of funding	These data are drawn from a study funded by a grant from the Centers for Disease Control and Prevention/National Center for Injury Prevention and Control (Grant No. R49/CCR419767-0) titled “Domestic Violence and Child Maltreatment in Black Families” that was awarded to the last author.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 152)**
Age (years) Mean (SD)	10 (1.43)
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 68 ; % = 45
Female	n = 84 ; % = 55

Characteristic	Study (N = 152)
Sample size	

Outcomes

Study timepoints

- 10 year (Mean age of children was 10 years (SD: 1.43))

Outcomes

Outcome	Study, 10 year vs 10 year, N = 152
Risk factor for internalising symptoms Measured by the Child Behavior Checklist (CBCL) and the Youth Self Report (YSR), characterised as scores in the borderline or clinical range (parent and self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Cumulative effect of 1 risk factor (compared to cumulative effect of 0 risk factors) Risk factors included: receipt of food stamps, mother's psychological distress, mother's IPV, transience (all parent-reported) and child maltreatment (self-reported), characterised using available or arbitrary cut-off points Odds ratio/95% CI	3.68 (1.64 to 8.25)
Cumulative effect of 2-3 risk factors (compared to cumulative effect of 0 risk factors) Risk factors included: receipt of food stamps, mother's psychological distress, mother's IPV, transience (all parent-reported) and child maltreatment (self-reported), characterised using available or arbitrary cut-off points Odds ratio/95% CI	11.89 (4.14 to 34.19)

Outcome	Study, 10 year vs 10 year, N = 152
Cumulative effect of 1 protective factor (compared to cumulative effect of 0 protective factors) Protective factors included: involvement in after school activities, family functioning, peer support and teacher support, each factor was dichotomised according to its distribution (reporter unclear) Odds ratio/95% CI	0.61 (0.29 to 1.28)
Cumulative effect of 2-3 protective factor (compared to cumulative effect of 0 protective factors) Protective factors included: involvement in after school activities, family functioning, peer support and teacher support, each factor was dichotomised according to its distribution (reporter unclear) Odds ratio/95% CI	0.24 (0.07 to 0.79)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.17 Geoffroy, 2018

Bibliographic Reference	Geoffroy, M.-C.; Boivin, M.; Arseneault, L.; Renaud, J.; Perret, L.C.; Turecki, G.; Michel, G.; Salla, J.; Vitaro, F.; Brendgen, M.; Tremblay, R.E.; Cote, S.M.; Childhood trajectories of peer victimization and prediction of mental health outcomes in midadolescence: a longitudinal population-based study; CMAJ; 2018; vol. 190 (no. 2); e37-e43

Study details

Trial registration number	Not reported
Aim	Aimed to capture, at the population level, differential exposure to peer victimization assessed from 6 to 13 years of age, and predictive associations of such victimization with mental health problems at 15 years, while adjusting for a variety of potential confounders.
Country/geographical location	Canada
Setting	Not reported
Inclusion criteria	Members of the Quebec Longitudinal Study of Child Development, a population-based sample of 2120 individuals born in 1997/98 in the Canadian province of Quebec
Exclusion criteria	Not reported
Study methods	Participants in the Quebec Longitudinal Study of Child Development, a population-based sample of 2120 individuals born in 1997/98 in the Canadian province of Quebec. Participants (at 15 years fo age) completed the Mental Health and Social Inadaptation Assessment, to assess the frequency, in the past 12 months of depression and dysthymia problems, generalized anxiety problems, social anxiety problems, eating problems, oppositional or defiance problems and conduct problems. Peer victimization was assessed through self-rating at ages 6, 7, 8, 10, 12 and 13 years using a modified version of the Self-Report Victimization Scale
Confounders	The model was adjusted for • sex • childhood family hardship (socioeconomic status, family functioning and structure, hostile-reactive parenting, maternal depressive symptoms), • childhood mental health (depression, anxiety, inattention/hyperactivity, oppositional/ defiant behaviour and physical aggression symptoms;) • victimization perpetration.

Statistical method(s) used to analyse the data	• Analysis of variance was used to examine patterns of peer victimization by age and sex using. • Growth mixture models were applied to identify differential exposure to victimization. • A series of models including 1 to 4 trajectory groups based on the maximum available sample (n = 1685) were estimated. • Best fitting model was selected using Bayesian Information Criterion LoMendell- Rubin likelihood ratio test and entropy. • All available potential cofounders, known for associations with victimisation, were controlled for. • Associations were adjusted for sex, family hardship, childhood mental health and victimisation perpetration.
Attrition	1363/2120 = 35.7% attrition
Study limitations (author)	• Mental health outcomes were measured by self-report questionnaires, which do not provide clinical diagnoses. • Peer victimization was also self reported, and may reflect a perception potentially biased by the participant's mental state. • Uncontrolled variables could account for some of the associations. • Given the smaller number of males reporting mental health problems and suicidality, statistical power was low for investigating moderation by sex in the observed associations. • Attrition occurred, and some population subgroups were underrepresented, which potentially resulted in an underestimation of associations with victimisation for the most vulnerable individuals.
Study limitations (reviewer)	Lack of data on setting and exclusion criteria
Source of funding	• Marie-Claude Geoffroy holds a Junior 1 salary award from the Fonds de recherche du Québec en santé (FRQS). • Louise Arseneault is the Mental Health Leadership Fellow for the UK Economic and Social Research Council. • Gustavo Turecki holds a Canada Research Chair (Tier 1) and a National Alliance for Research on Schizophrenia and Depression Distinguished Investigator Award. • The study was conducted with funding from the FRQS through the Quebec Net work on Suicide, Mood Disorders and Related disorders and the Canadian Institutes of Health Research.

Characteristics

Study-level characteristics

Characteristic	Study (N = 1363)
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 642 ; % = 47.1
Female Sample size	n = 721 ; % = 52.9

Outcomes

Study timepoints

- 15 year (Age of children at follow-up)

Outcomes

Outcome	Study, 15 year vs 15 year, N = 1363
Risk factor for depression/dysthymia problem Measured by Social Inadaptation Assessment (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)

Outcome	Study, 15 year vs 15 year, N = 1363
Severe victimisation between 6-13 years (compared to none/low victimisation) Measured using a modified Self-Report Victimization Scale (self-reported) Odds ratio/95% CI	2.34 (1.2 to 4.53)
Severe victimisation between 6-13 years (compared to none/low victimisation) Measured using a modified Self-Report Victimization Scale (self-reported) Odds ratio/95% CI	3.32 (1.75 to 6.3)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.18 Hammar, 2019

Bibliographic Reference	Hammar, E.; Bladh, M.; Agnafors, S.; Mental health and experience of being bullied in 12-year-old children with overweight and obesity; Acta Paediatrica, International Journal of Paediatrics; 2019

Study details

Study design	Cohort studies
Trial registration number	Not reported

Study start date	01-May-1995
Aim	To examine the association between weight status and mental health in 12-year-old children and to investigate the impact of childhood psychosocial risk factors for the development of overweight and obesity at age 12
Country/geographical location	Sweden
Setting	Chid welfare centres
Inclusion criteria	Children of mothers who participated in the part of the South East Sweden Birth Cohort study
Exclusion criteria	Not reported, participants were later excluded at 12 year follow-up if mothers were deceased, the children had moved out of the country or if the children had learning disabilities.
Study methods	Mothers of 1723 children, 88% of all invited mothers, accepted and were enrolled in the South East Sweden Birth Cohort study (SESBiC study). The baseline study was carried out at child welfare centres in connection with the routine 3-month check-up. At the 3-year follow-up, in connection with the routine examination of 3-year-olds at the child welfare centres, mothers were asked to fill out questionnaires. At the 12-year follow-up The parents were asked to fill out a package of questionnaires, which included questions regarding their education level, work situation and whether they were living with the child's other biological parent, and validated psychological instruments. The children were asked to fill out questionnaires regarding their health and well-being. The Life Stress Score (LSS) is a semi-structured interview that was conducted at baseline. A modified 33-item version of Coddington's Life Event Scale (CLES) was answered by the mothers at the 3-year follow-up. At the 12-year follow-up, parents were asked to fill out the Child Behaviour Checklist/4-18 (CBCL) and children were asked to answer the Strength and Difficulties Questionnaire (SDQ). In the overarching SESBiC study, the teachers reported on child behaviour using the Teacher's Report Form (TRF), evaluating child behaviour problems in the school setting.
Confounders	Regression models adjusted for all variables, including: • Gender • Parents born outside Scandinavia • Mother smoking during pregnancy • Divorced parents at aged 3 • Divorced parents at aged 12

	• Multiple life events at age 3 • Maternal unemployment at age 3 • Maternal unemployment at age 12 • Maternal education level at age 12 • Overweight or obesity at age 12
Statistical method(s) used to analyse the data	• Bivariate and multiple logistic regression analyses were performed. • Pearson's chi square test was used for statistical analyses of categorised data, unless the count was less than 5 when Fischer's exact test was used. • Statistical significance was defined as (two-sided) P≤ .05. • Results were presented with corresponding odds ratio (OR) and 95% confidence intervals (CI).
Attrition	573/1723 = 66.7% attrition
Study limitations (author)	• The use of cross-sectional data when it comes to the association between mental health problems and overweight and obesity in 12-year-old girls prevents conclusions about causality. • The relatively small sample size resulting in small sub-groups in multivariate analysis. This causes the power to be low.
Study limitations (reviewer)	Lack of detail regarding exclusion criteria
Source of funding	The SESBiC study was financially supported by the Swedish Research Council for Health, Working Life and Welfare (FORTE), the Swedish Research Council (VR) and Skandia Research.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 573)**
Gender	n = NR ; % = NR

Characteristic	Study (N = 573)
Sample size	
Male Sample size	n = 283 ; % = 49.4
Female Sample size	n = 290 ; % = 50.6

Outcomes

Study timepoints

- 12 year (Children were 12 years old at follow-up)

Outcomes

Outcome	Study, 12 year vs 12 year, N = 573
Risk factor for internalising problems Measured by the Child Behaviour Checklist: internalising problems sub-scale, characterised as scores ≥90th percentile (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Female gender (compared to male gender) Odds ratio/95% CI	1.1 (0.53 to 2.28)

Outcome	Study, 12 year vs 12 year, N = 573
Parents born outside Scandinavia at age 3 (compared to parents born inside Scandinavia) Measured by questionnaire (parent-reported) Odds ratio/95% CI	0.85 (0.21 to 3.46)
Mother smoking durnig pregnancy (compared to mother not smoking) Information obtained from the Medical birth register, classified as yes or no Odds ratio/95% CI	0.67 (0.23 to 1.94)
Divorced parents at age 3 (compared to parents not divorced) Measured by Coddington's Life Event Scale (CLES) Odds ratio/95% CI	1.12 (0.31 to 4.1)
Multiple life events at age 3 (compared to absence of multiple life events) Measured by Coddington's Life Event Scale (CLES), cut-off of 8 events used (90th percentile) (definitions of 'life events' not reported) (parent-reported) Odds ratio/95% CI	2.39 (0.71 to 8.05)
Maternal unemployment at age 3 (compared to maternal employment) Measured by questionnaire (parent-reported) Odds ratio/95% CI	2.76 (1.03 to 7.41)
Risk factor for emotional problems Measured by the Strengths and Difficulties Questionnaire: emotional symptoms sub-scale, characterised as scores ≥90th percentile (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Female gender (compared to male gender)	5.91 (2.25 to 15.57)

Outcome	Study, 12 year vs 12 year, N = 573
Odds ratio/95% CI	
Parents born outside Scandinavia at age 3 (compared to parents born inside Scandinavia) Measured by questionnaire (parent-reported) Odds ratio/95% CI	NR (NR to NR)
Mother smoking durnig pregnancy (compared to mother not smoking) Information obtained from the Medical birth register, classified as yes or no Odds ratio/95% CI	4.33 (1.78 to 10.52)
Divorced parents at age 3 (compared to parents not divorced) Measured by Coddington's Life Event Scale (CLES) Odds ratio/95% CI	2.22 (0.59 to 8.46)
Multiple life events at age 3 (compared to absence of multiple life events) Measured by Coddington's Life Event Scale (CLES), cut-off of 8 events used (90th percentile) (definitions of 'life events' not reported) (parent-reported) Odds ratio/95% CI	4.82 (1.24 to 18.67)
Maternal unemployment at age 3 (compared to maternal employment) Measured by questionnaire (parent-reported) Odds ratio/95% CI	0.22 (0.02 to 2.08)
Risk factor for social problems Measured by the Strengths and Difficulties Questionnaire: prosocial behaviour sub-scale, characterised as scores ≤10th percentile (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)

Outcome	Study, 12 year vs 12 year, N = 573
Female gender (compared to male gender) Odds ratio/95% CI	0.13 (0.04 to 0.38)
Parents born outside Scandinavia at age 3 (compared to parents born inside Scandinavia) Measured by questionnaire (parent-reported) Odds ratio/95% CI	1.35 (0.32 to 5.62)
Mother smoking durnig pregnancy (compared to mother not smoking) Information obtained from the Medical birth register, classified as yes or no Odds ratio/95% CI	1.24 (0.44 to 3.44)
Divorced parents at age 3 (compared to parents not divorced) Measured by Coddington's Life Event Scale (CLES) Odds ratio/95% CI	1.24 (0.34 to 4.61)
Multiple life events at age 3 (compared to absence of multiple life events) Measured by Coddington's Life Event Scale (CLES), cut-off of 8 events used (90th percentile) (definitions of 'life events' not reported) (parent-reported) Odds ratio/95% CI	1.64 (0.42 to 6.51)
Maternal unemployment at age 3 (compared to maternal employment) Measured by questionnaire (parent-reported) Odds ratio/95% CI	1.14 (0.34 to 3.8)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.19 Hesketh, 2004

Bibliographic Reference	Hesketh, K; Wake, M; Waters, E; Body mass index and parent-reported self-esteem in elementary school children: evidence for a causal relationship.; International journal of obesity and related metabolic disorders : journal of the International Association for the Study of Obesity; 2004; vol. 28 (no. 10); 1233-7

Study details

Study design	Prospective cohort study
Trial registration number	Not reported
Study start date	Sep-1997
Study end date	Jun-2001
Aim	To assess whether heavier children consistently experience poorer self-esteem when tracked over 3 years, from the early to late elementary school years
Country/geographical location	Australia
Setting	Not reported
Inclusion criteria	Participants in the Health of Young Victorians Study (HOYVS)
Exclusion criteria	Not reported (children with incomplete data were excluded from analyses at follow-up)

Study methods	Participants were recruited from the the Health of Young Victorians Study (HOYVS), a large epidemiologic study of Australian children's health, well-being and anthropometry conducted between September and December 1997. 24 elementary schools were randomly selected to be representative of Victoria's government, Catholic, and independent school sectors. The time interval between baseline and follow-up assessments ranged from 3.0 to 3.7 y (mean 3.2 y, s.d. 0.2 y). Children's height and weight were measured by trained field workers. Parents completed the self-esteem scale from the Australian authorised adaptation of the Child Health Questionnaire (CHQ PF50).
Confounders	Not reported
Statistical method(s) used to analyse the data	• Characteristics of children retained and lost to follow-up were compared using independent sample t-test, Mann–Whitney two-sample test, or Chi-square statistic as appropriate. • Wilcoxon matched pairs sign-rank test were used to compare baseline and follow-up self-esteem scores. • Gender differences in self-esteem scores were assessed by the Mann–Whitney two-sample test, and differences by age group. • BMI category were assessed by the Kruskal–Wallis rank test. • Chi-square statistic was used to compare proportions of children with low self-esteem scores across BMI categories. • The independent samples t-test was used to compare mean BMI z-score at follow-up was between children with low and non-low self-esteem scores. • Logistic regression analyses assessed the odds of being overweight/obese at follow-up for children with low self-esteem scores at baseline.
Attrition	1157/2336 = 50.5% attrition
Study limitations (author)	• Parent-proxy reports of children's self-esteem may under-report the true impact on the emotional well-being of younger children. • Self-esteem measure used in this study has not been validated against other specific measures of child self-esteem. • Loss to follow-up of a larger proportion of overweight and obese children may have reduced the power of the study to identify relationships with overweight and obesity.

Study limitations (reviewer)	Lack of detail regarding exclusion criteria
Source of funding	• This study was supported by grants from the National Heart Foundation, Financial Markets for Children, and Murdoch Children's Research Institute. • K Hesketh is supported by a National Health and Medical Research Council Public Health Post graduate Scholarship.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 1157)**
Gender Characteristics at follow-up Sample size	n = NR ; % = NR
Male Sample size	n = 567 ; % = 49
Female Sample size	n = 590 ; % = 51

Outcomes

Study timepoints

- 10.8 year (Mean age of children at follow-up)

Outcomes

Outcome	Study, 10.8 year vs 10.8 year, N = 1157
Risk factor for low self-esteem Measured by Child Health Questionnaire (CHQ PF50) self-esteem scale, characterised as scores below the 15th percentile (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Child overweight or obese at mean age 7.6 years (compared to non-overweight) Categorised by Obesity Task Force's gender and age-specific BMI cut-off points (height and weight to calculate BMI measured by trained field workers) Odds ratio/95% CI	1.8 (1.2 to 2.6)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.20 Hoare, 2016

Bibliographic Reference	Hoare, Erin; Millar, Lynne; Fuller-Tyszkiewicz, Matthew; Skouteris, Helen; Nichols, Melanie; Malakellis, Mary; Swinburn, Boyd; Allender, Steven; Depressive symptomatology, weight status and obesogenic risk among Australian adolescents: a prospective cohort study.; BMJ open; 2016; vol. 6 (no. 3); e010072

Study details

Study design	Prospective cohort study
Trial registration number	ACTRN12615000842561
Study start date	May-2012
Study end date	May-2014
Aim	• To re-examine cross-sectional associations at follow-up as an extension of the baseline findings • To evaluate longitudinal associations between depressive symptomatology at follow-up, and changes in obesogenic risk behaviours and weight status over the 2-year
Country/geographical location	Australia
Setting	Secondary school
Inclusion criteria	Students in years 7 and 8 from schools selected to participate by the Australian Capital Territory (ACT) Health Directorate.
Exclusion criteria	No exclusion criteria were set
Study methods	The Australian Capital Territory (ACT) It's Your Move! (IYM) was an intervention study aimed at preventing obesity through comprehensive school-based and community-based approaches to facilitating healthier lifestyles. The data for the evaluation of the ACT IYM were collected in May 2012 at baseline, and follow-up in May 2014. To examine the ACT IYM intervention effect, a regression analysis was run with SMFQ scores as the outcome and the interaction between wave of data collection and study condition as the predictor plus relevant covariates. The interaction was found to be non-significant so the intervention and comparison groups have been combined in the current study. Schools were selected and invited to participate by the ACT Health Directorate. All six participating schools were government schools. Students in years 7 and 8 were invited to participate in baseline measures and no exclusion criteria were set. Depressive symptomatology was measured by the SMFQ, which contained 13 self-report items aimed at rapidly assessing depressive symptomatology for children and adolescents. The Adolescent Behaviours, Attitudes and

	Knowledge Questionnaire (ABAKQ) contained self-report questions about physical activity, sedentary and dietary behaviours.
Confounders	School attended, age, and parent's level of education.
Statistical method(s) used to analyse the data	• All variables were checked for missing data. • Little's Missing Completely at test Random was used to determine that data were missing completely at random and case-wise deletion was used where relevant. • Histograms and calculations of skew and kurtosis values were used to check continuous variables for normality. • Demographic data were analysed using descriptive statistics. Independent sample Student t tests or Pearson's test were used to identify any significant differences between males and females at baseline. • Changes in proportions from baseline to follow-up were tested for significance for within group (baseline to follow-up) Newcombe's paired differences. • Cross-sectional analysis: ORs were calculated for the association between each independent variable (IV) and the dependent variable; depressive symptomatology using a sequential multiple logistic regression with a forward stepwise approach. • Longitudinal analysis: Separate multivariate regression models for males and females were completed on the outcome variable depressive symptomatology at follow up with several predictor variables.
Attrition	Three quarters (74.5%) participated in follow-up data collection; = 25.5% attrition
Study limitations (author)	• The underlying study was a quasi-experimental design, and intervention and comparison groups were combined in this current study. • The main variables of interest were based on self-report responses and this may have resulted in numerous biases. • A daily average of time spent using screen time for leisure was estimated based on responses to questions for weekdays and Saturday and Sunday. It is expected this variable may have provided a more comprehensive indication of activity, compared with the items used to categorise physical activity.

	• There was a large non-participation rate at baseline (52% response rate). Adolescents experiencing mental or physical health conditions may have been less inclined to participate in this study due to physical or emotional symptoms associated with their condition and therefore may have been under-represented. • Factors beyond lifestyle behaviours and weight status may have contributed to depressive symptomatology. The full range of potential influences were not measured in the current study and therefore not controlled for in analyses.
Study limitations (reviewer)	None to add
Source of funding	• The study was funded by the Australian Capital Territory Government. • Steven Allender is supported by funding from an Australian National Health and Medical Research Council/Australian National Heart Foundation Career Development Fellowship (APP1045836). He is supported by US National Institutes of Health grant titled Systems Science to Guide Whole-of-Community Childhood Obesity Interventions (1R01HL115485–01A1). • Steven Allender and Lynne Millar are researchers within a National Health and Medical Research Council Centre for Research Excellence in Obesity Policy and Food Systems (APP1041020). • Lynne Millar is supported by an Alfred Deakin Postdoctoral Fellowship.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 634)**
Age (years) Characteristic measured at follow-up Mean (SD)	15.1 (0.6)
Gender Characteristic measured at follow-up	n = NR ; % = NR

Characteristic	Study (N = 634)
Sample size	
Male Sample size	n = 296 ; % = 47
Female Sample size	n = 338 ; % = 53
Ethnicity Characteristic measured at follow-up (total per cent may not add to 100 due to rounding) Sample size	n = NR ; % = NR
European-Australian Sample size	n = 434 ; % = 68.5
Other Sample size	n = 200 ; % = 31.6

Outcomes

Study timepoints

- 15.1 year (Mean age of children at follow-up was 15.1 years (SD: 0.6))

Outcomes

Outcome	Study, 15.1 year vs 15.1 year, N = 634
Risk factor for depressive symptoms: Boys Measured by Short Mood and Feelings Questionnaire (SMFQ), characterised as score ≥10 (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Moderate / high physical activity (compared to low physical activity / inactive) Measured by relevant questions from the Adolescent Behaviours, Attitudes and Knowledge Questionnaire (ABAKQ), characterised as students that played active games at least once during last school day and participated in sport, dance or active games (self-reported) Odds ratio/95% CI	0.35 (0.14 to 0.86)
Risk factor for depressive symptoms: Girls Measured by Short Mood and Feelings Questionnaire (SMFQ), characterised as score ≥10 (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Moderate / high physical activity (compared to low physical activity / inactive) Measured by relevant questions from the Adolescent Behaviours, Attitudes and Knowledge Questionnaire (ABAKQ), characterised as students that played active games at least once during last school day and participated in sport, dance or active games (self-reported) Odds ratio/95% CI	1.48 (0.9 to 2.46)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.21 Houtepen, 2020

Bibliographic Reference	Houtepen, Lotte C; Heron, Jon; Suderman, Matthew J; Fraser, Abigail; Chittleborough, Catherine R; Howe, Laura D; Associations of adverse childhood experiences with educational attainment and adolescent health and the role of family and socioeconomic factors: a prospective cohort study in the UK; PLoS medicine; 2020; vol. 17 (no. 3); e1003031

Study details

Study design	Prospective cohort study
Trial registration number	Not reported
Aim	To examine the associations of ACEs from 0 to 16 years with educational attainment at 16 years (end of compulsory education) and markers of adolescent health and health-related behaviours assessed at age 17 years (depression, obesity, harmful alcohol use, smoking, and illicit drug use).
Country/geographical location	United Kingdom
Setting	Avon UK
Inclusion criteria	Children of pregnant women recruited to the Avon Longitudinal Study of Parents and Children
Exclusion criteria	• Children with data on fewer than 10% of the ACE questions across all time points • One child from within each twin pair at random
Study methods	Participants were from the Avon Longitudinal Study of Parents and Children (ALSPAC), which is prospective, population-based birth cohort study. The mothers, their partners, and the child were followed up using clinics, questionnaires, and links to routine data. ACEs were reported by both participants themselves and their mothers at multiple time points primarily through questionnaires. Dichotomous constructs indicating exposure to adversities between birth and 16 years were created for the 10 ACEs that are included in the World Health Organization ACE international questionnaire. Mental health were assessed using self-administered computer-assisted interviews. Depression status was based on the clinical

	interview schedule—revised (CIS-R), defined as meeting the depression diagnosis criteria of the international classification of diseases, 10th revision.
Confounders	Mother's home ownership status during pregnancy (mortgaged/owned/council rented/furnished private rental/unfurnished private rental/housing authority rented/other), mother and partner's highest educational qualification (CSE/vocational/O-level/A-level/degree), household social class (highest of mother and partner social class according to the Registrar General's Social Classes: profes sional/ managerial and technical/skilled nonmanual/partly skilled/unskilled), parity, maternal report of child's ethnicity (white/nonwhite), mother's age at delivery (in years), mother's mari tal status during pregnancy (never married/widowed/divorced/separated/first marriage/mar riage 2 or 3), mother's depression score (EPDS) at 18 and 32 weeks gestation, and mother's partner depression score (EPDS) at 18 weeks gestation.
Statistical method(s) used to analyse the data	• Binary logistic regression models for all binary outcomes and linear regression for the continuous outcomes of GCSE point score and BMI. • Associations of each separate ACE and an ACE score (categorised to give comparability with previous studies) with each outcome were assessed in an unadjusted model and a basic model as well as a fully adjusted model. • The individual ACEs are analysed separately in order to provide detail on whether certain ACEs are driving any associations of the ACE score or whether the patterns of associations differ across types of ACEs. • For the imputed data, the logistic regression results and numerators and denominators for descriptive analyses were obtained by averaging across the results from each of the 90 imputed data sets using Rubin's rules. • As a sensitivity analysis, the authors replicated these analyses in people with 'complete' data, i.e., participants who responded to more than 50% of the questionnaire items for all ACEs and who had data. on the outcomes.
Attrition	4917/11935 = 58.8% attrition
Study limitations (author)	• Using data from multiple questionnaires across a long period of time resulted in a high proportion of missing data, and the analyses assume data are missing at random. • Loss to follow-up meant that the sample size available for health outcomes (measured at a clinic at age 17 years) was much smaller than that available for education (assessed through linkage to routine data). • Loss to follow-up could potentially bias associations of ACEs with adverse outcomes towards the null.
Study limitations (reviewer)	None to add
Source of funding	This work was supported by a grant from the UK Economic and Social Research Council (ES/N000382/1).

	The UK Medical Research Council and the Wellcome Trust (grant ref: 102215/2/13/2) and the University of Bristol provide core support for ALSPAC.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 4917)**
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 2454 ; % = 49.9
Female Sample size	n = 2463 ; % = 50.1

Outcomes

Study timepoints

- 17 year (Outcomes were measured when children were 17 years old)

Outcomes

Outcome	Study, 17 year vs 17 year, N = 4917
Risk factors for depression Measured by the clinical interview schedule—revised (CIS-R), defined as meeting the depression diagnosis criteria of the international classification of diseases, 10th revision (self-reported) Odds ratio/95% CI	NR (NR to NR)
Exposure to 4+ ACEs between 0-16 years (compared to experiencing no ACEs) Classified as the 10 ACEs that are included in the World Health Organization ACE international questionnaire (Self- and parent-reported) Odds ratio/95% CI	2.43 (1.57 to 3.77)
Exposure to physical abuse between 0-16 years (compared to experiencing no physical abuse) Classified as an ACE that is included in the World Health Organization ACE international questionnaire (Self- and parent-reported) Odds ratio/95% CI	1.85 (1.41 to 2.43)
Exposure to emotional neglect between 0-16 years (compared to experiencing no emotional neglect) Classified as an ACE that is included in the World Health Organization ACE international questionnaire (Self- and parent-reported) Odds ratio/95% CI	1.14 (0.86 to 1.52)
Exposure to bullying on a weekly basis between 0-16 years (compared to experiencing no bullying on a weekly basis) Classified as an ACE that is included in the World Health Organization ACE international questionnaire (Self- and parent-reported) Odds ratio/95% CI	1.55 (1.21 to 1.98)
Exposure to violence between parents between 0-16 years (compared to experiencing no violence between parents)	0.85 (0.6 to 1.2)

Outcome	Study, 17 year vs 17 year, N = 4917
Classified as an ACE that is included in the World Health Organization ACE international questionnaire (Self- and parent-reported) Odds ratio/95% CI	
Exposure to parental substance use between 0-16 years (compared to experiencing no parental substance use) Classified as an ACE that is included in the World Health Organization ACE international questionnaire (Self- and parent-reported) Odds ratio/95% CI	0.96 (0.64 to 1.42)
Exposure to parent convicted on an offence between 0-16 years (compared to experiencing no parental conviction) Classified as an ACE that is included in the World Health Organization ACE international questionnaire (Self- and parent-reported) Odds ratio/95% CI	1.18 (0.77 to 1.81)
Exposure to parental separation between 0-16 years (compared to experiencing no parental separation) Classified as an ACE that is included in the World Health Organization ACE international questionnaire (Self- and parent-reported) Odds ratio/95% CI	1.28 (0.96 to 1.71)
Exposure to parental mental health problems or suicide between 0-16 years (compared to experiencing no parental mental health problems or suicide) Classified as an ACE that is included in the World Health Organization ACE international questionnaire (Self- and parent-reported) Odds ratio/95% CI	1.44 (1.1 to 1.89)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Low

D.22 Hrafnkelsdottir, 2018

Bibliographic Reference	Hrafnkelsdottir, Soffia M; Brychta, Robert J; Rognvaldsdottir, Vaka; Gestsdottir, Sunna; Chen, Kong Y; Johannsson, Erlingur; Gumundsdottir, Sigridur L; Arngrimsson, Sigurbjorn A; Less screen time and more frequent vigorous physical activity is associated with lower risk of reporting negative mental health symptoms among Icelandic adolescents.; PLoS ONE; 2018; vol. 13 (no. 4)

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Study start date	Apr-2015
Study end date	Jun-2015
Aim	To examine both the separate and interactive associations of screen time and physical activity with self-reported mental health in Icelandic adolescents
Country/geographical location	Iceland
Setting	Elementary school
Inclusion criteria	Eleven tenth-grade students from six elementary schools in metropolitan Reykjavik, Iceland
Exclusion criteria	Not reported

Study methods	Data collection was performed between mid-April and early June of 2015. Participants provided information regarding their background, health and lifestyle by answering a tablet-based questionnaire (in Icelandic) administered at school. The questionnaire addressed age, sex, maternal education (as a proxy for socioeconomic status), participation in screen-based activities, weekly frequency of vigorous physical activity, symptoms of mental health problems (depression, anxiety and somatic complaints), self-esteem and life satisfaction. Objective measurements of free-living physical activity, weight, height and body composition were also performed.
Confounders	Sex, body fat percentage and maternal education
Statistical method(s) used to analyse the data	• Descriptive summaries were presented as means and standard deviations for continuous variables and as frequencies and percentages for categorical variables. • Sex differences were evaluated by t-tests for continuous variables and chi-square tests for categorical variables. • Pearson`s correlational analysis was used to evaluate relationships between the main variables of interest. • Poisson regression analysis was performed to calculate the relative risk (RR) and 95% confidence intervals (CIs).
Attrition	244/319 = 23.5% attrition
Study limitations (author)	• The cross-sectional study design does not allow us to determine causal relationships between the study variables. • The self-report of screen time and vigorous physical activity which is subject to recall and reporting biases. • The questionnaire-based assessment of mental health used is not equivalent to clinical diagnosis. • Cannot rule out the possibility of selection bias.
Study limitations (reviewer)	Lack of data on exclusion criteria
Source of funding	The Icelandic Centre for Research (RANNIS) and the University of Iceland Research Fund

Characteristics

Study-level characteristics

Characteristic	**Study (N = 244)**
Gender	n = NR ; % = NR

Characteristic	Study (N = 244)
Sample size	
Male Sample size	n = 100 ; % = 41
Female Sample size	n = 144 ; % = 59

Outcomes

Study timepoints

- 15.8 year (Mean age of children)

Outcomes

Outcome	Study, 15.8 year vs 15.8 year, N = 244
Risk factor for depressive symptoms Measured by Symptom Checklist 90 (SCL-90): depression sub-scale (cut-off ≥30 points) (self-reported) Relative risk/95% CI	NR (*empty data* to *empty data*)
Vigorous physical activity ≥4 times/week (compared to vigorous physical activity <4 times/week) Measured subjectively using a six-point Likert scale (self-reported) Relative risk/95% CI	0.31 (0.14 to 0.71)

Outcome	Study, 15.8 year vs 15.8 year, N = 244
Total physical activity above group median (compared to total physical activity below group median) Measured objectively using Actigraph activity monitors (device-reported) Relative risk/95% CI	1.24 (0.6 to 2.56)
Risk factor for anxiety symptoms Measured by Symptom Checklist 90 (SCL-90): anxiety sub-scale (cut-off ≥12 points) (self-reported) Relative risk/95% CI	NR (*empty data* to *empty data*)
Vigorous physical activity ≥4 times/week (compared to vigorous physical activity <4 times/week) Measured subjectively using a six-point Likert scale (self-reported) Relative risk/95% CI	0.35 (0.18 to 0.67)
Total physical activity above group median (compared to total physical activity below group median) Measured objectively using Actigraph activity monitors (device-reported) Relative risk/95% CI	1.38 (0.74 to 2.54)
Risk factor for low self-esteem Measured by the Rosenberg Self-Esteem Scale (cut-off <15 points) (self-reported) Relative risk/95% CI	NR (*empty data* to *empty data*)
Vigorous physical activity ≥4 times/week (compared to vigorous physical activity <4 times/week) Measured subjectively using a six-point Likert scale (self-reported) Relative risk/95% CI	0.48 (0.26 to 0.9)

Outcome	Study, 15.8 year vs 15.8 year, N = 244
Total physical activity above group median (compared to total physical activity below group median) Measured objectively using Actigraph activity monitors (device-reported) Relative risk/95% CI	0.64 (0.35 to 1.19)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.23 Hunt, 2017

Bibliographic Reference	Hunt, Tenah KA; Slack, Kristen S; Berger, Lawrence M; Adverse childhood experiences and behavioral problems in middle childhood; Child abuse & neglect; 2017; vol. 67; 391-402

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Aim	• To examine clinical levels of behavioural problems and ADHD diagnosis to provide some indication as to whether early ACE exposure is associated with both the number of behavioural problems children.

	• To examine differences in susceptibility to ACE exposure across groups of race, gender, and maternal education. • To examine whether the ACE-specific categories or cumulative exposure to ACEs is more strongly associated with worse behavioural problems in middle childhood.
Country/geographical location	United States
Setting	Home-based
Inclusion criteria	Children included in the Fragile Families and Child Well being Study (FFCW)
Exclusion criteria	Cases with imputed dependent variables were excluded from the analyses
Study methods	Data were drawn from the Fragile Families and Child Well being Study (FFCW). The FFCW is a population-based, longitudinal birth cohort of 4,898 children born in large U.S. cities between 1998 and 2000. FFCW staff conducted interviews in hospitals with eligible families within 24 hours of the focal child's birth. Follow-up interviews were administered to parents by telephone when the child was approximately 1, 3, 5, and 9 years old. Families were also asked to participate in an in-home interview at the 3, 5, and 9 interviews to assess parental behaviors, mother-child interactions, and the quality of the child's home environment.
Confounders	Regression analyses accounted for the following • maternal factors (race/ethnicity (non-Hispanic White, non-Hispanic Black, Hispanic), maternal education (less than a high school degree, a high school degree or GED, more than a high school education), maternal marital status (married, cohabitating, single), maternal age at focal child's birth, number of children the mother has given birth to, whether the focal child was the mother's first birth, prenatal drug or alcohol use) • child factors (gender, whether the child was of low birth weight) • Familial (whether the focal child's grandmother was living in the household, the number of children and adults in the household, and family income)
Statistical method(s) used to analyse the data	• Descriptive analyses document the prevalence of ACEs and study outcomes for the full sample as well as their variation across, race/ethnicity, gender, and maternal education. • Ordinary least squares linear and logistic regressions were used to investigate various components of the associations between ACEs and child behavioural outcomes.

	• Regression models were used to assess whether there was a positive association between the amount of adverse exposures experienced by age 5 and behavioural outcomes reported at age 9 whether there were differential associations of ACE exposure and child behavioural outcomes across racial, gender, and maternal education subgroups. • The statistical equivalence of the coefficients for each variable across equations was tested in each regression. • The individual contributions of each ACE category in predicting behavioural outcomes were investigated.
Attrition	Children with completed data on internalising behaviours: 3043/4898 = 37.9% attrition
Study limitations (author)	• Behavioural problems may be caused by unmeasured characteristics of the children or their environment. • It is possible that there were adversities predictive of behavioural outcomes that were not included in the analyses. • The household ACE categories largely represent the child's parental characteristics for our study rather than the characteristics of all adult household members. • Child maltreatment measures only assessed behaviours conducted by the mother. • Prevalence of ACE exposure in this study may be underestimated. • It is possible that mothers exposed to higher number of risks experience more stress and thus perceive and report their child's behaviour to be more negative than it truly is. • It is possible that mothers influenced by social desirability bias would be motivated to underreport the prevalence of ACEs.
Study limitations (reviewer)	None to add
Source of funding	• The Fragile Families and Child Wellbeing Study is funded by National Institute of Child Health and Human Development (NICHD) Grants R01HD36916, R01HD39135, and R01HD40421, as well as a consortium of private foundations and other government agencies. • This research was supported by funding from the Institute for Research on Poverty at the University of Wisconsin—Madison.

Characteristics

Study-level characteristics

Characteristic	Study (N = 3043)
Gender Characteristics at age 9 years (follow-up) Sample size	n = NR ; % = NR
Male Sample size	n = 1582 ; % = 52
Female Sample size	n = 1461 ; % = 48
Ethnicity Characteristics at age 9 years (follow-up) Sample size	n = NR ; % = NR
White Sample size	n = 639 ; % = 21
Black Sample size	n = 1522 ; % = 50
Other Sample size	n = 122 ; % = 4

Outcomes

Study timepoints

- 9 year (Age of children at final follow-up)

Outcomes

Outcome	Study, 9 year vs 9 year, N = 3043
Risk factor for internalising problems Measured by Child Behavior Checklist, characterised as T-score ≥65 (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
1 Adverse Childhood Experience between birth and age 5 (compared to 0 Adverse Childhood Experiences) Includes emotional neglect, physical neglect, emotional abuse, physical abuse, and parental domestic violence, anxiety or depression, substance abuse, or incarceration (parent-reported) Odds ratio/95% CI	1.26 (0.76 to 2.08)
2 Adverse Childhood Experiences between birth and age 5 (compared to 0 Adverse Childhood Experiences) Includes emotional neglect, physical neglect, emotional abuse, physical abuse, and parental domestic violence, anxiety or depression, substance abuse, or incarceration (parent-reported) Odds ratio/95% CI	2.07 (1.27 to 3.39)
3 Adverse Childhood Experiences between birth and age 5 (compared to 0 Adverse Childhood Experiences) Includes emotional neglect, physical neglect, emotional abuse, physical abuse, and parental domestic violence, anxiety or depression, substance abuse, or incarceration (parent-reported) Odds ratio/95% CI	3.09 (1.85 to 5.17)

Outcome	Study, 9 year vs 9 year, N = 3043
4+ Adverse Childhood Experiences between birth and age 5 (compared to 0 Adverse Childhood Experiences) Includes emotional neglect, physical neglect, emotional abuse, physical abuse, and parental domestic violence, anxiety or depression, substance abuse, or incarceration (parent-reported) Odds ratio/95% CI	3.76 (2.26 to 6.27)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.24 Jansen, 2013

Bibliographic Reference Jansen, Pauline W; Mensah, Fiona K; Clifford, Susan A; Tiemeier, Henning; Nicholson, Jan M; Wake, Melissa; Development of mental health problems and overweight between ages 4 and 11 years: a population-based longitudinal study of Australian children.; Academic pediatrics; 2013; vol. 13 (no. 2); 159-67

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study start date	2004

Study end date	2010
Aim	• To determine timing and strength of associations between mental health and BMI at multiple time points spanning the entire preschool and primary school period from 4 to 11 years. • To investigate the longitudinal associations between cumulative burden of mental health problems and future overweight, and the reverse.
Country/geographical location	Australia
Setting	Not reported
Inclusion criteria	Children included in waves 1 to 4 of the Longitudinal Study of Australian Children (LSAC)
Exclusion criteria	Not reported
Study methods	Participants were included in the population-based Longitudinal Study of Australian Children. Analyses were conducted on children still participating in wave 4 and for whom BMI and parent-reported child mental health data were available for all 4 waves (n = 3197, 64% of the original cohort). Teacher reports on child mental health at all 4 waves were available for 2644 children (53% of the original cohort).
Confounders	Study adjusted for the following • child sex, • indigenous status • main language other than English is spoken at home • parent-reported education, • Parent occupational level, • family income • maternal psychological distress as a proxy for children's stress exposure
Statistical method(s) used to analyse the data	• In longitudinal analyses, tests of interaction between child age and SDQ Total and subscales were used to assess age trends in these associations.

	• Two sets of analyses were conducted to examine the effect of cumulative burden of mental health problems and overweight.
Attrition	4169/4983 = 16.3% attrition (Only 3197 children were included in the analysis of cumulative burden of overweight as a predictor for mental health)
Study limitations (author)	• Data were more often missing in socioeconomically disadvantaged families, which may cause underrepresentation and selective loss to follow-up. • In the calculation of trends across ages, it was not possible to simultaneously account for a complex survey design and correlations arising from repeated measurements within the same participants. • Associations for boys and girls separately was not examined; because gender differences in mental health mainly seem to emerge from adolescence onward.
Study limitations (reviewer)	Lack of data on setting and exclusion data
Source of funding	• Pauline Jansen was supported by a Rubicon grant (446-11-010) from the Netherlands Organisation for Scientific Research (NWO) and the Marie Cofund Action. She also received a stipend from the Ter Meulen Fund of the Royal Netherlands Academy of Arts and Sciences (KNAW). Melissa Wake was supported by NHMRC Population Health Career Development awards (284556 and 546405) • Fiona Mensah was supported by a NHMRC Public Health Capacity Building (436914). • All research at the Murdoch Children's Research Institute is supported by the Victorian government's Operational Infrastructure Program. • This work received support from the "Parenting Australia's Children" research group at the Parenting Research Centre.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 3197)**
Age (years) Characteristics at Wave 4 (final follow-up) when children were aged 10-11 years Sample size	n = NR ; % = NR
10 years Sample size	n = 2132 ; % = 66.7
11 years Sample size	n = 1065 ; % = 33.3
Gender Characteristics at Wave 4 (final follow-up) when children were aged 10-11 years Sample size	n = NR ; % = NR
Male Sample size	n = 1621 ; % = 50.7
Female Sample size	n = 1576 ; % = 49.3
Ethnicity Reported as indigenous status, characteristics at Wave 4 (final follow-up) when children were aged 10-11 years Sample size	n = NR ; % = NR

Characteristic	Study (N = 3197)
Non-indigenous Sample size	n = 3107 ; % = 97.2
Indigenous Sample size	n = 90 ; % = 2.8
Socioeconomic status Reported as first (most advantaged) and fifth (most disadvantaged) quintiles, middle 3 quintiles not reported, characteristics at Wave 4 (final follow-up) when children were aged 10-11 years Sample size	n = NR ; % = NR
First quintile Most advantaged Sample size	n = 691 ; % = 21.6
Fifth quintile Most disadvantaged Sample size	n = 575 ; % = 18

Outcomes

Study timepoints

- 10 year (Children aged 10-11 years at final follow-up. 66.7% of children were aged 10 years, 33.3% were aged 11 years.)

Outcomes

Outcome	Study, 10 year vs 10 year, N = 3197
Risk factor for emotional problems Measured by the Strengths and Difficulties Questionnaire (SDQ), characterised as scores within the borderline (80th-90th percentile) or abnormal (≥90th percentile) (parent and teacher-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Overweight at 1 out of 4 timepoints between ages 3-4 and 10-11 years inclusive (compared to not overweight at any timepoint) Measured using BMI, scores dichotomised to normal weight (including underweight) and overweight (including obesity): measured by interviewer Odds ratio/95% CI	1.41 (1.03 to 1.94)
Overweight at 2 out of 4 timepoints between ages 3-4 and 10-11 years inclusive (compared to not overweight at any timepoint) Measured using BMI, scores dichotomised to normal weight (including underweight) and overweight (including obesity): measured by interviewer Odds ratio/95% CI	1.41 (1.04 to 1.92)
Overweight at 3 out of 4 timepoints between ages 3-4 and 10-11 years inclusive (compared to not overweight at any timepoint) Measured using BMI, scores dichotomised to normal weight (including underweight) and overweight (including obesity): measured by interviewer Odds ratio/95% CI	1.42 (0.94 to 2.14)
Overweight at 4 out of 4 timepoints between ages 3-4 and 10-11 years inclusive (compared to not overweight at any timepoint) Measured using BMI, scores dichotomised to normal weight (including underweight) and overweight (including obesity): measured by interviewer	1.33 (0.94 to 1.87)

Outcome	Study, 10 year vs 10 year, N = 3197
Odds ratio/95% CI	
Risk factor for peer problems Measured by the Strengths and Difficulties Questionnaire (SDQ), characterised as scores within the borderline (80th-90th percentile) or abnormal (≥90th percentile) (parent and teacher-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Overweight at 1 out of 4 timepoints between ages 3-4 and 10-11 years inclusive (compared to not overweight at any timepoint) Measured using BMI, scores dichotomised to normal weight (including underweight) and overweight (including obesity): measured by interviewer Odds ratio/95% CI	1.31 (0.95 to 1.79)
Overweight at 2 out of 4 timepoints between ages 3-4 and 10-11 years inclusive (compared to not overweight at any timepoint) Measured using BMI, scores dichotomised to normal weight (including underweight) and overweight (including obesity): measured by interviewer Odds ratio/95% CI	1.69 (1.22 to 2.35)
Overweight at 3 out of 4 timepoints between ages 3-4 and 10-11 years inclusive (compared to not overweight at any timepoint) Measured using BMI, scores dichotomised to normal weight (including underweight) and overweight (including obesity): measured by interviewer Odds ratio/95% CI	1.54 (1.05 to 2.24)
Overweight at 4 out of 4 timepoints between ages 3-4 and 10-11 years inclusive (compared to not overweight at any timepoint) Measured using BMI, scores dichotomised to normal weight (including underweight) and overweight (including obesity): measured by interviewer	2.19 (1.63 to 2.94)

Outcome	Study, 10 year vs 10 year, N = 3197
Odds ratio/95% CI	

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.25 Jimenez, 2016

Bibliographic Reference	Jimenez, Manuel E; Wade, Roy Jr; Lin, Yong; Morrow, Lesley M; Reichman, Nancy E; Adverse Experiences in Early Childhood and Kindergarten Outcomes.; Pediatrics; 2016; vol. 137 (no. 2); e20151839

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Aim	To examine associations between adverse childhood experiences (ACEs) in early childhood and teacher-reported academic and behavioural problems in kindergarten
Country/geographical location	United States
Setting	Not reported

Inclusion criteria	The study was limited to children for whom teacher-reported outcomes as well as primary caregiver-report information on 8 ACE exposures on the basis of the Centers for Disease Control and Prevention Kaiser ACE study were available.
Exclusion criteria	Not reported
Study methods	Secondary analysis of data from the Fragile Families and Child Wellbeing Study (FFCWS) was conducted. The FFCWS birth cohort consists of nearly 5000 children born between 1998 and 2000 in 20 large US cities. The current study utilises data on ACEs reported in the mother's 5-year follow-up interview. Teacher-reported school performance in the last month of the child's kindergarten year was also utilised. The children's teachers were asked to rate the child's academic skills and emergent literacy skills during the last month of kindergarten using a 5-point Likert scale ("far below average" to "far above average"). Teachers were also asked to describe child classroom behaviour during the last month of kindergarten by using questions from the Child Behavior Checklist. Scores were dichotomised into the top 10th percentile versus lower. ACE measures were created from maternal reports at 5 years 9 out of the 10 ACEs included in the Centers for Disease Control and Prevention Kaiser ACE study. Individual ACEs were dichotomised as exposed or not and then summed to create a score ranging from 0 to 8. A categorical variable consisting of "0," "1," "2," and "≥3" ACEs on the basis of the sample distribution.
Confounders	Child age, gender, race, ethnicity, and income, as well as maternal education and parent relationship status at birth of child
Statistical method(s) used to analyse the data	• Assessed independent variables for colinearity. • Estimated both unadjusted and adjusted logistic regression models of associations between ACEs and the outcomes of interest. • Assessed sensitivity to construction of key measures and model specification.
Attrition	Not applicable
Study limitations (author)	• Although the authors controlled for several confounders that had little impact on the observed associations, there maybe unmeasured factors that account for the associations between ACEs in early childhood and end of year kindergarten outcomes. Therefore, causality cannot be inferred from the findings. • Findings do not necessarily generalise to all settings because the study sample was from large cities only. • It is possible that the authors underestimated ACEs in our study. • ACE information relied on maternal reports and the authors used relatively high thresholds for the standardised scales assessing child abusive behaviour. Both of these factors could have underestimated ACEs.

	• The authors did not include direct assessments of academic skills. • Richer data would have enriched the analyses. Information from the 1- and 3-year follow-up interviews had insufficient detail to allow us to incorporate ACEs ascertained at those time points.
Study limitations (reviewer)	Lack of data on exclusion criteria and setting.
Source of funding	• The project was supported by Award Numbers R25HD074544, P2CHD058486, and 5R01HD036916 awarded by the Eunice Kennedy Shriver National Institute of Child Health & Human Development. • Dr. Jimenez was supported by the Chancellor's Scholars Program, Rutgers Biomedical Health Sciences.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 1007)**
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 511 ; % = 51
Female Sample size	n = 496 ; % = 49
Ethnicity Sample size	n = NR ; % = NR

Characteristic	Study (N = 1007)
Not Latino Sample size	n = 759 ; % = 75
Latino Sample size	n = 246 ; % = 24
Race Race and ethnicity were reported separately Sample size	n = NR ; % = NR
White Sample size	n = 360 ; % = 36
African American Sample size	n = 464 ; % = 46
Other Sample size	n = 160 ; % = 16

Outcomes

Study timepoints

- 5 year (Age of children was 5 years at assessment)

Outcomes

Outcome	Study, 5 year vs 5 year, N = 1007
Risk factor for social problems Measured by Child Behaviour Checklist sub-scales, characterised as a score in the top 10th percentile (teacher reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
1 ACE exposure (compared to 0 ACE exposures) Includes 9 out of the 10 ACEs included in the Centers for Disease Control and Prevention Kaiser ACE study (parent-reported) Odds ratio/95% CI	1.4 (0.8 to 2.5)
2 ACE exposures (compared to 0 ACE exposures) Includes 9 out of the 10 ACEs included in the Centers for Disease Control and Prevention Kaiser ACE study (parent-reported) Odds ratio/95% CI	2 (1.1 to 3.6)
≥3 ACE exposures (compared to 0 ACE exposures) Includes 9 out of the 10 ACEs included in the Centers for Disease Control and Prevention Kaiser ACE study (parent-reported) Odds ratio/95% CI	2.7 (1.4 to 5)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.26 Kleszczewska, 2019

Bibliographic Reference	Kleszczewska, D.; Siedlecka, J.; Mazur, J.; Physical activity and features of the environment in which school children grow up as low mood determinants; Pediatria Polska; 2019; vol. 94 (no. 1); 25-33

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Study start date	2017
Study end date	2018
Aim	To analyse the prevalence of depression threat symptoms depending on the level of physical activity of young people, taking into account environmental factors and the quality of social relations.
Country/geographical location	Poland
Setting	School-based
Inclusion criteria	A representative group of school children that participated in the last round of the International Health Behaviour in School-aged Children (HBSC) studies performed in Poland during the school year 2017/2018 .
Exclusion criteria	Not reported
Study methods	Children from 378 classes from 194 schools of various types from 16 provinces participated in an anonymous survey carried out in the schools. The prevalence of depression was studied according to the indicators related to the level of physical activity, socio-economic factors affecting social position, and social relationships. Four questions in the Health Behaviour in School-aged Children (HBSC) questionnaire referred to physical activity; five questions or measurement scales were related to socio-economic factors which affect social position; four combined indices and one single item referring to social relationships.

Confounders	Sex and age
Statistical method(s) used to analyse the data	• The odds ratio (OR) was estimated using logistic regression, with a 95% confidence interval, adjusting the analyses only for gender and age. • Multivariate logistic regression model for risk of depression symptoms was estimated including all 16 independent variables. • Stratification for selected environmental factors was performed as part of the analysis of the moderation effect.
Attrition	Not reported / unclear
Study limitations (author)	• The employed WHO-5 questionnaire is a tool with a positive undertone, and it is relatively soft in comparison with the most popular tests, as described earlier, used to detect depression. • The present study is of cross-sectional nature, so it is difficult to speak about a cause and effect relationship.
Study limitations (reviewer)	• Lack of data on exclusion criteria • Lack of clarity regarding attrition
Source of funding	Not reported

Characteristics

Study-level characteristics

Characteristic	**Study (N = NR)**
Age Range	11 to 15

Outcomes

Study timepoints

- 13 year (Children were aged between 11-15 years)

Outcomes

Outcome	Study, 13 year vs 13 year, N = NR
Risk factor for depressive symptoms Measured by the WHO-5 screen test, a score of 8 points was used as a cut-off (self-reported) Units: No units Odds ratio/95% CI	NR (*empty data* to *empty data*)
Very low amount of moderate-to-vigorous physical activity (compared to high moderate-to-vigorous physical activity) Measured by the HBSC questionnaire, characterised as at least 60 minutes of physical activity 0-1 days/week (self-reported) Odds ratio/95% CI	4.64 (3.39 to 6.36)
Low amount of moderate-to-vigorous physical activity (compared to high moderate-to-vigorous physical activity) Measured by the HBSC questionnaire, characterised as at least 60 minutes of physical activity 2-4 days/week (self-reported) Odds ratio/95% CI	1.8 (1.36 to 2.37)
Moderate amount of moderate-to-vigorous physical activity (compared to high moderate-to-vigorous physical activity) Measured by the HBSC questionnaire, characterised as at least 60 minutes of physical activity 5-6 days/week (self-reported)	1.24 (0.91 to 1.67)

Outcome	Study, 13 year vs 13 year, N = NR
Odds ratio/95% CI	
Never does intensive physical activity outside school (compared to intensive physical activity outside school every day) Measured by the HBSC questionnaire, seven possible answers ranging from 'never' to 'every day' (self-reported) Odds ratio/95% CI	4.25 (2.97 to 6.08)
Does intensive physical activity outside school once a month or less (compared to intensive physical activity outside school every day) Measured by the HBSC questionnaire, seven possible answers ranging from 'never' to 'every day' (self-reported) Odds ratio/95% CI	2.29 (1.62 to 3.23)
Does intensive physical activity outside school once a week or less (compared to intensive physical activity outside school every day) Measured by the HBSC questionnaire, seven possible answers ranging from 'never' to 'every day' (self-reported) Odds ratio/95% CI	1.81 (1.29 to 2.53)
Does intensive physical activity outside school 2-6 times a week (compared to intensive physical activity outside school every day) Measured by the HBSC questionnaire, seven possible answers ranging from 'never' to 'every day' (self-reported) Odds ratio/95% CI	1.27 (0.94 to 1.72)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.27 Laurens, 2019

Bibliographic Reference	Laurens, Kristin R; Green, Melissa J; Dean, Kimberlie; Tzoumakis, Stacy; Harris, Felicity; Islam, Fakhrul; Kariuki, Maina; Essery, Claire M; Schofield, Jill M; Carr, Vaughan J; Chronic physical health conditions, mental health, and sources of support in a longitudinal Australian child population cohort.; Journal of Pediatric Psychology; 2019; vol. 44 (no. 9); 1083-1096

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Aim	To test the hypothesis that that children with hospital records of each of the chronic health conditions would be more likely to experience emotional, behavioural, and social problems than children without hospital records of these conditions, in both early and middle childhood. The strongest effects were anticipated for children with epilepsy.
Country/geographical location	Australia
Setting	New South Wales, Australia
Inclusion criteria	Inclusion criteria for the present study were the availability of valid records from the following data collections: (i) the Australian Government Department of Education and Training Australian Early Development Census (AEDC) in 2009 (ii) the Middle Childhood Survey (MCS) in 2015 and (iii) the NSW Ministry of Health's Admitted Patients Data Collection (APDC; 2001-2016) or Emergency Department Data Collection (EDDC; 2005–2016).
Exclusion criteria	• Children rated by teachers at school entry as having "special needs" (i.e., diagnosed medical, physical, or intellectually disabling condition such as cerebral palsy, Down syndrome, or autism). • Children with a hospital record containing diagnoses of any of the school-monitored physical health conditions occurring only after December 31, 2014.

Study methods	For the present study, 22,112 children had valid Australian Government Department of Education and Training Australian Early Development Census (AEDC) and Middle Childhood Survey (MCS) data, among whom 21,467 (97.1%) had an NSW Ministry of Health's Admitted Patients Data Collection (APDC) and/or Emergency Department Data Collection (EDDC) record. Of these, 19,029 children had no diagnosis appearing in their hospital records (APDC and/or EDDC) for any of the school monitored health conditions examined these children constituted a consistent comparison group for every analysis. The remaining 2,436 children had a hospital record containing a diagnosis of at least one of the school-monitored health conditions under investigation. Outcome measures of interest were assessed in 2009 (AEDC) and 2015 (MCS).
Confounders	Sex and socio-economic disadvantage
Statistical method(s) used to analyse the data	• The prevalence of each exposure and outcome measure was determined for each time period (T1 and T2). • A series of multivariable logistic regression analyses were conducted to examine the pattern and magnitude of associations between the five exposures and early and middle childhood outcomes. • All analyses were adjusted for the effects of sex and socio-economic status. • Analyses yielded odds ratios (ORs) and their 95% confidence intervals (CIs) as measures of effect size; results were statistically significant if the 95% CIs did not cross 1.00.
Attrition	Not applicable
Study limitations (author)	• There was no direct measure (via education records) of the children actually monitored under an Individual Health Care Plan in NSW, instead identifying children with the relevant chronic health conditions via hospital presentations. • Children whose conditions were effectively controlled by treatment delivered in primary care settings will have been included in the comparison group. • Data from some children with serious and early onset chronic health conditions will have been removed with the exclusion of the 3.2% of children with “special needs”. • The associations examined cannot reveal causal mechanisms, and bi-directional relationships may be present. • Administrative records obtained from government agencies were not collected for the purposes of this study, such that the consideration of socio-demographic covariates was limited to an area-based indicator of socio-economic disadvantage derived from residential postcode rather than an individual-level indicator.

	• Findings may in part reflect the different informants used at the early and middle childhood assessments, with meta-analytic data indicating that teachers report greater elevations of overall problems than children though the opposite is true of social problems. A lack of multi-informant reports (and particularly, any parental report) at each assessment is a limitation. • The assessments of internalising and externalising difficulties in the present study differed across early and middle childhood.
Study limitations (reviewer)	None to add
Source of funding	This research was conducted by the University of New South Wales with financial support from the Australian Research Council (ARC) Linkage Project (LP110100150, with the NSW Ministry of Health, NSW Department of Education, and the NSW Department of Family and Community Services representing the Linkage Project Partners), and Discovery Project (DP170101403); the National Health and Medical Research Council (NHMRC) Project Grants (APP1058652 and APP1148055) and Partnership Project (APP1133833); and the Australian Rotary Health 'Mental Health for Young Australians' Research Grants (104090 and 162302).

Characteristics

Study-level characteristics

Characteristic	**Study (N = 21304)**
Age (years) Characteristics at 11 years (Time 2) Mean (SD)	11.9 (4)
Gender Characteristics at 11 years (Time 2) Sample size	n = NR ; % = NR

Characteristic	Study (N = 21304)
Male Sample size	n = 10552 ; % = 49.5
Female Sample size	n = 10752 ; % = 50.5
Socioeconomic status Reported as number of socioeconomically disadvantaged children Sample size	n = 3894 ; % = 18.3

Outcomes

Study timepoints

- 11 year (Outcomes were measured when children were approximately 11 years old)

Outcomes

Outcome	Study, 11 year vs 11 year, N = 21304
Risk factors for conduct problems Measured by the Middle Childhood Survey (MCS) online: Conduct problems sub-scale (drawn from SDQ); classified as children scoring in the lowest 10% (self-reported) Odds ratio/95% CI	NR (NR to NR)

Outcome	Study, 11 year vs 11 year, N = 21304
Hospital presentation any school-monitored physical health condition at 5 or 11 years (compared to no hospital presentation) Included asthma, allergies and anaphylaxis, epilepsy and type 1 diabetes (reported by hospital records of diagnosis) Odds ratio/95% CI	1.22 (1.06 to 1.41)
Risk factor for peer problems Measured by the Middle Childhood Survey (MCS) online: Peer problems sub-scale (drawn from SDQ); classified as children scoring in the lowest 10% (self-reported) Odds ratio/95% CI	NR (NR to NR)
Hospital presentation any school-monitored physical health condition at 5 or 11 years (compared to no hospital presentation) Included asthma, allergies and anaphylaxis, epilepsy and type 1 diabetes (reported by hospital records of diagnosis) Odds ratio/95% CI	1.18 (0.97 to 1.43)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.28 Lee, 2017

Bibliographic Reference	Lee, Joo Eun; Park, Sohee; Nam, Jin-Young; Ju, Young Jun; Park, Eun-Cheol; Effect of Changes in Sleep Quantity and Quality on Depressive Symptoms among Korean Children; Journal of School Nursing; 2017; vol. 33 (no. 4); 299-306

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study start date	2011
Study end date	2013
Aim	To examine the effect of sleep quantity and quality on depression in elementary schoolchildren
Country/geographical location	South Korea
Setting	Primary school
Inclusion criteria	Participants in the Korean Children & Youth Panel Survey (KCYPS; 2011–2013)
Exclusion criteria	Participants with depressive symptoms at baseline
Study methods	Data used came from the three waves of the Korean Children & Youth Panel Survey (KCYPS; 2011–2013) conducted by the Nation Youth Policy Institute. For students, group interviews were conducted at school visits after obtaining consent from parents and for parents, a questionnaire survey was conducted.
Confounders	Covariates included • Child-related variables (sex, region of residency, health status, and academic record) • Parent-related variables (annual household income, educational cost burden, parents' level of education, parents' employment status, and the number of days parents were absent from home per week)
Statistical method(s) used to analyse the data	• Chi-square test was used to assess the differences in characteristics according to depressive symptoms. • A generalised estimating equation (GEE) model was used to examine the associations between depressive symptoms and changes in sleep duration and sleep quality.

	• subgroup analysis was performed, stratifying students by sex and sleep duration change, to examine associations between depressive symptoms and changes in sleep quality.
Attrition	1152/2605 = 55.8% attrition
Study limitations (author)	• Depressive symptoms were measured by self-reported data without clinical diagnosis. • The data on sleep quantity and quality used in this study were not measured by objective methods, such as polysomnogram or actigraphy. • The reliability of information collected by children's self-reports.
Study limitations (reviewer)	None to add
Source of funding	The author(s) received no financial support for the research, author ship, and/or publication of this article.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 2605)**
Gender Characteristics at follow-up Sample size	n = NR ; % = NR
Male with no depressive symptoms Percentage reported according to depressive symptoms Sample size	n = 1049 ; % = 78
Female with no depressive symptoms Percentage reported according to depressive symptoms	n = 1018 ; % = 80.8

Characteristic	Study (N = 2605)
Sample size	
Male with depressive symptoms Percentage reported according to depressive symptoms Sample size	n = 296 ; % = 22
Female with depressive symptoms Percentage reported according to depressive symptoms Sample size	n = 242 ; % = 19.2
Socioeconomic status Measured by annual household income, characteristics at follow-up Sample size	n = NR ; % = NR
Low/lower middle class (participants with no depressive symptoms) Percentage reported according to depressive symptoms Sample size	n = 253 ; % = 78.1
Middle class (participants with no depressive symptoms) Percentage reported according to depressive symptoms Sample size	n = 368 ; % = 79.5
Higher middle class (participants with no depressive symptoms) Percentage reported according to depressive symptoms Sample size	n = 774 ; % = 78
High class (participants with no depressive symptoms) Percentage reported according to depressive symptoms Sample size	n = 672 ; % = 81.5

Characteristic	Study (N = 2605)
Low/lower middle class (participants with depressive symptoms) Percentage reported according to depressive symptoms Sample size	n = 71 ; % = 21.9
Middle class (participants with depressive symptoms) Percentage reported according to depressive symptoms Sample size	n = 95 ; % = 20.5
Higher middle class (participants with depressive symptoms) Percentage reported according to depressive symptoms Sample size	n = 219 ; % = 22.1
High class (participants with depressive symptoms) Percentage reported according to depressive symptoms Sample size	n = 153 ; % = 18.6

Outcomes

Study timepoints

- 10 year (Age of children at follow-up)

Outcomes

Outcome	Study, 10 year vs 10 year, N = 2605
Risk factor for depressive symptoms Measured by the Center for Epidemiologic Studies–Depression Scale (CES-D 10), characterised as scores ≥16 (reporter unclear) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Sleep duration change from <10 hours to ≥10 hours between ages 8-9 years (compared to consistently sleeping ≥10 hours) (Self-reported) Odds ratio/95% CI	1.14 (0.81 to 1.6)
Sleep duration change from <10 hours to ≥10 hours between ages 8-9 years (compared to consistently sleeping ≥10 hours) (Self-reported) Odds ratio/95% CI	1.1 (0.83 to 1.46)
Sleep duration consistently<10 hours between ages 8-9 years (compared to consistently sleeping ≥10 hours) (Self-reported) Odds ratio/95% CI	1.09 (0.85 to 1.41)
Sleep quality change from poor to good between ages 8-9 years (compared to consistenly good quality sleep) Measured by the enquiry "You cannot fall asleep deeply and wake up often during the night", with response categories of 'very well, well, poorly, and very poorly' (Self-reported) Odds ratio/95% CI	1.69 (0.99 to 2.9)
Sleep quality change from good to poor between ages 8-9 years (compared to consistenly good quality sleep) Measured by the enquiry "You cannot fall asleep deeply and wake up often during the night", with response categories of 'very well, well, poorly, and very poorly' (Self-reported)	2.95 (2.21 to 3.93)

Outcome	Study, 10 year vs 10 year, N = 2605
Odds ratio/95% CI	
Sleep quality consistently poor between ages 8-9 years (compared to consistenly good quality sleep) Measured by the enquiry "You cannot fall asleep deeply and wake up often during the night", with response categories of 'very well, well, poorly, and very poorly' (Self-reported) Odds ratio/95% CI	2.36 (1.18 to 4.71)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.29 Lemstra, 2012

Bibliographic Reference	Lemstra, Mark E; Nielsen, Ghita; Rogers, Marla R; Thompson, Adam T; Moraros, John S; Risk indicators and outcomes associated with bullying in youth aged 9-15 years.; Canadian journal of public health = Revue canadienne de sante publique; 2012; vol. 103 (no. 1); 9-13

Study details

Study design	Cross-sectional study
Trial registration number	Not reported

Study start date	Feb-2008
Study end date	Feb-2008
Aim	• To determine the unadjusted and adjusted risk indicators associated with physical bullying among children in grades 5-8. • To describe the impact of repeated physical bullying on health outcomes – namely depressed mood.
Country/geographical location	Canada
Setting	Not reported
Inclusion criteria	All students attending school in the city of Saskatoon, Canada, between grades 5-8
Exclusion criteria	Not reported
Study methods	Every student in grades 5-8 attending school in the city of Saskatoon, Canada, was asked to complete the Saskatoon School Health Survey in February of 2008 (n=9825). The survey measured prevalence of bullying and queries causes of bullying, where bullying occurs, responses to bullying and what should be done to prevent or reduce bullying. All questions on demographics, socio-economic status and family unit were taken from the National Longitudinal Survey of Children and Youth (NLSCY) developed by Statistics Canada. Parenting questions came from the Parenting Relationship Scale. The depressed mood questionnaire was the Center for Epidemiological Studies Depression Scale with a summary score of 16 used as the cut-off. The self-esteem questionnaire, suicide ideation and self-reported health were also taken from the NLSCY.
Confounders	After controlling for gender, age, father's education level, parenting relationship, self-esteem and suicide ideation
Statistical method(s) used to analyse the data	• Cross-tabulations were performed initially between the variable examining if youth were ever physically bullied within the previous four weeks and demographic information, socio-economic information, body mass index, family unit and relationship with parents. • After these initial cross-tabulations, logistic regression was used to determine the independent relationship between the outcome variable of ever having been physically bullied in the previous four weeks and the potential explanatory variables. The final results are presented as adjusted odds ratios with 95% confidence intervals.

	• Logistic regression was also used to stepwise and independent relationship between ever having been physically bullied in the previous four weeks and current depressed mood.
Attrition	4197/9825 = 57.3% attrition
Study limitations (author)	• The study was cross-sectional and, as such, causation cannot be determined. • The sample had an overall response rate of 43.6%. • There was a selection bias in response rate by neighbourhood income.
Study limitations (reviewer)	Lack of data on exclusion criteria and setting
Source of funding	This research was paid for by a grant from the Canadian Institutes of Health Research.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 4197)**
Age Sample size	n = NR ; % = NR
9-10 years Sample size	n = 902 ; % = 21.5
11 years Sample size	n = 1044 ; % = 24.9
12 years Sample size	n = 1124 ; % = 26.8

Characteristic	Study (N = 4197)
13-15 years Sample size	n = 1096 ; % = 26.1
Missing data Sample size	n = 31 ; % = 0.7
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 2039 ; % = 48.6
Female Sample size	n = 2138 ; % = 50.9
Missing data Sample size	n = 20 ; % = 0.5
Ethnicity Sample size	n = NR ; % = NR
Caucasian or “White” Sample size	n = 3222 ; % = 76.8
First Nations or Métis Sample size	n = 422 ; % = 10.1

Characteristic	Study (N = 4197)
Other Sample size	n = 474 ; % = 11.3
Missing data Sample size	n = 79 ; % = 1.9

Outcomes

Study timepoints

- 12 year (Children aged between 9-15 years)

Outcomes

Outcome	Study, 12 year vs 12 year, N = 4197
Risk factor for depressive mood Measured by the Center for Epidemiological Studies Depression Scale (cut-off score = 16) (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Low self-esteem (compared to normal self-esteem) Measured by the self-esteem questionnaire taken from the National Longitudinal Survey of Children and Youth (NLSCY) (self-reported) Odds ratio/95% CI	5.6 (4.1 to 7.5)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.30 Loomans, 2012

Bibliographic Reference	Loomans, E.M.; Hofland, L.; Van Der Stelt, O.; Van Der Wal, M.F.; Koot, H.M.; Van Den Bergh, B.R.H.; Vrijkotte, T.G.M.; Caffeine intake during pregnancy and risk of problem behavior in 5- to 6-year-old children; Pediatrics; 2012; vol. 130 (no. 2); e305-e313

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study start date	Jan-2003
Aim	To prospectively investigate the association between prenatal maternal dietary caffeine intake and children's problem behavior in a large multiethnic, community-basedbirth cohort.
Country/geographical location	The Netherlands
Setting	Not reported
Inclusion criteria	• Participants in the Amsterdam Born Children and their Development (ABCD) study • Complete data available for both maternal caffeine intake and children's behavioural assessment (both mother and teacher reports)

Exclusion criteria	Missing data on caffeine intake
Study methods	Data collected as part of the part of the Amsterdam Born Children and their Development (ABCD) study, a large multiethnic, community-based birth cohort. This study approached all pregnant women living in Amsterdam between January 2003 and March 2004. These data were completed with information on pregnancy outcome from Youth Health Care Registration and the Dutch Perinatal Registration.
Confounders	Model was adjusted for • maternal age, • ethnicity, • maternal education, • maternal anxiety, • cohabitant status, • smoking, • alcohol, • child's gender, • family size, • standardized birth weight • gestational age
Statistical method(s) used to analyse the data	• Descriptive statistics were used to explore the association between maternal characteristics and caffeine intake; statistical differences were tested with analysis of variance for continuous variables and Chi-square tests for categorical variables. • The association between maternal prenatal caffeine intake and problem behaviour was analysed by multiple logistic regression analysis.
Attrition	3439/8266 = 58.4% attrition
Study limitations (author)	• Mothers who filled in the pregnancy questionnaire and rated their child's behaviour differed from mothers in the nonresponse group. This may have resulted in an underestimation of the prevalence of behavioural problems.

	• Caffeine intake was measured by self-report. Multiple assessments of caffeine consumption would have given insight in potential sensitive or critical periods in pregnancy during which the foetus might be more susceptible to potential programming effects of caffeine intake. • Caffeine half-life is extended during the last trimester of pregnancy, which could lead to a decreased caffeine intake and hence overestimation of caffeine intake over the course of pregnancy. • No information about caffeine intake via chocolate, energy drinks, and medication was available, which may have led to an underestimation of caffeine intake. • No data on caffeine metabolism were available.
Study limitations (reviewer)	Lack of data on setting
Source of funding	This work was supported by the Department of Public Health, Academic Medical Centre, University of Amsterdam, Amsterdam, Netherlands; the Department of Epidemiology, Documentation and Health Promotion, Public Health Service Amsterdam, Netherlands; and the Department of Psychology, Tilburg University, Tilburg, Netherlands.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 3439)**
Gender Characteristics at follow-up Sample size	n = NR ; % = NR
Male Sample size	n = 1745 ; % = NR
Female Sample size	n = 1694 ; % = NR

Characteristic	Study (N = 3439)
Ethnicity Characteristics at follow-up Sample size	n = NR ; % = NR
Dutch (Reported as mother's ethnic background) Sample size	n = 2630 ; % = NR
Surinamese (Reported as mother's ethnic background) Sample size	n = 117 ; % = NR
Mediterranean (Reported as mother's ethnic background) Sample size	n = 202 ; % = NR
Other (Reported as mother's ethnic background) Sample size	n = 490 ; % = NR

Outcomes

Study timepoints

- 5.1 year (Mean age of children at follow-up)

Outcomes

Outcome	Study, 5.1 year vs 5.1 year, N = 3439
Risk factor for emotional symtoms Measured by Strengths and Difficulties Questionnaire (SDQ) emotional symptoms subscale, characterised as mean score above 83rd percentile reported by both mother and teacher (parent and teacher-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Maternal caffeine intake >425 mg/day during pregnancy (compared to caffeine intake 0-85 mg/day) Measured by pregnancy questionnaire, total caffeine in take per day was calculated by using the Dutch Food Composition Database (parent-reported) Odds ratio/95% CI	1.02 (0.42 to 2.51)
Maternal caffeine intake >425 mg/day during pregnancy (compared to caffeine intake 0-85 mg/day) Measured by pregnancy questionnaire, total caffeine in take per day was calculated by using the Dutch Food Composition Database (parent-reported) Odds ratio/95% CI	0.65 (0.25 to 1.67)
Maternal caffeine intake >425 mg/day and smoker during pregnancy (compared to caffeine intake 0-85 mg/day and smoker) Measured by pregnancy questionnaire, total caffeine in take per day was calculated by using the Dutch Food Composition Database (parent-reported) Odds ratio/95% CI	54.73 (3.48 to 860.32)
Maternal caffeine intake >425 mg/day during pregnancy (compared to caffeine intake 0-85 mg/day) Measured by pregnancy questionnaire, total caffeine in take per day was calculated by using the Dutch Food Composition Database (parent-reported) Odds ratio/95% CI	0.45 (0.06 to 3.54)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.31 Luoma, 2001

Bibliographic Reference	Luoma, I; Tamminen, T; Kaukonen, P; Laippala, P; Puura, K; Salmelin, R; Almqvist, F; Longitudinal study of maternal depressive symptoms and child well-being.; Journal of the American Academy of Child and Adolescent Psychiatry; 2001; vol. 40 (no. 12); 1367-74

Study details

Study design	Prospective cohort study
Trial registration number	Not reported
Study start date	1989
Study end date	Apr-1998
Aim	• To examine whether high levels of maternal prenatal, postnatal, or concurrent depressive symptoms are associated with a child's psychosocial functioning and emotional/behavioural problems when the child is of school age. • To study whether maternal prenatal and/or postnatal depressive symptoms are associated in the long term with an increased risk of low functioning or high problem levels in the child. • To study the associations between the timing and recurrence of the mother's depressive symptoms and the level of the child's psychosocial functioning and symptomatology.

Country/geographical location	Finland
Setting	Not reported
Inclusion criteria	Healthy first-time mothers from all maternity health clinics in the city of Tampere during a 6-month period in 1989–1990.
Exclusion criteria	Depressive symptom screening occurring outside the time schedule of the first study stage (although these mothers were included again at final follow-up (T6).
Study methods	Data were collected from all maternity health clinics in the city of Tampere during a 6-month period in 1989–1990 and participants were followed up via postal survey during the period November 1997–April 1998. The depressive symptoms of the mothers were screened, and the firstborn children's psychosocial functioning and emotional/behavioral problems were assessed by questionnaires completed by parents and teachers.
Confounders	Models were adjusted for • Sociodemographic variables (mother's education and marital status, family socioeconomic status, number of children in the family) • Child's gender • Mother's age (dichotomized with a cutpoint ≥35 years) • Prenatal, postnatal (T3), and concurrent assessments of depressive symptoms
Statistical method(s) used to analyse the data	• Cross-tabulations, together with Fisher exact test (two-tailed), were used to examine the categorised child outcome variables by maternal depressive status. • Means and standard deviations were calculated for the continuous variables. • Continuity issues of maternal depressive symptoms were examined by Spearman correlations. • Logistic regression was performed using child variables as dependent variables and sociodemographic variables as independent variables. Assessments of depressive symptoms were also included. • The results of regression analyses are presented as odds ratios (ORs) and their 95% confidence intervals (CIs).
Attrition	147/349 = 57.9% attrition

Study limitations (author)	• Only the questionnaires of the follow-up study were analysed in this report; not the research interviews made for smaller subsamples. • Symptoms of depression are not specific to affective disorder, but can be associated with other psychiatric problems or stressful life situations • The sensitivity of the Edinburgh Postnatal Depression Scale (EPDS) was lower than the specificity in this sample, possibly causing bias, concerning the prevalence of depression and on the instability of depressive symptoms. • The proportion of symptomatic mothers at each assessment point was limited because a fairly high cut-off in the EPDS was used. • It is probable that some of the mothers who scored high at one assessment point scored just below the cut point at the next point in time. • Study attrition increased in the course of the survey and the proportion of subjects with incomplete data increased in successive stages and reduced the sample size. It is possible that mothers and children with more distress were more likely to drop out from the study. • It was not possible to estimate the severity and the duration of maternal depressive symptoms and the possible family history of depression more accurately. • There was a long time interval from the postnatal stage to the latest study stage, and the depressive symptoms of the mothers during this interval were not considered here. • Fathers' views and functioning were not considered.
Study limitations (reviewer)	Lack of data regarding setting
Source of funding	The study was supported by grants from the Finnish Child Psychiatric Research Foundation, the Foundation of Paediatric Research, and the Medical Research Fund of Tampere University Hospital.

Characteristics

Study-level characteristics

Characteristic	Study (N = 147)
Gender Characteristics at age 8-9 years Sample size	n = NR ; % = NR
Male Sample size	n = 68 ; % = 46
Female Sample size	n = 79 ; % = 54

Outcomes

Study timepoints

- 8.5 year (Children were 8-9 years at final follow-up)

Outcomes

Outcome	Study, 8.5 year vs 8.5 year, N = 147
Risk factor for low social competence Measured by Child Behavior Checklist (CBCL): Social Competence score, characterised as children in the lowest 15th percentile (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Maternal postnatal depressive symptoms above cut-off at age 2 months (compared to depressive symptoms below cut-off) Measured by Edinburgh Postnatal Depression Scale (EPDS), cut-off score ≥13 out of 30 (parent-reported) Odds ratio/95% CI	7.6 (1.6 to 36.6)
Maternal prenatal depressive symptoms above cut-off at last trimester (compared to depressive symptoms below cut-off) Measured by Edinburgh Postnatal Depression Scale (EPDS), cut-off score ≥13 out of 30 (parent-reported) Odds ratio/95% CI	8.5 (2.7 to 26.5)
Maternal depressive symptoms above cut-off at any timepoint between last trimester and 8-9 years (compared to depressive symptoms below cut-off) Measured by Edinburgh Postnatal Depression Scale (EPDS), cut-off score ≥13 out of 30 (parent-reported) Custom value	NS

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.32 Matthews, 2015

Bibliographic Reference	Matthews, T.; Danese, A.; Wertz, J.; Ambler, A.; Kelly, M.; Diver, A.; Caspi, A.; Moffitt, T.E.; Arseneault, L.; Social isolation and mental health at primary and secondary school entry: A longitudinal cohort study; Journal of the American Academy of Child and Adolescent Psychiatry; 2015; vol. 54 (no. 3); 225-232

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Aim	To examine the associations between social isolation and mental health difficulties at primary and secondary school entry, 2 important transitions in children's lives and key periods for the formation of social connections
Country/geographical location	United Kingdom
Setting	Home-based
Inclusion criteria	Participants of the Environmental Risk (E-Risk) Longitudinal Twin Study
Exclusion criteria	Not reported
Study methods	Participants were members of the Environmental Risk (E-Risk) Longitudinal Twin Study, which tracks the development of a birth cohort of 2,232 British children. Follow-up home visits were conducted when these children were aged 7 years (98% participation), 10 years (96%), and 12 years (96%).
Confounders	Analyses were adjusted for • Gender

Statistical method(s) used to analyse the data	Multinomial logistic regressions were used to: • Examine associations between family factors and social isolation. • Test concurrent associations between social isolation and mental health difficulties at ages 5 and 12. • To examine longitudinal associations between age-5 mental health and age-12 social isolation. Linear regressions were used to test longitudinal associations between age-5 social isolation and age-12 mental health difficulties. All analyses were adjusted for gender. non-independent observations were adjusted for with tests based on Huber–White or sandwich variance.
Attrition	96% participation at 12 years (follow-up) = 4% attrition
Study limitations (author)	• Correlational study design prohibits any inferences of causality. • Age-5 mental health and age-12 social isolation were both based on mother and teacher reports. It is therefore possible that the associations between these measures were inflate because of shared-method variance. • Categorisation of social isolation into groups was based on an arbitrary choice of cut-off points rather than an established precedent. • As the sample was drawn from a twin study, each of the participants had a sibling by definition. Children with socially anxious or withdrawn behaviours may be protected from social isolation through their sibling relationships. It is therefore possible that twin data may underestimate the effects of social isolation.
Study limitations (reviewer)	Lack of data on setting
Source of funding	• The E-Risk Study is funded by MRC grants G9806489 and 61002190.

	• Additional support was provided by funds from the Economic and Social Research Council (RES-177-25-0013) and the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD; HD061298). • Jasmin Wertz is supported by the National Institute for Health Research (NIHR) Mental Health Biomedical Research Centre at South London and Maudsley NHS Foundation Trust and King's College London

Outcomes

Study timepoints

- 12 year (Age of children at follow-up)

Outcomes

Outcome	**Study, 12 year vs 12 year, N = NR**
Risk factor for moderate social isolation Measured using using 6 items from the Children's Behavior Checklist (CBCL) and the matching 6 items from the Teacher's Report Form (TRF), characterised as scores >1 and ≤2 (parent and teacher-reported) Relative risk/95% CI	NR (*empty data* to *empty data*)
Moderate socioeconomic status at age 5 (comparison not reported) Characterised into 3 groups (split by tertile) based on a standardised composite of income, parents' education, and social class (parent-reported) Relative risk/95% CI	1.42 (1.01 to 1.99)

Outcome	Study, 12 year vs 12 year, N = NR
Low socioeconomic status at age 5 (comparison not reported) Characterised into 3 groups (split by tertile) based on a standardised composite of income, parents' education, and social class (parent-reported) Relative risk/95% CI	1.67 (1.17 to 2.37)
Maternal depression at age 5 (comparison not reported) Measured by DSM-IV, characterised as Lifetime diagnosis of a major depressive episode (parent-reported) Relative risk/95% CI	1.22 (0.92 to 1.6)
Parental antisocial behaviour at age 5 (comparison not reported) Measured by Young Adult Self-Report and DSM-IV, characterised as lifetime presence of symptoms of conduct disorder and antisocial personality disorder: parent had 3 or more antisocial personality symptoms (parent-reported) Relative risk/95% CI	1.58 (1.17 to 2.13)
Physcial maltreatment at age 5 (comparison not reported) Measured by interview protocol from the Multisite Child Development Project, characterised based on mothers' report of the severity of discipline, her concerns that someone else may have harmed the child, and the interviewer's rating of the likelihood that the child had been maltreated (parent-reported) Relative risk/95% CI	1.2 (0.85 to 1.69)
Emotional problems at age 5 (comparison not reported) Measured by Child Behavior Checklist and Teacher's Report Form: withdrawn/depressed and somatic subscales (parent and teacher-reported) Relative risk/95% CI	1.12 (0.93 to 1.36)

Outcome	Study, 12 year vs 12 year, N = NR
Behavioural problems at age 5 (comparison not reported) Measured by Child Behavior Checklist and Teacher's Report Form: delinquency and aggression subscales (parent and teacher-reported) Relative risk/95% CI	1.22 (1.02 to 1.46)
ADHD symptoms at age 5 (comparison not reported) Measured by Child Behavior Checklist and Teacher's Report Form: impulsive, and hyperactivity scales (parent and teacher-reported) Relative risk/95% CI	1.18 (0.99 to 1.39)
Risk factor for high social isolation Measured using using 6 items from the Children's Behavior Checklist (CBCL) and the matching 6 items from the Teacher's Report Form (TRF), characterised as scores >2 (parent and teacher-reported) Relative risk/95% CI	NR (*empty data* to *empty data*)
Moderate socioeconomic status at age 5 (comparison not reported) Characterised into 3 groups (split by tertile) based on a standardised composite of income, parents' education, and social class (parent-reported) Relative risk/95% CI	1.59 (1.07 to 2.38)
Low socioeconomic status at age 5 (comparison not reported) Characterised into 3 groups (split by tertile) based on a standardised composite of income, parents' education, and social class (parent-reported) Relative risk/95% CI	2.4 (1.62 to 3.56)
Maternal depression at age 5 (comparison not reported) Measured by DSM-IV, characterised as Lifetime diagnosis of a major depressive episode (parent-reported)	1.1 (0.8 to 1.51)

Outcome	Study, 12 year vs 12 year, N = NR
Relative risk/95% CI	
Parental antisocial behaviour at age 5 (comparison not reported) Measured by Young Adult Self-Report and DSM-IV, characterised as lifetime presence of symptoms of conduct disorder and antisocial personality disorder: parent had 3 or more antisocial personality symptoms (parent-reported) Relative risk/95% CI	1.45 (1.02 to 2.05)
Physcial maltreatment at age 5 (comparison not reported) Measured by interview protocol from the Multisite Child Development Project, characterised based on mothers' report of the severity of discipline, her concerns that someone else may have harmed the child, and the interviewer's rating of the likelihood that the child had been maltreated (parent-reported) Relative risk/95% CI	1.5 (1.01 to 2.22)
Emotional problems at age 5 (comparison not reported) Measured by Child Behavior Checklist and Teacher's Report Form: withdrawn/depressed and somatic subscales (parent and teacher-reported) Relative risk/95% CI	1.13 (0.93 to 1.37)
Behavioural problems at age 5 (comparison not reported) Measured by Child Behavior Checklist and Teacher's Report Form: delinquency and aggression subscales (parent and teacher-reported) Relative risk/95% CI	1.31 (1.1 to 1.57)
ADHD symptoms at age 5 (comparison not reported) Measured by Child Behavior Checklist and Teacher's Report Form: impulsive, and hyperactivity scales (parent and teacher-reported) Relative risk/95% CI	1.55 (1.29 to 1.87)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.33 Meeker, 2021

Bibliographic Reference	Meeker, Elizabeth C; O'Connor, Briannon C; Kelly, Lourah M; Hodgeman, Debra D; Scheel-Jones, Amy H; Berbary, Cassandra; The impact of adverse childhood experiences on adolescent health risk indicators in a community sample.; Psychological Trauma: Theory, Research, Practice, and Policy; 2021; vol. 13 (no. 3); 302-312

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Study start date	2017
Study end date	2017
Aim	• To understand the prevalence of ACEs in an adolescent community sample • To explore the impact of having experienced multiple ACEs on a range of health risk behaviours
Country/geographical location	United States
Setting	High schools from a single county in western New York
Inclusion criteria	High school students from a single county in western New York

Exclusion criteria	Records were excluded in cases with evidence of unreliable responding (e.g., selected all possible gender/ race options) or where students chose not to answer demographic or ACEs items. In addition, youth who indicated age under 14 or gender as “other” were excluded from analyses due to the small number of youth endorsing either item and therefore limited power to detect differences in these groups. An additional students were missing data on health outcome variables and were removed from subsequent analyses.
Study methods	Data were collected anonymously from high school students across a single county in western New York through the Youth Risk Behavior Survey (YRBS), which is administered on a biennial basis. The survey is administered through the county Department of Public Health in partnership with the local public school districts. Eleven items (coded “yes”/”no”) assessed youths’ experiences of stressful or traumatic situations (ACEs). In addition, a question was added to the survey regarding witnessing community violence. Two items were used as indicators of mental health symptoms: cognitive difficulties and depressed mood.
Confounders	Age, Race/Ethnicity, and Gender
Statistical method(s) used to analyse the data	• Standard descriptive statistics (e.g., frequency distributions, chi-square tests) were used to summarize demographic characteristics and distributions of outcomes of interest. • Logistic regression models compared the differential odds of engaging in or experiencing any of the health risk indicators between ACEs groups. • Logistic regressions also tested ACEs dose response hypotheses, specifically if increasing numbers of total ACEs reported by students were associated with differential odds of engaging in or experiencing each health risk indicator.
Attrition	Not applicable (cross-sectional study)
Study limitations (author)	• Study used single items to assess health indicators, given the length of the survey and wide array of experiences and behaviours assessed. • Although the survey was anonymous, some students may be unwilling to disclose ACEs or other experiences due to stigma, avoidance, and fear of investigation by child services. • The survey was deployed in western New York and may not generalise to other regions. • Students who endorsed their gender as “other” were not included due to the small number of students who endorsed this response, which may underestimate ACEs and relationships to mental health difficulties found in transgender youth. • Study was also conducted in English and likely is not representative of students without English reading proficiency.

	• The cross-sectional design prevents determination of directions of relationships between ACEs and health outcomes. The persistence of ACEs was also not assessed. • The authors did not examine type of ACEs (e.g., household dysfunction vs. abuse and neglect) that may infer the greatest level of risk. • The study did not test the impact of protective factors on relationships between ACEs and health indicators; resilience factors that mitigate the impact of ACEs across the life span.
Study limitations (reviewer)	None to add
Source of funding	Support for this study was provided by Monroe County Office of Mental Health and Coordinated Care Services, Inc (CCSI). Manuscript preparation was funded in part by the T32AA007290 (National Institute on Alcohol Abuse and Alcoholism; Alessi Bauer) that covered part of the time of Lourah M. Kelly.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 1528)**
Age years Sample size	n = NR ; % = NR
14 years Sample size	n = 211 ; % = 13.8
15 years Sample size	n = 353 ; % = 23.1
16 years	n = 382 ; % = 25

Characteristic	Study (N = 1528)
Sample size	
17 years Sample size	n = 396 ; % = 25.9
18 years Sample size	n = 186 ; % = 12.2
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 733 ; % = 48
Female Sample size	n = 795 ; % = 52
Ethnicity Sample size	n = NR ; % = NR
White Sample size	n = 929 ; % = 60.8
Black Sample size	n = 231 ; % = 15.1
Latinx Sample size	n = 201 ; % = 13.2

Characteristic	Study (N = 1528)
Asian Sample size	n = 71 ; % = 4.6
Other Sample size	n = 96 ; % = 6.3

Outcomes

Study timepoints

- 16 year (Children were between 14-18 years when risk factor was measured. Cross-sectional study, risk factor and outcome data were collected at the same timepoint)

Outcomes

Outcome	Study, 16 year vs 16 year, N = 1528
Risk factors for depressed mood Measured using the Youth Risk Behavior Survey (YRBS): yes/no question “During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing some usual activities?” (self-reported) Custom value	NR
Experience of 2 or more ACEs (compared to experiencing 0 ACEs) Measured using 10 ACEs + extra question regarding witnessing community violence (self-reported)	7.99 (significant)

Outcome	Study, 16 year vs 16 year, N = 1528
Custom value	

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Low

D.34 Morgan, 2008

Bibliographic Reference	Morgan, Paul L; Farkas, George; Tufis, Paula A; Sperling, Rayne A; Are reading and behavior problems risk factors for each other?.; Journal of learning disabilities; 2008; vol. 41 (no. 5); 417-36

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study start date	1998
Aim	• To test whether, after controlling for earlier problem behaviours and other antecedent variables, children's reading problems predict their later behaviour problems. • To investigate whether, after controlling for both prior reading problems and a range of antecedent variables, early manifestations of problem behaviour predict later relative reading failure.

Country/geographical location	United States
Setting	Primary school
Inclusion criteria	Participants of the Early Childhood Longitudinal Study—Kindergarten Class (ECLS-K)
Exclusion criteria	Not reported
Study methods	The study's dataset was the Early Childhood Longitudinal Study—Kindergarten Class (ECLS-K) a large scale nationally representative sample of children as they age through the elementary school years. Data from the sampled children were collected at the beginning and end of kindergarten, in the fall and spring of first grade (with a random subsample in the fall), and again in the spring of third grade. Children completed the Reading Test during one-to-one, untimed sessions with a trained assessor. Teachers completed the self-administered Teacher Social Rating Scale each time children were assessed.
Confounders	Analyses adjusted for • family variables (i.e., mother's and father's education level, whether the family's income was below the Federal poverty level, whether the family participated in federal assistance programs such as Aid to Families with Dependent Children or Head Start, the percentage of the school's student eligible for free lunch). • Demographic variables (i.e., the child's race and ethnicity, the child's gender, whether the language spoken at home was English, whether the racial composition of the child's school was over 25% Black or Hispanic, the child's household structure and number of siblings, the mother's age at first birth, the child's age at Kindergarten entry, whether the child's school was located in a urban or rural location).
Statistical method(s) used to analyse the data	• Reading or behaviour variables, were dichotomised using a cut-off of the “worst” 10% of participants. • Multi-level logistic regression modelling to determine whether reading and behaviour problems acted as risk factors for each other. • Hierarchical Linear Modelling (HLM) to perform regressions that statistically adjusted for the spatially clustered nature of the sample design (i.e., students within schools) and the wide variety of potentially confounding variables
Attrition	The ECLS-K includes 13,964 children who were interviewed during both the spring of first and third grade. Of these, 2,449 children (17.54%) changed schools sometime between the two time periods

Study limitations (author)	• Analyses are based on a limited number of time points, as well as on a sample of children who did not change schools between these time points. • Analyses are based in part on multiply imputed values replacing varying amounts of missing data. • The authors did not manipulate a hypothesised causal agent (e.g., pronounced difficulty learning to read), which is the "gold standard" in demonstrating a causal relation. • It is also possible that the authors did not include an important confound into the analyses that could explain the effects we attribute to reading or behaviour problems.
Study limitations (reviewer)	Lack of data on exclusion criteria
Source of funding	This research was supported by the Penn State Population Research Institute which is funded by the National Institutes of Health under award number R24HD041025

Characteristics

Study-level characteristics

Characteristic	**Study (N = 11515)**
Age (Months) Characteristics baseline (kindergarten) Mean (SD)	65.59 (4.27)
Gender Characteristics baseline (kindergarten) Sample size	n = NR ; % = NR
Male Sample size	n = 5758 ; % = 50

Characteristic	Study (N = 11515)
Female Sample size	n = 5757 ; % = 50
Ethnicity Characteristics baseline (kindergarten) Mean (SD)	NR (NR)
Black non-hispanic Mean (SD)	0.12 (0.32)
Hispanic Mean (SD)	0.17 (0.38)
Asian Mean (SD)	0.07 (0.25)
Other Mean (SD)	0.05 (0.23)
White, Non-Hispanic Mean (SD)	0.59 (0.49)

Outcomes

Study timepoints

- 3 year (Children were in third grade at follow-up (age not reported))

Outcomes

Outcome	Study, 3 year vs 3 year, N = 11515
Risk factor for interpersonal problems Measured by Teacher Social Rating Scale: Interpersonal Skills subscale, characterised as bottom 10% of participants (teacher-reported) Odds ratio/SD	NR (*empty data*)
Reading problems in 1st grade (compared to no reading problems) Measured by reading test, characterised as bottom 10% of participants (reported by trained assessor) Odds ratio/SD	1.2 (NR)
Approaches to learning problems in 1st grade (compared to no approaches to learning problems) Measured by Teacher Social Rating Scale: Approaches to learning subscale, characterised as bottom 10% of participants (teacher-reported) Odds ratio/SD	1.74 (NR)
Interpersonal problems in 1st grade (compared to no intersonal problems) Measured by Teacher Social Rating Scale: Interpersonal Skills subscale, characterised as bottom 10% of participants (teacher-reported) Odds ratio/SD	3.33 (NR)
Over 25% black students in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	0.68 (NR)

Outcome	Study, 3 year vs 3 year, N = 11515
Over 25% hispanic students in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	0.98 (NR)
Male gender in kindergarten (comparison not reported) (Reporter unclear) Odds ratio/SD	1.66 (NR)
Mother's education less than high school in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	1.37 (NR)
Father's education less than high school in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	0.96 (NR)
Family below poverty level in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	1.15 (NR)
Race: Black non-Hispanic in kindergarten (comparison not reported) (Reporter unclear) Odds ratio/SD	1.75 (NR)
Race: Hispanic in kindergarten (comparison not reported) (Reporter unclear) Odds ratio/SD	1.01 (NR)

Outcome	Study, 3 year vs 3 year, N = 11515
Race: Asian in kindergarten (comparison not reported) (Reporter unclear) Odds ratio/SD	0.63 (NR)
Race: Other in kindergarten (comparison not reported) (Reporter unclear) Odds ratio/SD	1.21 (NR)
Household structure: Single parent family in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	1.29 (NR)
Household structure: Other structures in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	1.56 (NR)
Home language not English in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	0.83 (NR)
Reading problems in 1st grade (compared to no reading problems) Measured by reading test, characterised as bottom 10% of participants (reported by trained assessor) Odds ratio/SD	1.66 (NR)
Approaches to learning problems in 1st grade (compared to no approaches to learning problems) Measured by Teacher Social Rating Scale: Approaches to learning subscale, characterised as bottom 10% of participants (teacher-reported)	1.94 (NR)

Outcome	Study, 3 year vs 3 year, N = 11515
Odds ratio/SD	
Internalising problems in 1st grade (compared to no intersonal problems) Measured by Teacher Social Rating Scale: Internalising Problems Behaviours subscale, characterised as bottom 10% of participants (teacher-reported) Odds ratio/SD	2.53 (NR)
Over 25% black students in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	1.06 (NR)
Over 25% hispanic students in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	1.06 (NR)
Male gender in kindergarten (comparison not reported) (Reporter unclear) Odds ratio/SD	1.08 (NR)
Mother's education less than high school in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	1.22 (NR)
Father's education less than high school in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	1.04 (NR)

Outcome	Study, 3 year vs 3 year, N = 11515
Family below poverty level in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	1.2 (NR)
Race: Black non-Hispanic in kindergarten (comparison not reported) (Reporter unclear) Odds ratio/SD	0.86 (NR)
Race: Hispanic in kindergarten (comparison not reported) (Reporter unclear) Odds ratio/SD	0.87 (NR)
Race: Asian in kindergarten (comparison not reported) (Reporter unclear) Odds ratio/SD	0.49 (NR)
Race: Other in kindergarten (comparison not reported) (Reporter unclear) Odds ratio/SD	1.03 (NR)
Household structure: Single parent familyin 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	1.31 (NR)
Household structure: Other structures in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	1.44 (NR)

Outcome	Study, 3 year vs 3 year, N = 11515
Home language not English in 1st grade (comparison not reported) (Reporter unclear) Odds ratio/SD	0.9 (NR)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.35 Munasinghe, 2020

Bibliographic Reference	Munasinghe, Sithum; Sperandei, Sandro; Freebairn, Louise; Conroy, Elizabeth; Jani, Hir; Marjanovic, Sandra; Page, Andrew; The Impact of Physical Distancing Policies During the COVID-19 Pandemic on Health and Well-Being Among Australian Adolescents.; The Journal of adolescent health : official publication of the Society for Adolescent Medicine; 2020; vol. 67 (no. 5); 653-661

Study details

Study design	Prospective cohort study
Trial registration number	Not reported
Study start date	18-Nov-2019

Study end date	19-Apr-2020
Aim	To investigate whether the physical distancing policies and school closures in the state of New South Wales (Australia) were associated with changes in physical activity, dietary behaviours, and well-being during the early period of this policy.
Country/geographical location	Australia
Setting	Western Sydney area, Australia
Inclusion criteria	Young people were recruited via social media (Instagram and Facebook) from the general population aged 13-19 years of a Sydney population catchment
Exclusion criteria	Not reported
Study methods	Young people were recruited via social media (Instagram and Facebook) from the general population aged 13-19 years of a Sydney population catchment. The primary outcome variables for this study included measures of physical activity, sedentary behaviour, dietary behaviour, and psychological well-being.
Confounders	Sex, age, body mass index, and employment status
Statistical method(s) used to analyse the data	• Descriptive plots of trajectories of physical activity were examined over the 22-week follow period, based on daily pedometer data, motion-based activity recognition (MBAR), and weekly self-report ecological momentary assessments (EMAs). • Multivariate multilevel mixed effect logistic regression models were conducted to investigate associations between the implementation of NSW guidelines (specified as a binary pre-post variable on March 23, 2020) and subsequent changes in physical activity, dietary behaviour, and well-being measures.
Attrition	Only 45% of baseline participants (N=1,298) completed one or more subsequent EMA. Attrition = 55%.
Study limitations (author)	• Participants who were more likely to engage were overwhelmingly female and more likely to be older in age (16-18 years). • Low EMA and follow-up survey completion rate only 45% of baseline participants (N=1,298) completed one or more subsequent EMA.
Study limitations (reviewer)	Lack of information on exclusion criteria
Source of funding	The research was supported by the Australian Government's Medical Research Future Fund (MRFF)

Characteristics

Study-level characteristics

Characteristic	Study (N = 582)
Age Median (IQR)	17 (16 to 18)
Gender Number of males and females did not add up to the total number of participants Sample size	n = NR ; % = NR
Male Sample size	n = 102 ; % = 17.5
Female Sample size	n = 465 ; % = 80

Outcomes

Study timepoints

- 22 week (Follow-up time)

Outcomes

Outcome	Study, 22 week vs 22 week, N = 582
Risk factors for psychological distress Measured by the Kessler Psychological Distress 6-item scale (K6); cut-off score of ≥19 was used (self-reported) Sample size	n = 421 ; % = 72.3
Risk factors for psychological distress Measured by the Kessler Psychological Distress 6-item scale (K6); cut-off score of ≥19 was used (self-reported) Odds ratio/95% CI	NR (NR to NR)
Post-implementation of physical distancing measures (compared to pre-implementation of physical distancing measures) Physical distancing began in the earlier period of March with the closure of pubs, clubs, gyms, cinemas, places of worship on March 23, 2020 and evidence of parents keeping children at home from school Sample size	n = NR ; % = NR
Post-implementation of physical distancing measures (compared to pre-implementation of physical distancing measures) Physical distancing began in the earlier period of March with the closure of pubs, clubs, gyms, cinemas, places of worship on March 23, 2020 and evidence of parents keeping children at home from school Odds ratio/95% CI	1.48 (0.74 to 2.95)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.36 O'Connor, 2002

Bibliographic Reference	O'Connor TG; Heron J; Golding J; Beveridge M; Glover V; Maternal antenatal anxiety and children's behavioural/emotional problems at 4 years. Report from the Avon Longitudinal Study of Parents and Children; British Journal of Psychiatry; 2002; vol. 180

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Aim	To test the hypothesis that maternal antenatal anxiety predicts behavioural / emotional problems in children
Country/geographical location	United Kingdom
Setting	Home-based (postal questionnaires)
Inclusion criteria	Parents and children of those included in the Avon Longitudinal Study
Exclusion criteria	• Individuals who did not complete the antenatal questionnaires in the allotted time frame. • Individuals who completed the questionnaires in overlapping time periods or in reverse order. • Children from multiple births. • Children born before 33 weeks gestation.
Study methods	The final sample size was 7748. Maternal anxiety and depression were assessed at 18 weeks and 32 weeks gestation, as well as 8 weeks, 8 months, 21 months and 33 months postnatally. Data on covariates were assessed during pregnancy and shortly after birth. Data on children's behavioural / emotional problems were collected at 47 months. Maternal anxiety was measured using the anxiety items from the Crown-Crisp index. Maternal depression was assessed using the Edinburgh Postnatal Depression Scale (EPDS). Behavioural adjustment in children at 4 years was based on parent reports using an adaptation of a previously widely used index of psychiatric symptoms in children.

Confounders	• Gestational age • Mother's concerns about pregnancy • Mother smoking during pregnancy • Mother consuming alcohol during pregnancy • Crowding • Mother's educational attainment • Maternal age • Maternal anxiety at 18 and 32 weeks gestation, and 8 weeks postnatal • Postnatal depression (at 8 weeks)
Statistical method(s) used to analyse the data	• For analyses based on a dichotomous dependent variable, Logistic regression was used and odds ratios were reported as the index of association. • Least squared regression was used when examining the continuous measure of behavioural / emotional problems as the dependent variable. • For both types of regression, a hierarchal approach was used.
Attrition	7448/12998 = 42.7% attrition
Study limitations (author)	• Selective attrition could mean that the authors observed associations among the less severely disturbed individuals. • The data were based entirely on maternal report, which raises the methodological concern that the ratings of child behavioural / emotional problems were influenced by reporter bias.
Study limitations (reviewer)	None to add
Source of funding	Not reported

Characteristics

Study-level characteristics

Characteristic	Study (N = 7448)
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 3853 ; % = 51.7
Female Sample size	n = 3595 ; % = 48.3

Outcomes

Study timepoints

- 4 year (Children were 4 years at follow-up)

Outcomes

Outcome	Study, 4 year vs 4 year, N = 7748
Risk factor for behavioural / emotional problems Measured using an adapted index of psychiatric symptoms in children, characterised using a cut-off of scores 2 SD above the mean (parent-reported)	NR (*empty data* to *empty data*)

Outcome	Study, 4 year vs 4 year, N = 7748
Odds ratio/95% CI	
Smoking during early pregnancy (compared to not smoking during early pregnancy: Boys Characterised as any cigarette or other smoking in the 2 weeks prior to completing the 18 week gestation questionnaire (self-reported Odds ratio/95% CI	1.38 (0.98 to 1.93)
Alcohol consumption of 1+ units/day during the first 3 months of pregnancy (compared to alcohol consumption of <1 units/day): Boys Self-reported Odds ratio/95% CI	0.74 (0.25 to 2.15)
Mother has university degree during pregnancy (compared to mother has CSE / vocational level education): Boys Self-reported Odds ratio/95% CI	0.4 (0.21 to 0.74)
Maternal anxiety at 18 weeks gestation (compared to no maternal anxiety): Boys Measured by the Crown-Crisp Index: anxiety items, characterised as mothers who scored in the top 15% (self-reported) Odds ratio/95% CI	1.13 (0.77 to 1.67)
Maternal anxiety at 32 weeks gestation (compared to no maternal anxiety): Boys Measured by the Crown-Crisp Index: anxiety items, characterised as mothers who scored in the top 15% (self-reported) Odds ratio/95% CI	2.14 (1.48 to 3.1)

Outcome	Study, 4 year vs 4 year, N = 7748
Maternal anxiety at 8 weeks postnatal (compared to no maternal anxiety): Boys Measured by the Crown-Crisp Index: anxiety items, characterised as mothers who scored in the top 15% (self-reported) Odds ratio/95% CI	1.54 (1 to 2.37)
Maternal depression at 8 weeks postnatal (compared to no maternal depression): Boys Measured by the Edinburgh Postnatal Depression Scale, characterised using a cut-off score of 13 (self-reported) Odds ratio/95% CI	1.49 (0.94 to 2.37)
Smoking during early pregnancy (compared to not smoking during early pregnancy: Girls Characterised as any cigarette or other smoking in the 2 weeks prior to completing the 18 week gestation questionnaire (self-reported) Odds ratio/95% CI	1.21 (0.87 to 1.72)
Alcohol consumption of 1+ units/day during the first 3 months of pregnancy (compared to alcohol consumption of <1 units/day): Girls Self-reported Odds ratio/95% CI	1.2 (0.48 to 2.97)
Mother has university degree during pregnancy (compared to mother has CSE / vocational level education): Girls Self-reported Odds ratio/95% CI	0.28 (0.15 to 0.54)
Maternal anxiety at 18 weeks gestation (compared to no maternal anxiety): Girls Measured by the Crown-Crisp Index: anxiety items, characterised as mothers who scored in the top 15% (self-reported) Odds ratio/95% CI	1.36 (0.93 to 1.98)

Outcome	Study, 4 year vs 4 year, N = 7748
Maternal anxiety at 32 weeks gestation (compared to no maternal anxiety): Girls Measured by the Crown-Crisp Index: anxiety items, characterised as mothers who scored in the top 15% (self-reported) Odds ratio/95% CI	1.88 (1.31 to 2.69)
Maternal anxiety at 8 weeks postnatal (compared to no maternal anxiety): Girls Measured by the Crown-Crisp Index: anxiety items, characterised as mothers who scored in the top 15% (self-reported) Odds ratio/95% CI	1.35 (0.88 to 2.07)
Maternal depression at 8 weeks postnatal (compared to no maternal depression): Girls Measured by the Edinburgh Postnatal Depression Scale, characterised using a cut-off score of 13 (self-reported) Odds ratio/95% CI	1.46 (0.91 to 2.34)
Maternal age ≥21 years during pregnancy (compared to maternal age ≤20 years) Boys Self-reported Odds ratio/95% CI	3.04 (1.89 to 4.89)
Maternal age ≥21 years during pregnancy (compared to maternal age ≤20 years) Girls Self-reported Odds ratio/95% CI	1.78 (1.08 to 2.95)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.37 O'Farrell, 2005

Bibliographic Reference	O'Farrell, A; Flanagan, E; Bedford, D; James, D; Howell, F; Factors associated with self-reported depression and self-esteem among school-going adolescents from a geographically defined region in Ireland.; Irish journal of medical science; 2005; vol. 174 (no. 4); 17-22

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Aim	To measure the prevalence of, and risk factors associated with, depression and low self-esteem among Irish post-primary students.
Country/geographical location	Ireland
Setting	Secondary school
Inclusion criteria	Students in randomly selected classes at the 24 schools selected to participate in the study
Exclusion criteria	Not reported
Study methods	A random stratified sampling technique was employed to select post-primary schools in counties Cavan, Monaghan, Louth and Meath. Of a total of 58 post-primary schools, 24 were selected to participate in the study. Three classes from each school were then randomly selected to participate. Anonymous questionnaires incorporating two standardised scales for measuring depressive symptomatology (CES-D questionnaire) and self esteem (Rosenberg Self-Esteem Scale) were distributed to students during a class period by a Research Officer. Demographic data such as age, sex, social class and fitness levels were also collected by questionnaire.
Confounders	• Age • Social class • Sex

	• Single parent family • Low self-esteem score • Low self-reported fitness level
Statistical method(s) used to analyse the data	The completed questionnaires were then coded, and analysed using JMP statistical analysis package. 8 In addition, multivariate logistic regression analysis was carried out using STATA, version 8.
Attrition	992/1428 = 30.5% attrition
Study limitations (author)	• This study was a cross-sectional study and therefore a causal relationship between risk factors and outcome measures can only be inferred. • Data on confounding factors such as timing of parental separation and parental depression that may be associated with both single parent families and depression are lacking. • Self-administered questionnaires were used to measure depression and self esteem and therefore, the findings may not be as reliable as that information obtained by interview or clinical assessment.
Study limitations (reviewer)	Lack of data on exclusion criteria
Source of funding	Not reported

Characteristics

Study-level characteristics

Characteristic	**Study (N = 992)**
Age (years) Range	13 to 17
Age (years)	15 (NR to NR)

Characteristic	Study (N = 992)
Median (IQR)	
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 603 ; % = 60.7
Female Sample size	n = 389 ; % = 39.2

Outcomes

Study timepoints

- 15 year (Median age of children was 15 years (range 13 to 17 years))

Outcomes

Outcome	Study, 15 year vs 15 year, N = 992
Risk factor for depressive symptoms Measured by the Centre for Epidemiological Studies-Depression (CES-D) Scale, characterised as scores ≥24 (self-reported) Custom value	NR

Outcome	Study, 15 year vs 15 year, N = 992
Low self-esteem (compared to normal/high self-esteem) Measured by the Rosenberg Self-Esteem (RSE) Scale, characterised as a score below the inter-quartile range (self-reported) Custom value	13.44 (Sig)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.38 Paavonen, 2003

Bibliographic Reference	Paavonen, E Juulia; Solantaus, Tytti; Almqvist, Fredrik; Aronen, Eeva T; Four-year follow-up study of sleep and psychiatric symptoms in preadolescents: relationship of persistent and temporary sleep problems to psychiatric symptoms.; Journal of developmental and behavioral pediatrics : JDBP; 2003; vol. 24 (no. 5); 307-14

Study details

Study design	Prospective cohort study
Trial registration number	Not reported

Aim	To assess sleep problems longitudinally at the ages of 8 and 12 years and to describe the spectrum of teacher-reported psychiatric symptoms in relation to previous, current, or persistent sleep disturbances reported by the children or parents
Country/geographical location	Finland
Setting	Primary school
Inclusion criteria	Finnish-speaking children, aged 8 to 9 years from school districts in the Helsinki area
Exclusion criteria	Mentally impaired children
Study methods	Data taken from a population-based epidemiological follow-up on mental health problems in childhood in Finland. Children's questionnaires were filled out during school hours and were distributed to the children by school teachers. Parents received the questionnaires through the schools, and two reminders were sent if the questionnaire was not returned in time. Children's psychiatric symptoms were assessed according to teachers' reports, and parents and children served as informants for sleep problems. At the second time point, teachers filled out the Teachers' Report Form.
Confounders	Analyses were adjusted for • gender, • mother's education, • mother's and father's socioeconomic status, • previous internalizing symptoms, • previous externalizing symptoms, • previous hyperactivity, • previous school refusal.
Statistical method(s) used to analyse the data	• The prevalence rates of sleep problems at T1 and T2 were compared using the McNemar test. • Persistence rates were then assessed and odds ratios and 95% confidence. • Mean scores of the different Teacher Report Form scales were compared using nonparametric tests (Mann-Whitney U test). • Multiple logistic regression analysis was performed to control for potential confounding factors. • Each outcome measure was submitted separately to logistic regression analysis as a dependent variable.

	• Statistical significance level was set at 0.05 and all p values were two-sided.
Attrition	598/1290 = 53.6% attrition
Study limitations (author)	• High drop-out rate. • The study lacked sufficient power to show statistical significance for the association between persistent sleep disturbances and psychiatric symptoms. • Only a few sleep questions were available and no exact definitions were given to parents. • All cases with sleep-related problems were included, regardless of severity. It is therefore possible that some of the reported sleep disturbances represent normal temporary variations in sleep quality and not clinically meaningful disorders.
Study limitations (reviewer)	None to add
Source of funding	The study was financially supported by Research Funds from Helsinki University Central Hospital and grants from the Finnish Medical Foundation, the Foundation for Pediatric Research, the Foundation of Children's Castle Hospital, the Finnish Sleep Research Society, the Child Psychiatric Research Foundation, and the Finnish Cultural Foundation.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 1320)**
Gender Characteristics at baseline Sample size	n = NR ; % = NR
Male Sample size	n = 661 ; % = 51.3

Characteristic	Study (N = 1320)
Female Sample size	n = 627 ; % = 48.7

Outcomes

Study timepoints

- 12 year (Age of children at follow-up)

Outcomes

Outcome	Study, 12 year vs 12 year, N = 598
Risk factor for internalising problems Measured by the Teacher Report Form (TRF), characterised using cut-off for deviant scores previously defined by Achenbach (teacher-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Previous sleep disturbance at age 8 (comparison not reported) Measured by the Rutter A2 scale and Children's Depression Inventory: sleep questions (parent and self-reported) Odds ratio/95% CI	0.78 (0.43 to 1.43)
Persistent sleep problem between the ages of 8 and 12 (comparison not reported) Measured by the Rutter A2 scale, Children's Behavior Checklist (CBCL) and Children's Depression Inventory: sleep questions (parent and self-reported)	1.82 (0.83 to 3.97)

Outcome	Study, 12 year vs 12 year, N = 598
Odds ratio/95% CI	

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.39 Park, 2014

Bibliographic Reference Park, S.; Kim, B.-N.; Kim, J.-W.; Shin, M.-S.; Yoo, H.J.; Lee, J.; Cho, S.-C.; Associations between maternal stress during pregnancy and offspring internalizing and externalizing problems in childhood; International Journal of Mental Health Systems; 2014; vol. 8 (no. 1); 44

Study details

Study design	Retrospective cohort study
Trial registration number	Not reported
Aim	To further clarify the complex relationships between prenatal and postnatal maternal psychological health, other perinatal risk factors, and offspring internalizing and externalizing behavioural problems in childhood.
Country/geographical location	South Korea

Setting	Primary school
Inclusion criteria	Children two to three schools from each region, for a total of thirteen schools, Seoul, Seongnam, Incheon, Ulsan, and Yeoncheon
Exclusion criteria	Incomplete responses to written informed consent
Study methods	Participants were recruited from five different administrative regions of Korea. We selected two to three schools from each region, for a total of thirteen schools, and sent letters to the parents of third and fourth grade children inviting them to participate in our study. Trained laypersons conducted face-to-face interviews of the mothers at each participant's school. Mothers completed the Korean version of the Child Behavior Checklist (K-CBCL) to evaluate internalizing and externalizing symptoms of children
Confounders	Model adjusted for • severe maternal stress during pregnancy • postpartum depression • family income, • unwanted pregnancy
Statistical method(s) used to analyse the data	• Binary logistic regression was used to evaluate group differences in demographic and perinatal variables. • Two sets of dichotomised outcomes were defined as the internalising problems (IP) group versus controls without IP, and the externalising problems (EP) group versus controls without EP. • Predictive variables were demographic, prenatal and child-rearing factors. • Individual variables were independently included in the logistic model one by one with no other covariates before variables significantly different between group in the univariate analysis were concurrently entered into the model. • Odd ratios adjusted for other variables were calculated. • 10% of the sample from control group were selected and perinatal variables were compared between a random sample from control group without IP (N = 96) and the IP group (N = 44) and between a random sample from control group without EP (N = 97) and the EP group (N = 30) using binary logistic regression tests.

Attrition	1003/1089 = 7.9% attrition
Study limitations (author)	• Lack of reliability and validity testing for the single-item surveys on maternal stress during pregnancy and postpartum depression. • Assessment of offspring behaviour was relied on maternal reports, which are likely to be biased by mother's own psychological health. • Respondents' reports may be characterised by inaccuracies because the data on prenatal and child-rearing factors were based on the recollection of the mothers of the children. • Did not get information on psychiatric family history other than postpartum depression, which could confound the results. • Small sample size of the internalising problems and the externalising problems group did not provide sufficient statistical power to detect modest differences.
Study limitations (reviewer)	None to add
Source of funding	This study was supported by the National Research Foundation of Korea (NRF) Grant funded by the Korean Government (MSIP)(NRF-2014R1A1A3049818)

Characteristics

Study-level characteristics

Characteristic	**Study (N = 1003)**
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 580 ; % = 57.8
Female	n = 423 ; % = 42.2

Characteristic	Study (N = 1003)
Sample size	

Outcomes

Study timepoints

- 9.05 year (Mean age of children)

Outcomes

Outcome	Study, 9.05 year vs 9.05 year, N = 1003
Risk factor for internalising problems Measured by the Korean version of the Child Behavior Checklist (K-CBCL), characterised as T-score ≥63 (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Severe maternal stress during pregnancy (comparison not reported) Measured using a structured questionnaire on perinatal risk factors (parent reported) Odds ratio/95% CI	3.09 (1.51 to 6.31)
Very mild to mild postpartum depression for at least 1 month during first year postpartum (compared to no depression) Measured using 5-point Likert-type scale, characterised as scoring 1-2 (parent-reported) Odds ratio/95% CI	1.72 (0.77 to 3.81)

Outcome	Study, 9.05 year vs 9.05 year, N = 1003
Moderate to very severe postpartum depression for at least 1 month during first year postpartum (compared to no depression) Measured using 5-point Likert-type scale, characterised as scoring 3-5 (parent-reported) Odds ratio/95% CI	2.07 (0.85 to 5.06)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.40 Roberts, 2013

Bibliographic Reference	Roberts, R.E.; Hao, D.T.; Obesity has few effects on future psychosocial functioning of adolescents; Eating Behaviors; 2013; vol. 14 (no. 2); 128-136

Study details

Study design	Prospective cohort study
Trial registration number	Not reported
Aim	To re-examine the question of the role of obesity in risk of psychosocial dysfunction among adolescents

Country/geographical location	United States
Setting	Not reported
Inclusion criteria	Teen Health 2000 Study (TH2K). The sample was selected from households in the Houston metropolitan area enrolled in two local health maintenance organisations.
Exclusion criteria	Not reported
Study methods	Data are taken from the Teen Health 2000 Study. The sample was selected from households in the Houston metropolitan area enrolled in two local health maintenance organizations. One youth, aged 11 to 17 years, was sampled from each eligible household, oversampling for ethnic minority households. Data were collected on sample youths and one adult caregiver using computer-assisted personal interviews and self-administered questionnaires. The interviews were conducted by trained, lay interviewers
Confounders	Analyses were adjusted for • age, • gender, • family income, • functioning
Statistical method(s) used to analyse the data	The estimated odds ratios and their 95% confidence limits were calculated using survey logistic regression using Taylor series approximation to compute the standard error of the odds ratio.
Attrition	3134/4175 = 24.9% attrition
Study limitations (author)	• Sample selected was not a strictly area probability sample. • Lower than preferred response rates, which could pose a potential risk of bias. • Lack of study power.
Study limitations (reviewer)	Lack of data on setting
Source of funding	• This was supported, in part, by Grants Nos. MH 49764 and MH 65606 from the National Institutes of Health.

	• The original study, except current analyses and manuscript preparation, was funded by the National Institutes of Health. • Work on this paper was supported by the University of Texas and the Dell Center for Healthy Living.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 4175)**
Age (years) Characteristics at baseline Sample size	n = NR ; % = NR
12 or less: At-risk of overweight or overweight BMI ≥85th percentile Sample size	n = NR ; % = 42.55
Between 13-15: At-risk of overweight or overweight BMI ≥85th percentile Sample size	n = NR ; % = 39.78
16+: At-risk of overweight or overweight BMI ≥85th percentile Sample size	n = NR ; % = 34.2
12 or less: Overweight BMI ≥95th percentile Sample size	n = NR ; % = 22.75
Between 13-15: Overweight BMI ≥95th percentile Sample size	n = NR ; % = 20.84

Characteristic	Study (N = 4175)
16+: Overweight BMI ≥95th percentile Sample size	n = NR ; % = 18.72
Gender Characteristics at baseline Sample size	n = NR ; % = NR
Male: At-risk of overweight or overweight BMI ≥85th percentile Sample size	n = NR ; % = 41.51
Female: At-risk of overweight or overweight BMI ≥85th percentile Sample size	n = NR ; % = 36.34
Male: Overweight BMI ≥95th percentile Sample size	n = NR ; % = 22.96
Female: Overweight BMI ≥95th percentile Sample size	n = NR ; % = 18.51
Ethnicity Characteristics at baseline Sample size	n = NR ; % = NR
Euro American: At-risk of overweight or overweight BMI ≥85th percentile Sample size	n = NR ; % = 31.17
African American: At-risk of overweight or overweight BMI ≥85th percentile	n = NR ; % = 44.35

Characteristic	Study (N = 4175)
Sample size	
Mexican/Hispanic: At-risk of overweight or overweight BMI ≥85th percentile Sample size	n = NR ; % = 44.86
Euro American: Overweight BMI ≥95th percentile Sample size	n = NR ; % = 13.93
African American: Overweight BMI ≥95th percentile Sample size	n = NR ; % = 25.01
Mexican/Hispanic: Overweight BMI ≥95th percentile Sample size	n = NR ; % = 27.68
Socioeconomic status Characteristics at baseline Sample size	n = NR ; % = NR
Family income <$35,000: At-risk of overweight or overweight BMI ≥85th percentile Sample size	n = NR ; % = 46.68
Family income $35,000 - $64,999: At-risk of overweight or overweight BMI ≥85th percentile Sample size	n = NR ; % = 41.67
Family income: $65,000: At-risk of overweight or overweight BMI ≥85th percentile Sample size	n = NR ; % = 31.92
Family income <$35,000: Overweight BMI ≥95th percentile	n = NR ; % = 26.26

Characteristic	Study (N = 4175)
Sample size	
Family income $35,000 - $64,999: Overweight BMI ≥95th percentile Sample size	n = NR ; % = 22.12
Family income: $65,000: Overweight BMI ≥95th percentile Sample size	n = NR ; % = 16.13

Outcomes

Study timepoints

- 12 month (Length of follow-up)

Outcomes

Outcome	Study, 12 month vs 12 month, N = 3134
Risk factor for peer problems Measured using a self-administered questionnaire, characterised as having some or a lot of problems with peers (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Overweight (compared to healthy weight) Measured using BMI, characterised as 95th>BMI≥85th percentile (reporter unclear) Odds ratio/95% CI	1.1 (0.77 to 1.57)

Outcome	Study, 12 month vs 12 month, N = 3134
Obese (compared to healthy weight) Measured using BMI, characterised as BMI≥95th percentile(reporter unclear) Odds ratio/95% CI	1.13 (0.8 to 1.59)
Risk factor for poor perceived mental health Measured using a self-administered questionnaire, characterised as having fair or poor or very poor mental health (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Overweight (compared to healthy weight) Measured using BMI, characterised as 95th>BMI≥85th percentile (reporter unclear) Odds ratio/95% CI	1.07 (0.8 to 1.43)
Obese (compared to healthy weight) Measured using BMI, characterised as BMI≥95th percentile(reporter unclear) Odds ratio/95% CI	1.66 (1.29 to 2.14)
Risk factor for low self-esteem Measured using the Rosenberg's self-esteem scale, characterised as scores below the median (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Overweight (compared to healthy weight) Measured using BMI, characterised as 95th>BMI≥85th percentile (reporter unclear) Odds ratio/95% CI	0.91 (0.73 to 1.12)

Outcome	Study, 12 month vs 12 month, N = 3134
Obese (compared to healthy weight) Measured using BMI, characterised as BMI≥95th percentile(reporter unclear) Odds ratio/95% CI	1.09 (0.89 to 1.35)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.41 Roetman, 2019

Bibliographic Reference Roetman, Peter Josse; Lundstrom, Sebastian; Finkenauer, Catrin; Vermeiren, Robert Rafael Joseph Marie; Lichtenstein, Paul; Colins, Olivier Frederiek; Children With Early-Onset Disruptive Behavior: Parental Mental Disorders Predict Poor Psychosocial Functioning in Adolescence.; Journal of the American Academy of Child and Adolescent Psychiatry; 2019; vol. 58 (no. 8); 806-817

Study details

Study design	Longitudinal studies
Aim	to investigate whether 9-year-old children with DB are at a greater risk for mal adjustment in middle (age 15) and late (age 18) adolescence when considering maternal and paternal mental disorder status

Country/geographical location	Sweden
Setting	Not reported
Inclusion criteria	Children included in The Child and Adolescent Twin Study in Sweden (CATSS)
Exclusion criteria	Not reported at baseline (children with missing data were excluded at follow-up ages 15 and 18 years)
Study methods	Data were taken from the Child and Adolescent Twin Study in Sweden (CATSS), a nationwide longitudinal study that targets all twins born in Sweden since July 1992. Data were collected at age 9, 15 and 19 and comprise dof both self-report and parent-reported information.
Confounders	Analyses adjusted for • sex of child, • parental education level, • maternal age at birth, • paternal age at birth, • child disruptive behaviour, • paternal mental disorder, • maternal mental disorder
Statistical method(s) used to analyse the data	All outcome measures, except self reported crime, were dichotomised into high versus low. Generalized linear mixed models (GLMMs) for logistic regression were conducted. A robust estimator (Huber/White/sandwich estimation) was used to estimate the covariance. The first model was a crude effects model consisting of child disruptive behaviour (DB) (continuous), paternal mental disorder (MD) (dichotomous), or maternal MD (dichotomous). In the second model, child DB, paternal MD, and maternal MD were included simultaneously in an adjusted model.

	Parental education level, maternal age at childbirth, paternal age at childbirth and gender were controlled in both models. Both models were repeated in a subsample of children who displayed at least some DB, to test whether parental MD is a risk factor for future maladjustment among children who already display DB.
Attrition	Age 15 years follow-up: 6319/8906 = 29.0% attrition Age 18 years follow-up: 3068/8906 = 65.6% attrition
Study limitations (author)	• Llifetime prevalence of parental MD and child DB, which implies that it is uncertain whether parental MD occurred before, at the same time, or after the onset of child DB. This might have hampered the likelihood of finding significant main effects of parental MDs in children with DB. • Specific mental disorders in parents have been associated with different child outcomes, and there is some evidence to suggest that relations between specific parental mental disorders with future child outcomes are influenced by the sex of the parent. prevalence issues prevented the testing of the effect of specific MDs (eg, substance use disorder, major depressive disorder) in parents in general, or in mothers and fathers separately. • The number of children with DB who had parents with an MD was low and prevalence issues may have hampered the likelihood of finding significant effects of parental MDs in children with DB. • It can be argued that dichotomising the outcome variables may have decreased the power to reveal significant prospective relations. • Officially recorded parental mental disorders are most likely an underestimation of the true extent of parental mental disorders.
Study limitations (reviewer)	Lack of detail regarding the exclusion criteria
Source of funding	• The study was supported by ACTION. ACTION receives funding from the European Union Seventh Framework Program (FP7/2007e 2013) under grant agreement no. 602768. • The Swedish Twin Registry receives funding through the Swedish Research Council under the grant no. 2017-00641. • The Child and Adolescent Twin Study in Sweden (CATSS) was supported by the Swedish Council for Working Life, funds under the ALF agreement, the Soderstr€om-Konigska Foundation, and the Swedish Research Council.

Characteristics

Study-level characteristics

Characteristic	Study (N = 6319)
Gender Sample size	n = NR ; % = NR
Male Gender reported at age 15 years follow-up Sample size	n = 2885 ; % = 45.7
Female Gender reported at age 15 years follow-up Sample size	n = 3434 ; % = 54.3

Outcomes

Study timepoints

- 15 year (Age of children at first follow-up)
- 18 year (Age of children at final follow-up)

Outcomes

Outcome	Study, 15 year vs 15 year, N = 6319	Study, 18 year vs 18 year, N = 3068
Risk factor for emotional problems Measured by Strengths and Difficulties Questionnaire (SDQ) subscale (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)	NR (*empty data* to *empty data*)
Child disruptive behaviour at 9 years (comparison not reported) Measured using Autism-Tics, AD/HD and other Comorbidities inventory (A-TAC) Odds ratio/95% CI	1.11 (1.06 to 1.16)	1.3 (1.22 to 1.39)
Paternal mental disorder at 9 years (compared to no parernal mental disorder) Based on information retrieved from the National Patient Register (NPR) Odds ratio/95% CI	1.11 (0.82 to 1.5)	0.99 (0.61 to 1.59)
Maternal mental disorder at 9 years (compared to no maternal mental disorder) Based on information retrieved from the National Patient Register (NPR) Odds ratio/95% CI	1.12 (0.83 to 1.51)	1.28 (0.85 to 1.93)
Risk factor for peer problems Measured by Strengths and Difficulties Questionnaire (SDQ) subscale (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)	NR (*empty data* to *empty data*)

Outcome	Study, 15 year vs 15 year, N = 6319	Study, 18 year vs 18 year, N = 3068
Child disruptive behaviour at 9 years (comparison not reported) Measured using Autism-Tics, AD/HD and other Comorbidities inventory (A-TAC) Odds ratio/95% CI	1.17 (1.12 to 1.22)	NR (NR to NR)
Paternal mental disorder at 9 years (compared to no parernal mental disorder) Based on information retrieved from the National Patient Register (NPR) Odds ratio/95% CI	1.02 (0.77 to 1.34)	NR (NR to NR)
Maternal mental disorder at 9 years (compared to no maternal mental disorder) Based on information retrieved from the National Patient Register (NPR) Odds ratio/95% CI	1.36 (1.06 to 1.73)	NR (NR to NR)
Risk factor for low prosocial behaviour Measured by Strengths and Difficulties Questionnaire (SDQ) subscale (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)	NR (*empty data* to *empty data*)
Child disruptive behaviour at 9 years (comparison not reported) Measured using Autism-Tics, AD/HD and other Comorbidities inventory (A-TAC) Odds ratio/95% CI	1.08 (1.03 to 1.13)	NR (NR to NR)
Paternal mental disorder at 9 years (compared to no parernal mental disorder) Based on information retrieved from the National Patient Register (NPR)	0.93 (0.67 to 1.29)	NR (NR to NR)

Outcome	Study, 15 year vs 15 year, N = 6319	Study, 18 year vs 18 year, N = 3068
Odds ratio/95% CI		
Maternal mental disorder at 9 years (compared to no maternal mental disorder) Based on information retrieved from the National Patient Register (NPR) Odds ratio/95% CI	1.03 (0.78 to 1.38)	NR (NR to NR)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.42 Rothon, 2010

Bibliographic Reference	Rothon, Catherine; Edwards, Phil; Bhui, Kamaldeep; Viner, Russell M; Taylor, Stephanie; Stansfeld, Stephen A; Physical activity and depressive symptoms in adolescents: a prospective study.; BMC medicine; 2010; vol. 8; 32

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study start date	2001

Study end date	2003
Aim	To examine the relationship between depression and physical activity
Country/geographical location	United Kingdom
Setting	Secondary school
Inclusion criteria	Data obtained from the Research with East London Adolescents: Community Health Survey (RELACHS). Participants were recruited from three Local Education Authority (LEA) boroughs in East London (Hackney, Newham and Tower Hamlets) in 2001. Participants in 2001 were year 7 (age 11-12) and year 9 (age 13-14) pupils from comprehensive schools in the three boroughs.
Exclusion criteria	Pupils who did not have complete data
Study methods	Data taken from RELACHS, an epidemiological study of adolescents. Participants were recruited from three Local Education Authority (LEA) boroughs in East London (Hackney, Newham and Tower Hamlets) in 2001 and followed up in 2003. A team of researchers administered the questionnaire in classrooms in one 40-50 min session. Pupils provided self-reported data on a self-completion questionnaire. Physical measurements were taken by trained researchers.
Confounders	Analyses adjusted for • baseline depressive symptoms • baseline physical activity.
Statistical method(s) used to analyse the data	• For cross-sectional analysis, univariable analyses, crude odds ratios (ORs) were calculated for the association between each variable and depression using logistic regression. • Confounders were assessed using Mantel-Haenszel methods and univariable logistic regression analysis. • Multivariable analysis was carried out using logistic regression. • For the cross-sectional analysis, the continuous physical activity variable was used as the main exposure. • Multivariable longitudinal analysis was carried out to examine the impact of a change in physical activity on depression and the Wald test was used to assess goodness- of-fit. • Potential cofounders were added to the model in groups and retained if they they improved model fit.

	• Direction of causality was analysed by looking at whether participants who developed depressive symptoms between baseline and follow-up had higher odds of changing their level of physical activity.
Attrition	2,093/2,789 = 25.0% attrition
Study limitations (author)	• Certain groups were less likely to be followed-up (adolescents who were depressed at baseline, girls, those eligible for free school meals and white pupils), which may have contributed to an underestimation of the strength of association between physical activity and depression at follow-up. • All of the measures, with the exception of height and weight, were self-reported and there are no objective measures with which to compare the pupils' answers. • Pupils with depressive symptoms may be less likely to recall periods of physical activity due to a tendency to underestimate their level of activity/achievement. • As students get older, it may be less fashionable to be active; physical activity at follow-up may therefore be underestimated. • Activity taken within the school, during physical education classes and break times is not taken into account and intensity may have varied considerably amongst pupils. • The study may suffer from a lack of power, particularly in the longitudinal analysis. • There is still a possibility of residual confounding, even after adjustment of cofounders.
Study limitations (reviewer)	None to add
Source of funding	The data collection was funded by East London and City Health Authority and the Department of Health. Catherine Rothon is funded by a Medical Research Council Special Training Fellowship (G0601707).

Characteristics

Study-level characteristics

Characteristic	Study (N = 2789)
Gender Sample size	n = NR ; % = NR
Male Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 1356 ; % = 48.8
Female Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 1433 ; % = 51.1
Ethnicity Sample size	n = NR ; % = NR
White UK Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 581 ; % = 20.8
White Other Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 161 ; % = 5.9
Bangladeshi Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 690 ; % = 25.6

Characteristic	Study (N = 2789)
Indian Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 250 ; % = 9
Pakistani Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 184 ; % = 6.8
Black Caribbean Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 166 ; % = 6
Black African Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 279 ; % = 10.1
Black British Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 121 ; % = 4.3
Mixed ethnicity Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 193 ; % = 7
Other Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 124 ; % = 4.5

Characteristic	Study (N = 2789)
Socioeconomic status Measured by eligibility for free school meals Sample size	n = NR ; % = NR
Not eligible Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 1338 ; % = 51.9
Eligible Characteristics at baseline (percentage adjusted for survey design) Sample size	n = 1217 ; % = 48.1

Outcomes

Study timepoints

- 2 year (Follow-up time for both groups that were in Year 7 (age 11-12) and Year 9 (age 13-14) at baseline in 2001)

Outcomes

Outcome	Study, 2 year vs 2 year, N = 2093
Risk factor for depressive symptoms (adjusted for general health/long-standing illness) Measured by the Short Moods and Feelings Questionnaire (SMFQ) with a score of ≥8 indicating the presence of depression (self-reported)	NR (*empty data* to *empty data*)

Outcome	Study, 2 year vs 2 year, N = 2093
Odds ratio/95% CI	
Per hour change in level of physical activity between 2001-2003 (Males) Measured by questions on physical activity taken from the Health Education Authority (HEA), calculated by subtracting the continuous physical activity variable at baseline from the continuous physical activity variable at follow-up Odds ratio/95% CI	0.99 (0.89 to 1.09)
Per hour change in level of physical activity between 2001-2003 (Females) Measured by questions on physical activity taken from the Health Education Authority (HEA), calculated by subtracting the continuous physical activity variable at baseline from the continuous physical activity variable at follow-up Odds ratio/95% CI	0.99 (0.89 to 1.1)
Risk factor for depressive symptoms (adjusted for health behaviours) Measured by the Short Moods and Feelings Questionnaire (SMFQ) with a score of ≥8 indicating the presence of depression (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Per hour change in level of physical activity between 2001-2003 (Males) Measured by questions on physical activity taken from the Health Education Authority (HEA), calculated by subtracting the continuous physical activity variable at baseline from the continuous physical activity variable at follow-up Odds ratio/95% CI	0.95 (0.88 to 1.03)
Per hour change in level of physical activity between 2001-2003 (Females) Measured by questions on physical activity taken from the Health Education Authority (HEA), calculated by subtracting the continuous physical activity variable at baseline from the continuous physical activity variable at follow-up Odds ratio/95% CI	0.95 (0.87 to 1.04)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.43 Rushton, 2002

Bibliographic Reference	Rushton, Jerry L; Forcier, Michelle; Schectman, Robin M; Epidemiology of depressive symptoms in the National Longitudinal Study of Adolescent Health.; Journal of the American Academy of Child and Adolescent Psychiatry; 2002; vol. 41 (no. 2); 199-205

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study start date	1995
Study end date	1996
Aim	• To provide a description of the range of depressive symptoms reported by adolescents in a large, nationally representative sample • To understand factors associated with persistence of depressive symptoms
Country/geographical location	United States
Setting	Home-based
Inclusion criteria	Adolescents included in the National Longitudinal Study of Adolescent Health (AddHealth) survey

Exclusion criteria	• Respondents with missing items • Respondents with no assigned sample weight
Study methods	Data taken from the National Longitudinal Study of Adolescent Health (AddHealth), a survey of adolescents in grades 7 through 12 in the United States. Participants were interviewed in their home in 1995 and again in 1996
Confounders	Analyses adjusted for • race, • grade in school, • socioeconomic status, • maternal educational status, • single-parent household.
Statistical method(s) used to analyse the data	• Bivariate analyses of outcomes and sociodemographic factors were conducted with chi-squared analysis. • Potential predictive variables were analysed with multivariate logistic regression for the outcome of persistent moderate/severe depressive symptoms. • Logistic regression models were added variables selected from bivariate analyses and stepwise modelling with significant and demographic variables being retained in the model.
Attrition	13568/20736 = 34.6% attrition (20736 = 76.8% that completed the interview of the 27000 that were invited to)
Study limitations (author)	• CES-D represents symptoms during the past week and may include more transient or temporary symptoms than other measures. Gender and cultural factors may also affect CES-D responses. • Results may not be generalisable to adolescents with depressive disorders identified by means of other scales, DSM criteria, or clinical diagnosis. • Compared to AddHealth study, other longitudinal studies have the advantages of multiple measures over time, longer follow-up periods, and additional mental health items.

	• The AddHealth study does not include extensive medical information—notably antidepressant treatment and mental health services. • Some of these factors may have changed, or other intervening events, stresses, or changes may have occurred during the study period that are not captured in the analysis of the AddHealth survey. • Non-respondent students have different health risks and behaviours that could affect the generalisability of the results.
Study limitations (reviewer)	None to add
Source of funding	Not reported

Characteristics

Study-level characteristics

Characteristic	**Study (N = 20736)**
Age (years) Characteristics at baseline Mean (SD)	15.6 (NR)
Gender Characteristics at baseline Sample size	n = NR ; % = NR
Male Sample size	n = 10430 ; % = 50.3
Female Sample size	n = 10306 ; % = 49.7

Characteristic	Study (N = 20736)
Ethnicity Characteristics at baseline Sample size	n = NR ; % = NR
White Sample size	n = 14100 ; % = 68
African American Sample size	n = 3110 ; % = 15
Hispanic Sample size	n = 2551 ; % = 12.3
Asian Sample size	n = 705 ; % = 3.4
Other Sample size	n = 290 ; % = 1.4
Socioeconomic status Characteristics at baseline Sample size	n = NR ; % = NR
Parent on public assistance Sample size	n = 2385 ; % = 11.5

Outcomes

Study timepoints

- 1 year (Length of follow-up (age children at follow-up not reported))

Outcomes

Outcome	Study, 1 year vs 1 year, N = 13568
Risk factor for moderate to severe depressive symptoms Measured by Center for Epidemiologic Studies-Depression Scale (CES-D), characterised as a score ≥24 (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Received counseling at mean age 15.6 years (compared to reference group adolescents) Measured using 5-point Likert agreement scale (self-reported) Odds ratio/95% CI	1.9 (1.2 to 3)
Suspended from school at mean age 15.6 (compared to reference group adolescents) Measured using 5-point Likert agreement scale (self-reported) Odds ratio/95% CI	1.9 (1.3 to 2.7)
Fair/poor general health at mean age 15.6 years (compared to reference group adolescents) Measured using 5-point Likert agreement scale (self-reported) Odds ratio/95% CI	1.7 (1.1 to 2.7)
Somatic symptoms at mean age 15.6 years (compared to reference group adolescents) Measured using 5-point Likert agreement scale (self-reported) Odds ratio/95% CI	1.6 (1.1 to 2.5)

Outcome	Study, 1 year vs 1 year, N = 13568
Female gender at mean age 15.6 years (compared to reference group adolescents) Measured using 5-point Likert agreement scale (self-reported) Odds ratio/95% CI	1.6 (1.1 to 2.4)
Unable to obtain needed medical care at mean age 15.6 years (compared to reference group adolescents) Measured using 5-point Likert agreement scale (self-reported) Odds ratio/95% CI	1.6 (1.1 to 2.2)
Suicidal ideation at mean age 15.6 years (compared to reference group adolescents) Measured using 5-point Likert agreement scale (self-reported) Odds ratio/95% CI	1.5 (1 to 2.2)
Family has fun together at mean age 15.6 years (compared to reference group adolescents) Measured using 5-point Likert agreement scale (self-reported) Odds ratio/95% CI	0.6 (0.4 to 0.9)
Close to father at mean age 15.6 years (compared to reference group adolescents) Measured using 5-point Likert agreement scale (self-reported) Odds ratio/95% CI	0.4 (0.3 to 0.7)
Family member completed suicide at mean age 15.6 years (compared to reference group adolescents) Measured using 5-point Likert agreement scale (self-reported) Odds ratio/95% CI	0.2 (0.1 to 0.6)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.44 Sawyer, 2011

Bibliographic Reference	Sawyer, Michael Gifford; Harchak, Taylor; Wake, Melissa; Lynch, John; Four-year prospective study of BMI and mental health problems in young children.; Pediatrics; 2011; vol. 128 (no. 4); 677-84

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study start date	2004
Study end date	2008
Aim	To investigate the relationship between children's BMI at 4-5 years and changes to children's BMI between 4-5 years and 8-9 years, and children's levels of mental health problems/HRQoL at 8-9 years
Country/geographical location	Australia
Setting	Not reported
Inclusion criteria	Children included in wave 1 of the national Longitudinal Study of Australian Children (LSAC) when they were 4-5 years-old
Exclusion criteria	Not reported

Study methods	Data came form the national Longitudinal Study of Australian Children in 2004 and follow up in 2008. Trained interviewers interviewed the primary caregiver at home. Other information were sourced from teachers who had at least 8 hours of contact per week.
Confounders	Analyses were adjusted for • mother's education level • mother's Kessler K6 scale score • language other the English spoken by mother at home • child's indigenous status • mother's occupation • neighbourhood disadvantage (SEIFA) • SDQ or PedsQl scale score at age 4 to 5
Statistical method(s) used to analyse the data	Two sets of logistic regression analyses were used to examine the relationship between children's BMI and their mental health and HRQoL at age 8-9 years.
Attrition	3363/4983 = 32.5% attrition
Study limitations (author)	Loss of participants during initial sampling and follow-up, which may have introduced systematic errors in prevalence estimates.
Study limitations (reviewer)	Lack of data on setting and exclusion criteria
Source of funding	• Dr Lynch was supported by an Australia Fellowship from the National Health and Medical Research Council. • Dr Wake was supported by the National Health and Medical Council career development award 546405.

Characteristics

Study-level characteristics

Characteristic	Study (N = 3363)
Gender Characteristics at age 4-5 years Sample size	n = NR ; % = NR
Male Sample size	n = 1715 ; % = 51
Female Sample size	n = 1648 ; % = 49
Ethnicity Characteristics at age 4-5 years Sample size	n = NR ; % = NR
Aboriginal or Torres Strait Islander Sample size	n = 67 ; % = 2
Socioeconomic status Measured by parental occupation, characteristics at age 4-5 years Sample size	n = NR ; % = NR
Neither parent working Sample size	n = 269 ; % = 8

Characteristic	Study (N = 3363)
Unskilled Sample size	n = 168 ; % = 5
Skilled Sample size	n = 1009 ; % = 30
Professional Sample size	n = 1917 ; % = 57

Outcomes

Study timepoints

- 8.5 year

Outcomes

Outcome	Study, 8.5 year vs 8.5 year, N = 3363
Risk factor for peer problems: parent report Measured using Strength and Difficulties Questionnaire (SDQ) subscale, dichotomised using recommended cut-off scores which are not specified (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)

Outcome	Study, 8.5 year vs 8.5 year, N = 3363
Higher BMI at age 4-5 (comparison not reported) BMI z scores standardised for age and gender used, classification of 'higher BMI' not reported (interviewer-reported) Odds ratio/95% CI	1.15 (1.03 to 1.28)
Risk factor for emotional symptoms: parent report Measured using Strength and Difficulties Questionnaire (SDQ) subscale, dichotomised using recommended cut-off scores which are not specified (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Higher BMI at age 4-5 (comparison not reported) BMI z scores standardised for age and gender used, classification of 'higher BMI' not reported (interviewer-reported) Odds ratio/95% CI	1.05 (0.91 to 1.2)
Risk factor for peer problems: teacher report Measured using Strength and Difficulties Questionnaire (SDQ) subscale, dichotomised using recommended cut-off scores which are not specified (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Higher BMI at age 4-5 (comparison not reported) BMI z scores standardised for age and gender used, classification of 'higher BMI' not reported (interviewer-reported) Odds ratio/95% CI	1.2 (1.04 to 1.37)
Risk factor for emotional symptoms: parent report Measured using Strength and Difficulties Questionnaire (SDQ) subscale, dichotomised using recommended cut-off scores which are not specified (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)

Outcome	Study, 8.5 year vs 8.5 year, N = 3363
Higher BMI at age 4-5 (comparison not reported) BMI z scores standardised for age and gender used, classification of 'higher BMI' not reported (interviewer-reported) Odds ratio/95% CI	1.38 (1.17 to 1.62)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.45 SCOURFIELD, 2016

Bibliographic Reference	SCOURFIELD, Jonathan; The association between characteristics of fathering in infancy and depressive symptoms in adolescence: a UK birth cohort study; Child Abuse and Neglect; 2016; vol. 58; 119-128

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Aim	• To examine how fathers' attitudes and experiences influence child outcomes (as opposed to simply noting the effect of father absence • or presence)

	• To examine the association between paternal child care attitudes/experiences and child outcomes • To examine a range of attitudes including the more extreme negative responses. • To examine whether these effects are moderated by characteristics of the father, mother and child, such as social class, child's sex and parental depression
Country/geographical location	United Kingdom
Setting	The former Avon Health Authority in south-west England
Inclusion criteria	Participants from the Avon Longitudinal Study of Parents and Children
Exclusion criteria	Not reported
Study methods	Data taken from the Avon Longitudinal Study of Parents and Children. Data on paternal attitudes to and experiences of child care were derived from the questionnaires administered to the study mothers' partner at 8 weeks, 8 months and 21 months.
Confounders	Analyses adjusted for • sex of child, • maternal depression, • paternal depression • challenging life events.
Statistical method(s) used to analyse the data	• Logistic regression was used to investigate associations between paternal parenting and adolescent depressive symptoms as a binary outcome. • On the basis of the univariable associations of primary exposures with the outcomes, a decision was taken about which variables to take forward into multi-variable regression models. • 75 imputed datasets were generated based on the outcome, primary exposure and confounder variables, and any interaction terms. • The number of imputations required to achieve convergence of parameter estimates was determined by checking the estimate of the Monte Carlo error in relation to the standard error of the coefficient being estimated. • The data was imputed under a logistic regression model using an imputation sampling method. • Imputed estimates were combined using Rubin's rules.

	• Pairwise correlations between aspects of paternal parenting were investigated using Pearson's correlation coefficients.
Attrition	3024/13973 = 73.4% attrition (Outcome data available for 3024 adolescents who had paternal data 21 months, 13973 singletons/twins at the start of the Avon Longitudinal Study)
Study limitations (author)	• Attrition is a limitation of using ALSPAC data from later waves. • Potential selection bias as those lost to follow-up are disproportionately from lower socio-economic positions and therefore more likely to show depressive symptoms. • Levels of depressive symptoms were higher in children who did not have data provided by fathers at 8 weeks, 8 months or 21 months. • It is difficult to admit to feeling anger towards a toddler and being worried you might be violent, so socially desirable responses are quite likely. Therefore, the true association of the potential paternal abuse responses and children's depression risk could be underestimated. • The evidence for interaction of potential abuse and social class was relatively weak ($p = 0.04$) and interactions with five variables were tested so it is possible that this was a chance association. • Measures of paternal characteristics have not yet been validated and individual items which make up the potential paternal abuse measure have not been validated for measuring this risk.
Study limitations (reviewer)	Lack of data on exclusion criteria
Source of funding	This research was specifically funded by the Economic and Social Research Council as part of a mid-career development fellowship (RES 070-27-0040)

Outcomes

Study timepoints

- 16.5 year (Age of children at follow-up)

Outcomes

Outcome	Study, 16.5 year vs 16.5 year, N = 2250
Risk factor for depressive symptoms Measured by Short Mood and Feelings Questionnaire (SMFQ), dichotomised using cut-off score ≥11 Sample size	n = NR
Risk factor for depressive symptoms Measured by Short Mood and Feelings Questionnaire (SMFQ), dichotomised using cut-off score ≥11 Odds ratio/95% CI	NR (*empty data* to *empty data*)
Potential paternal abuse in professional, managerial and technical households at age 21 months (comparison not reported) Assessed using questionnaires and converted into standardised z-scores (Parent reported) Sample size	n = 1401 ; % = 62.3
Potential paternal abuse in professional, managerial and technical households at age 21 months (comparison not reported) Assessed using questionnaires and converted into standardised z-scores (Parent reported) Odds ratio/95% CI	1.31 (1.13 to 1.53)
Potential paternal abuse in skilled non-manual households at age 21 months (comparison not reported) Assessed using questionnaires and converted into standardised z-scores (Parent reported)	n = 623 ; % = 27.7

Outcome	Study, 16.5 year vs 16.5 year, N = 2250
Sample size	
Potential paternal abuse in skilled non-manual households at age 21 months (comparison not reported) Assessed using questionnaires and converted into standardised z-scores (Parent reported) Odds ratio/95% CI	0.97 (0.78 to 1.23)
Potential paternal abuse in skilled manual, semi-skilled and unskilled social class households at age 21 months (comparison not reported) Assessed using questionnaires and converted into standardised z-scores (Parent reported) Sample size	n = 226 ; % = 10
Potential paternal abuse in skilled manual, semi-skilled and unskilled social class households at age 21 months (comparison not reported) Assessed using questionnaires and converted into standardised z-scores (Parent reported) Odds ratio/95% CI	0.95 (0.65 to 1.39)
Paternal enjoyment at age 21 months (comparison not reported) Assessed using questionnaires and converted into standardised z-scores (Parent reported) Sample size	n = NR ; % = NR
Paternal enjoyment at age 21 months (comparison not reported) Assessed using questionnaires and converted into standardised z-scores (Parent reported) Odds ratio/95% CI	0.9 (0.8 to 1.02)
Paternal confidence at age 21 months (comparison not reported) Assessed using questionnaires and converted into standardised z-scores (Parent reported) Sample size	n = NR ; % = NR

Outcome	Study, 16.5 year vs 16.5 year, N = 2250
Paternal confidence at age 21 months (comparison not reported) Assessed using questionnaires and converted into standardised z-scores (Parent reported) Odds ratio/95% CI	0.99 (0.87 to 1.13)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	High

D.46 Sourander, 2005

Bibliographic Reference	Sourander, Andre; Helstela, Leila; Childhood predictors of externalizing and internalizing problems in adolescence. A prospective follow-up study from age 8 to 16.; European child & adolescent psychiatry; 2005; vol. 14 (no. 8); 415-23

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study start date	Nov-1989
Study end date	Sep-1997

Aim	• To study to what extent children's emotional and behavioural problems, perceived need of services and family variables at age 8 predict parent reports of child's externalising and internalising problems at age 16. • To study the weight of different informants at age 8 (parents, teachers and children) for outcome at age 16.
Country/geographical location	Finland
Setting	Home and school-based
Inclusion criteria	All Finnish-speaking children born in 1981 and living in one of the five University hospital catchment areas of Finland (Turku University Hospital, south-west Finland)
Exclusion criteria	Children not born in 1981
Study methods	Data taken from a target population was all Finnish-speaking children born in 1981 and living in one of the five University hospital catchment areas of Finland and were followed up 8 years later. At baseline, information was obtained from parents, teachers and self-reports.Data collection was organized through teachers.
Confounders	Analyses included all variables significant in univariate model
Statistical method(s) used to analyse the data	• Univariate and multivariate logistic regression analysed the association between the response variables at follow-up and the explanatory variables when the child was 8 years of age. • Those explanatory variables which remained significant at level 0.1 in the respective multivariate analysis were included in the final multivariate analysis. • P-values less than 0.05 were considered statistically significant. All tests were two-tailed.
Attrition	609/986 = 38.2% attrition
Study limitations (author)	• Large number of subjects and the longitudinal design lacks specificity and the additional depth that formally structured interviews or register data might provide. • The instruments used at baseline and at follow- up were not the same. • Follow-up assessment was based solely on parent reports. • No information about the mental health of the parents was collected.

Study limitations (reviewer)	None to add
Source of funding	Not reported

Outcomes

Study timepoints

- 16 year (Age of children at follow-up)

Outcomes

Outcome	**Study, 16 year vs 16 year, N = 609**
Risk factor for externalising problems - Boys Measured by Child Behavior Check list (CBCL) externalising scale, characterised as sex-specific 82nd percentile cut-off based on the distribution of the scores in the sample at follow-up Custom value	NR
Risk factor for externalising problems - Boys Measured by Child Behavior Check list (CBCL) externalising scale, characterised as sex-specific 82nd percentile cut-off based on the distribution of the scores in the sample at follow-up Odds ratio/95% CI	NR (*empty data* to *empty data*)
Depressive symptoms above cut-off at age 8 (compared to depressive symptoms below cut-off) Measured by Children's Depression Inventory (CDI), dichotomised using cut-off of scores ≥13 (self-reported) Custom value	NS

Outcome	Study, 16 year vs 16 year, N = 609
Depressive symptoms above cut-off at age 8 (compared to depressive symptoms below cut-off) Measured by Children's Depression Inventory (CDI), dichotomised using cut-off of scores ≥13 (self-reported) Odds ratio/95% CI	NR (NR to NR)
Psychosomatic symptoms above cut-off at age 8 (compared to psychosomatic symptoms below cut-off) Measured using psychosomatic scale developed of the study, dichotomised using cut-off of scores in the 90th percentile (self-reported) Custom value	NS
Psychosomatic symptoms above cut-off at age 8 (compared to psychosomatic symptoms below cut-off) Measured using psychosomatic scale developed of the study, dichotomised using cut-off of scores in the 90th percentile (self-reported) Odds ratio/95% CI	NR (NR to NR)
Emotional symptoms above cut-off at age 8: parent report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Custom value	NS
Emotional symptoms above cut-off at age 8: parent report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Odds ratio/95% CI	NR (NR to NR)
Conduct symtpoms above cut-off at age 8: parent report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Custom value	NS

Outcome	Study, 16 year vs 16 year, N = 609
Conduct symtpoms above cut-off at age 8: parent report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Odds ratio/95% CI	NR (NR to NR)
Hyperkinetic symtpoms above cut-off at age 8: parent report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Odds ratio/95% CI	7.8 (2.6 to 23.7)
Emotional symptoms above cut-off at age 8: teacher report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Custom value	NS
Emotional symptoms above cut-off at age 8: teacher report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Odds ratio/95% CI	NR (NR to NR)
Conduct symtpoms above cut-off at age 8: teacher report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Odds ratio/95% CI	5.1 (1.8 to 13.9)
Hyperkinetic symtpoms above cut-off at age 8: teacher report (compared to hyperkinetic symtoms below cut-off)	NS

Outcome	Study, 16 year vs 16 year, N = 609
Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Custom value	
Hyperkinetic symtpoms above cut-off at age 8: teacher report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Odds ratio/95% CI	NR (NR to NR)
Other than intact family at age 8 (compared to living with two biological parents) (Parent-reported) Custom value	NS
Other than intact family at age 8 (compared to living with two biological parents) (Parent-reported) Odds ratio/95% CI	NR (NR to NR)
Lower parent education at age 8 (compared to higher parent education) Characterised as not completing upper secondary school (parent-reported) Custom value	NS
Lower parent education at age 8 (compared to higher parent education) Characterised as not completing upper secondary school (parent-reported) Odds ratio/95% CI	NR (NR to NR)

Outcome	Study, 16 year vs 16 year, N = 609
Change in family structure (e.g. divorce or remarriage) between the ages of 8-16 (comparison not reported) (Parent-reported) Odds ratio/95% CI	3.2 (1.2 to 8.4)
Need of professional services for child's emotioanl or behavioural problems (compared to not needing professional services) (Parent-reported) Custom value	NS
Need of professional services for child's emotioanl or behavioural problems (compared to not needing professional services) (Parent-reported) Odds ratio/95% CI	NR (NR to NR)
Risk factor for externalising problems - Girls Measured by Child Behavior Check list (CBCL) externalising scale, characterised as sex-specific 82nd percentile cut-off based on the distribution of the scores in the sample at follow-up Custom value	NR
Risk factor for externalising problems - Girls Measured by Child Behavior Check list (CBCL) externalising scale, characterised as sex-specific 82nd percentile cut-off based on the distribution of the scores in the sample at follow-up Odds ratio/95% CI	NR (*empty data* to *empty data*)
Depressive symptoms above cut-off at age 8 (compared to depressive symptoms below cut-off) Measured by Children’s Depression Inventory (CDI), dichotomised using cut-off of scores ≥13 (self-reported) Custom value	NS

Outcome	Study, 16 year vs 16 year, N = 609
Depressive symptoms above cut-off at age 8 (compared to depressive symptoms below cut-off) Measured by Children's Depression Inventory (CDI), dichotomised using cut-off of scores ≥13 (self-reported) Odds ratio/95% CI	NR (NR to NR)
Psychosomatic symptoms above cut-off at age 8 (compared to psychosomatic symptoms below cut-off) Measured using psychosomatic scale developed of the study, dichotomised using cut-off of scores in the 90th percentile (self-reported) Custom value	NS
Psychosomatic symptoms above cut-off at age 8 (compared to psychosomatic symptoms below cut-off) Measured using psychosomatic scale developed of the study, dichotomised using cut-off of scores in the 90th percentile (self-reported) Odds ratio/95% CI	NR (NR to NR)
Emotional symptoms above cut-off at age 8: parent report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Custom value	NS
Emotional symptoms above cut-off at age 8: parent report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Odds ratio/95% CI	NR (NR to NR)
Conduct symtpoms above cut-off at age 8: parent report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Odds ratio/95% CI	3.5 (1.1 to 10.8)

Outcome	Study, 16 year vs 16 year, N = 609
Hyperkinetic symtpoms above cut-off at age 8: parent report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Custom value	NS
Hyperkinetic symtpoms above cut-off at age 8: parent report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Odds ratio/95% CI	NR (NR to NR)
Emotional symptoms above cut-off at age 8: teacher report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Custom value	NS
Emotional symptoms above cut-off at age 8: teacher report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Odds ratio/95% CI	NR (NR to NR)
Conduct symtpoms above cut-off at age 8: teacher report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Odds ratio/95% CI	4.7 (2 to 11.2)
Hyperkinetic symtpoms above cut-off at age 8: teacher report (compared to hyperkinetic symtoms below cut-off)	NS

Outcome	Study, 16 year vs 16 year, N = 609
Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Custom value	
Hyperkinetic symtpoms above cut-off at age 8: teacher report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Odds ratio/95% CI	NR (NR to NR)
Other than intact family at age 8 (compared to living with two biological parents) (Parent-reported) Custom value	NS
Other than intact family at age 8 (compared to living with two biological parents) (Parent-reported) Odds ratio/95% CI	NR (NR to NR)
Lower parent education at age 8 (compared to higher parent education) Characterised as not completing upper secondary school (parent-reported) Custom value	NS
Lower parent education at age 8 (compared to higher parent education) Characterised as not completing upper secondary school (parent-reported) Odds ratio/95% CI	NR (NR to NR)

Outcome	Study, 16 year vs 16 year, N = 609
Change in family structure (e.g. divorce or remarriage) between the ages of 8-16 (comparison not reported) (Parent-reported) Custom value	NS
Change in family structure (e.g. divorce or remarriage) between the ages of 8-16 (comparison not reported) (Parent-reported) Odds ratio/95% CI	NR (NR to NR)
Need of professional services for child's emotioanl or behavioural problems (compared to not needing professional services) (Parent-reported) Odds ratio/95% CI	6.6 (1.9 to 23.3)
Risk factor for internalising problems - Boys Measured by Child Behavior Check list (CBCL) internalising scale, characterised as sex-specific 82nd percentile cut-off based on the distribution of the scores in the sample at follow-up Custom value	NR
Risk factor for internalising problems - Boys Measured by Child Behavior Check list (CBCL) internalising scale, characterised as sex-specific 82nd percentile cut-off based on the distribution of the scores in the sample at follow-up Odds ratio/95% CI	NR (*empty data* to *empty data*)
Depressive symptoms above cut-off at age 8 (compared to depressive symptoms below cut-off) Measured by Children’s Depression Inventory (CDI), dichotomised using cut-off of scores ≥13 (self-reported) Custom value	NS

Outcome	Study, 16 year vs 16 year, N = 609
Depressive symptoms above cut-off at age 8 (compared to depressive symptoms below cut-off) Measured by Children's Depression Inventory (CDI), dichotomised using cut-off of scores ≥13 (self-reported) Odds ratio/95% CI	NR (NR to NR)
Psychosomatic symptoms above cut-off at age 8 (compared to psychosomatic symptoms below cut-off) Measured using psychosomatic scale developed of the study, dichotomised using cut-off of scores in the 90th percentile (self-reported) Custom value	NS
Psychosomatic symptoms above cut-off at age 8 (compared to psychosomatic symptoms below cut-off) Measured using psychosomatic scale developed of the study, dichotomised using cut-off of scores in the 90th percentile (self-reported) Odds ratio/95% CI	NR (NR to NR)
Emotional symptoms above cut-off at age 8: parent report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Odds ratio/95% CI	2.4 (1.01 to 6.2)
Conduct symtpoms above cut-off at age 8: parent report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Custom value	NS
Conduct symtpoms above cut-off at age 8: parent report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Odds ratio/95% CI	NR (NR to NR)

Outcome	Study, 16 year vs 16 year, N = 609
Hyperkinetic symtpoms above cut-off at age 8: parent report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Custom value	NS
Hyperkinetic symtpoms above cut-off at age 8: parent report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Odds ratio/95% CI	NR (NR to NR)
Emotional symptoms above cut-off at age 8: teacher report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Custom value	NS
Emotional symptoms above cut-off at age 8: teacher report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Odds ratio/95% CI	NR (NR to NR)
Conduct symtpoms above cut-off at age 8: teacher report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Custom value	NS
Conduct symtpoms above cut-off at age 8: teacher report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported)	NR (NR to NR)

Outcome	Study, 16 year vs 16 year, N = 609
Odds ratio/95% CI	
Hyperkinetic symtpoms above cut-off at age 8: teacher report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Odds ratio/95% CI	2.9 (1.03 to 8.1)
Other than intact family at age 8 (compared to living with two biological parents) (Parent-reported) Custom value	NS
Other than intact family at age 8 (compared to living with two biological parents) (Parent-reported) Odds ratio/95% CI	NR (NR to NR)
Lower parent education at age 8 (compared to higher parent education) Characterised as not completing upper secondary school (parent-reported) Custom value	NS
Lower parent education at age 8 (compared to higher parent education) Characterised as not completing upper secondary school (parent-reported) Odds ratio/95% CI	NR (NR to NR)
Change in family structure (e.g. divorce or remarriage) between the ages of 8-16 (comparison not reported) (Parent-reported) Odds ratio/95% CI	2.8 (1.2 to 6.4)

Outcome	Study, 16 year vs 16 year, N = 609
Need of professional services for child's emotioanl or behavioural problems (compared to not needing professional services) (Parent-reported) Custom value	NS
Need of professional services for child's emotioanl or behavioural problems (compared to not needing professional services) (Parent-reported) Odds ratio/95% CI	NR (NR to NR)
Risk factor for internalising problems - Girls Measured by Child Behavior Check list (CBCL) internalising scale, characterised as sex-specific 82nd percentile cut-off based on the distribution of the scores in the sample at follow-up Custom value	NR
Risk factor for internalising problems - Girls Measured by Child Behavior Check list (CBCL) internalising scale, characterised as sex-specific 82nd percentile cut-off based on the distribution of the scores in the sample at follow-up Odds ratio/95% CI	NR (*empty data* to *empty data*)
Depressive symptoms above cut-off at age 8 (compared to depressive symptoms below cut-off) Measured by Children’s Depression Inventory (CDI), dichotomised using cut-off of scores ≥13 (self-reported) Odds ratio/95% CI	2.3 (1.01 to 5.6)
Psychosomatic symptoms above cut-off at age 8 (compared to psychosomatic symptoms below cut-off) Measured using psychosomatic scale developed of the study, dichotomised using cut-off of scores in the 90th percentile (self-reported) Custom value	NS

Outcome	Study, 16 year vs 16 year, N = 609
Psychosomatic symptoms above cut-off at age 8 (compared to psychosomatic symptoms below cut-off) Measured using psychosomatic scale developed of the study, dichotomised using cut-off of scores in the 90th percentile (self-reported) Odds ratio/95% CI	NR (NR to NR)
Emotional symptoms above cut-off at age 8: parent report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Odds ratio/95% CI	3.9 (1.7 to 8.8)
Conduct symtpoms above cut-off at age 8: parent report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Custom value	NS
Conduct symtpoms above cut-off at age 8: parent report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Odds ratio/95% CI	NR (NR to NR)
Hyperkinetic symtpoms above cut-off at age 8: parent report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported) Custom value	NS
Hyperkinetic symtpoms above cut-off at age 8: parent report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (parent-reported)	NR (NR to NR)

Outcome	Study, 16 year vs 16 year, N = 609
Odds ratio/95% CI	
Emotional symptoms above cut-off at age 8: teacher report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Custom value	NS
Emotional symptoms above cut-off at age 8: teacher report (compared to emotional symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Odds ratio/95% CI	NR (NR to NR)
Conduct symtpoms above cut-off at age 8: teacher report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Custom value	NS
Conduct symtpoms above cut-off at age 8: teacher report (compared to conduct symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Odds ratio/95% CI	NR (NR to NR)
Hyperkinetic symtpoms above cut-off at age 8: teacher report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Custom value	NS

Outcome	Study, 16 year vs 16 year, N = 609
Hyperkinetic symtpoms above cut-off at age 8: teacher report (compared to hyperkinetic symtoms below cut-off) Measured by Rutter Parent Questionnaire subscale, dichotomised using cut-off of scores in the sex-specific 90th percentile (teacher-reported) Odds ratio/95% CI	NR (NR to NR)
Other than intact family at age 8 (compared to living with two biological parents) (Parent-reported) Custom value	NS
Other than intact family at age 8 (compared to living with two biological parents) (Parent-reported) Odds ratio/95% CI	NR (NR to *empty data*)
Lower parent education at age 8 (compared to higher parent education) Characterised as not completing upper secondary school (parent-reported) Custom value	NS
Lower parent education at age 8 (compared to higher parent education) Characterised as not completing upper secondary school (parent-reported) Odds ratio/95% CI	NR (NR to NR)
Change in family structure (e.g. divorce or remarriage) between the ages of 8-16 (comparison not reported) (Parent-reported) Custom value	NS

Outcome	Study, 16 year vs 16 year, N = 609
Change in family structure (e.g. divorce or remarriage) between the ages of 8-16 (comparison not reported) (Parent-reported) Odds ratio/95% CI	NR (NR to NR)
Need of professional services for child's emotioanl or behavioural problems (compared to not needing professional services) (Parent-reported) Odds ratio/95% CI	6.5 (1.7 to 25.6)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.47 Spencer, 2020

Bibliographic Reference	Spencer, A.E.; Baul, T.D.; Sikov, J.; Adams, W.G.; Tripodis, Y.; Buonocore, O.; Jellinek, M.; Michael Murphy, J.; Garg, A.; The Relationship Between Social Risks and the Mental Health of School-Age Children in Primary Care; Academic Pediatrics; 2020; vol. 20 (no. 2); 208-215

Study details

Study design	Cross-sectional study

Trial registration number	Not reported
Study start date	01-Sep-2016
Study end date	31-Aug-2017
Aim	To inform how social risks screening tools could be used in clinical practice for children with social risks, mental health needs, or both.
Country/geographical location	United States
Setting	A hospital-based paediatric clinic
Inclusion criteria	Children age 6–11 years old seen for well child visits at a large, urban, safety-net hospital-based paediatric clinic
Exclusion criteria	Children who did not have complete answers to both questionnaires (WE CARE and PSC-17)
Study methods	The authors conducted a cross-sectional analysis of de-identified electronic medical record (EMR). Scores from the Pediatric Symptom Checklist-17 (PSC-17), and the Well Child Care, Evaluation, Community Resources, Advocacy, Referral, Education (WE CARE) screener were extracted. Caregivers complete these questionnaires as a part of well child visits for school-age children. Sociodemographic data from the EMR including patient's age, gender, race, ethnicity, language, and primary health insurance was also collected. Psychiatric symptoms were measured with the PSC-17, a caregiver-report measure of children's psychosocial functioning Higher scores indicate higher levels of impairment, and a positive total score (=15) indicates psychosocial dysfunction and need for further evaluation. Social risks were measured by the WE CARE screener, a caregiver-report questionnaire.
Confounders	Age, sex, race/ethnicity, language, and health insurance
Statistical method(s) used to analyse the data	• To examine the association between PSC-17 scores and cumulative and individual social risks, we performed chi-squared tests and calculated odds ratios. • To determine a cut-off that best distinguished children with a positive PSC-17 total score from those with a negative score, the authors plotted a Receiver Operating Characteristics (ROC) curve for WE CARE score. • Multiple linear regression analyses were conducted to examine the association between cumulative social risks and PSC-17 scores after adjusting for the following potential confounding variables; to assess whether one or

	more social risks scores predicted positive PSC-17 and to examine the association between individual risks and PSC-17 scores.
Attrition	There were 3345 patients age 6–11 years old seen for well child visits during the study time period, and 943 (28.1 %) of these patients had complete results on both questionnaires entered into the electronic medical record.
Study limitations (author)	• The study was a retrospective chart review of cross-sectional data, and thus the authors could not establish temporal relationships or causality of the associations found. • The screeners were administered as part of standard clinical practice only about one-third of children had both completed questionnaires in their medical records. • The authors did not have data on whether caregivers thought they needed help related to each risk. • Very few children had four or more social risks on the WE CARE screener, and thus the authors were not able to reliably report on the effect of social risk accumulation past three risk. • Children in the study were mostly publicly insured and non-white; thus, the findings may not generalise to other populations. • Public insurance was used as a proxy for income, which may have obscured income differences that would have clarified the role of income in the findings. • Due to the sample size, the study may have been inadequately powered to detect other clinically meaningful differences.
Study limitations (reviewer)	None to add
Source of funding	This work was supported by grants from the Gordon and Betty Moore Foundation and the National Institute of Mental Health, K23 (1K23MH118478-01).

Characteristics

Study-level characteristics

Characteristic	**Study (N = 943)**
Age years Range	6 to 11
Age years Mean (SD)	8.5 (1.7)
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 472 ; % = 50.1
Female Sample size	n = 471 ; % = 49.9
Ethnicity Sample size	n = NR ; % = NR
Hispanic / Latino / Spanish Sample size	n = 154 ; % = 16.3
Non-hispanic black	n = 486 ; % = 51.5

Characteristic	Study (N = 943)
Sample size	
Non-hispanic white Sample size	n = 47 ; % = 4.9
Non-Hispanic Other / Declined Sample size	n = 256 ; % = 27.2

Outcomes

Study timepoints

- 8.5 year (Mean age of children was 8.5 years (SD: 1.7))

Outcomes

Outcome	Study, 8.5 year vs 8.5 year, N = 943
Risk factor for psychosocial dysfunction Measured by the Pediatric Symptom Checklist-17, characterised as score ≥15 (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
≥3 social risks (compared to <3 social risks) Measured by the WE CARE questionnaire, social risks cover caregiver education, employment, child care, housing, food security, and household heat (parent-reported) Odds ratio/95% CI	2.3 (1.4 to 3.9)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.48 Stickley, 2016

Bibliographic Reference	Stickley, A.; Koyanagi, A.; Koposov, R.; Blatny, M.; Hrdlicka, M.; Schwab-Stone, M.; Ruchkin, V.; Loneliness and its association with psychological and somatic health problems among Czech, Russian and U.S. adolescents; BMC Psychiatry; 2016; vol. 16 (no. 1); 128

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Study start date	2003
Study end date	2003
Aim	• To determine the factors associated with loneliness among Czech, Russian and U.S. adolescents and whether these vary across the three countries • To examine the degree to which loneliness affects psychological and somatic health among adolescents in the three countries
Country/geographical location	Czech Republic, Russia and the United States
Setting	Secondary school

Inclusion criteria	Adolescents aged 13–15 years that participated in the Social and Health Assessment (SAHA) conducted in the Czech Republic, Russia and the United States
Exclusion criteria	Not reported
Study methods	Students were recruited from within classes that were randomly selected from within schools that had themselves been randomly selected (except at the US site, where all students were included). In all countries, students completed the survey in their classrooms during a normal school day. For comparability, the present study is limited to those adolescents who were aged 13–15 years. The final sample comprised of 2205 adolescents from the Czech Republic, 1995 from Russia and 2050 from the United States. Loneliness was measured using a question taken from a modified version of the Centre for Epidemiologic Studies-Depression Scale (CES-D). Information on personal characteristics was obtained by asking students to respond to the statement 'I am shy'. Friendship ties were assessed by asking students to indicate the number of close friends they had. Details of the family environment were obtained through three measures: parental education, family structure and household size. Information was also obtained about the perceptions of parental behaviour using three variables that came from Parenting Scales developed by the SAHA Research Evaluation Team. Two school-based factors were examined: school attachment and school-based peer victimisation.
Confounders	Covariates presented in the regression models were all mutually adjusted for each other, these included: • Age • Family structure • Parental education • Household size • Parental involvement • Inconsistent parenting • Friendship ties

	• Number of close friends • Personal characteristics • I am shy • School attachment • Peer victimisation
Statistical method(s) used to analyse the data	• Univariable and multivariable logistic regression analyses was used to assess which factors were associated with adolescent loneliness, and the relation between loneliness and the health outcomes. • The results were presented as odds ratios (OR) with 95 % confidence intervals (CI). • Clustering within schools was adjusted for by using the clustered sandwich estimator.
Attrition	Not applicable
Study limitations (author)	The authors
Study limitations (reviewer)	• The authors used a single-item study question to measure loneliness. Recent research has indicated that single-item questions and multiple-item scales can produce different results in terms of the prevalence of loneliness and the characteristics associated with it. • The authors had to rely on self-reports for the variables used in this study without being able to check the accuracy of this information, which might have resulted in bias. • The authors lacked information about certain variables which have been previously shown to be important when it comes to understanding adolescent loneliness e.g. self-esteem. • The authors examined a measure of overall loneliness. However, a recent study indicates that adolescent loneliness not only occurs across different spheres, but that these different sources of loneliness are related to psychopathology in different ways. • The parenting scale had not been formally validated and the alpha value for inconsistent parenting was low (alpha= 0.65). • Odds ratios and confidence intervals for depressive symptoms in the multivariable analysis were large. • Causality could not be determined due to the cross-sectional design of the study.
Source of funding	• Andrew Stickley's work was supported by the Swedish Foundation for Baltic and East European Studies [Health and Population Developments in Eastern Europe-grant number A052-10].

	• Ai Koyanagi's work was supported by the Miguel Servet contract financed by the CP13/00150 project, integrated into the National R + D + I and funded by the ISCIII - General Branch Evaluation and Promotion of Health Research - and the European Regional Development Fund (ERDF-FEDER). • Marek Blatný was financially supported by RVO: 68081740. • Michal Hrdlička was supported by the project (Ministry of Health, Czech Republic) for conceptual development of research organization 00064203 (University Hospital Motol, Prague, Czech Republic)

Characteristics

Study-level characteristics

Characteristic	**Study (N = 6250)**
Age Range	13 to 15
Ethnicity Country of study reported Sample size	n = NR ; % = NR
Czech Republic Sample size	n = 2205 ; % = NR
Russia Sample size	n = 1995 ; % = NR
United States Sample size	n = 2050 ; % = NR

Outcomes

Study timepoints

- 14 year (Children were aged between 13 and 15 years)

Outcomes

Outcome	Study, 14 year vs 14 year, N = 4255
Risk factor for loneliness: Czech Republic Females Measured by a question taken from a modified version of the Centre for Epidemiologic Studies-Depression Scale (CES-D), characterised as answering 'certainly true' to the question (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Somewhat shy (compared to not shy) Measured by response to statement 'I am shy', characterised as an answer of 'somewhat true' (self-reported) Odds ratio/95% CI	1.53 (0.93 to *empty data*)
Certainly shy (compared to not shy) Measured by response to statement 'I am shy', characterised as an answer of 'certainly true' (self-reported) Odds ratio/95% CI	4.32 (2.45 to 7.64)
Risk factor for loneliness: Czech Republic Males Measured by a question taken from a modified version of the Centre for Epidemiologic Studies-Depression Scale (CES-D), characterised as answering 'certainly true' to the question (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)

Outcome	Study, 14 year vs 14 year, N = 4255
Somewhat shy (compared to not shy) Measured by response to statement 'I am shy', characterised as an answer of 'somewhat true' (self-reported) Odds ratio/95% CI	1.66 (0.76 to 3.66)
Certainly shy (compared to not shy) Measured by response to statement 'I am shy', characterised as an answer of 'certainly true' (self-reported) Odds ratio/95% CI	4.36 (1.79 to 10.6)
Risk factor for loneliness: United States Females Measured by a question taken from a modified version of the Centre for Epidemiologic Studies-Depression Scale (CES-D), characterised as answering 'certainly true' to the question (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Somewhat shy (compared to not shy) Measured by response to statement 'I am shy', characterised as an answer of 'somewhat true' (self-reported) Odds ratio/95% CI	0.81 (0.44 to 1.48)
Certainly shy (compared to not shy) Measured by response to statement 'I am shy', characterised as an answer of 'certainly true' (self-reported) Odds ratio/95% CI	1.36 (0.87 to 2.14)
Risk factor for loneliness: United States Males Measured by a question taken from a modified version of the Centre for Epidemiologic Studies-Depression Scale (CES-D), characterised as answering 'certainly true' to the question (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)

Outcome	Study, 14 year vs 14 year, N = 4255
Somewhat shy (compared to not shy) Measured by response to statement 'I am shy', characterised as an answer of 'somewhat true' (self-reported) Odds ratio/95% CI	2 (1.11 to 3.6)
Certainly shy (compared to not shy) Measured by response to statement 'I am shy', characterised as an answer of 'certainly true' (self-reported) Odds ratio/95% CI	7.37 (3.88 to 14)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.49 Thurston, 2018

Bibliographic Reference	Thurston, Holly; Bell, Janice F; Induni, Marta; Community-level Adverse Experiences and Emotional Regulation in Children and Adolescents.; Journal of pediatric nursing; 2018; vol. 42; 25-33

Study details

Study design	Cross-sectional study

Trial registration number	Not reported
Study start date	2011
Study end date	2012
Aim	To answer the questions: • What is the prevalence of community-level adverse experiences, and does the prevalence differ by race/ethnicity? • What is the relationship between ACEs and an indicator of allostatic load?
Country/geographical location	United States
Setting	Home-based (telephone survey)
Inclusion criteria	Households included in the MCHB/HRSA sponsored National Survey of Children's Health (NSCH, 2011–2012).
Exclusion criteria	Children under 6 years. Observations were excluded from the analysis if they were missing data for the primary dependent or independent variables.
Study methods	The cross-sectional study used data collected in the MCHB/HRSA sponsored National Survey of Children's Health (NSCH, 2011–2012). Randomly selected households were included in the NSCH if there was at least one child age 0–17 in the household at the time of the telephone survey. A parent/caregiver responded to questions about factors impacting the child's health and wellbeing (n= 95,677). The current study included children ages 6 to 17 years of age (N =65,680). For the outcome measure of emotional regulation, we use the measure “Child stays calm and in control when facing a challenge” which was included in the NSCH as a simple measurement of resilience. New to the 2011–2012 NSCH were nine adverse childhood event experience questions. the 9 adverse event experience variables were combined into a single variable with 3 possible outcomes: 0 = “Child had no adverse family experiences;” 1 = “Child had 1 adverse family experience;” and 2 = “Child had 2 or more adverse family experiences”.
Confounders	• Age • Sex • Primary language spoken in household

	• Income as a percentage of the federal poverty level • Child/parent engagement
Statistical method(s) used to analyse the data	• Pearson chi-square tests were used to compare proportions of all covariates. • Multivariable logistic regression with a robust estimator of variance was used to model the binary resilience variable as a function of the adverse event experiences and covariates. • Because the household income variable included 9% missing data, multiple imputation (MI) methods were employed using the NSCH-provided MI dataset. • Statistical significance was determined by examining 95% confidence intervals and p-values for all tests.
Attrition	62300/65680 = 5.1% attrition (62300 was the smallest sample size when observations were excluded from the analysis due to missing data).
Study limitations (author)	• The cross-sectional design which demonstrates associations, but not causality. • Adverse events occurring in the home involve sensitive topics and, as caregiver-reported items, may be subject to social desirability bias and thus underreported—in which case our findings may underestimate the true prevalence and impact of household ACEs. • Self-report of the strength of the child/caregiver relationship may be inflated insofar as the caregiver is reluctant to admit problems in their relationship with the child. • Items of child maltreatment: experiencing or witnessing child neglect; physical abuse; sexual abuse; and/or emotional abuse were missing from the list of ACEs. Absence of these items may confound the true effect and magnitude of the independent variables on the outcome.
Study limitations (reviewer)	None to add
Source of funding	This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 65680)**
Age (years) Range	6 to 17
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 32197 ; % = 51.7
Female Sample size	n = 30028 ; % = 48.2
Missing data Sample size	n = 75 ; % = 0.1
Ethnicity Sample size	n = NR ; % = NR
White, Non-Hispanic Sample size	n = 41984 ; % = 67.4
Black non-hispanic Sample size	n = 5762 ; % = 9.2

Characteristic	Study (N = 65680)
Hispanic Sample size	n = 7715 ; % = 12.4
Other non-hispanic Sample size	n = 6305 ; % = 10.1
Missing data Sample size	n = 534 ; % = 0.9
Socioeconimic status Measured as household income as a percentage of the federal poverty level Sample size	n = NR ; % = NR
Below 100% Sample size	n = 7558 ; % = 12.1
100% to 199% Sample size	n = 9874 ; % = 15.8
200% to 399% Sample size	n = 18172 ; % = 29.2
Above 399% Sample size	n = 21901 ; % = 35.2
Missing data Sample size	n = 4795 ; % = 7.7

Outcomes

Study timepoints

- 11.5 year (Children were aged between 6 and 17 years)

Outcomes

Outcome	Study, 11.5 year vs 11.5 year, N = 65680
Predictive factor of emotional regulation Measured by the answer to “Child stays calm and in control when facing a challenge”, characterised as an answer of usually or always (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Cumulative effect of 1 ACE (comparison not reported) Measured by nine adverse childhood event experience questions (parent-reported) (lower ORs = worse emotional regulation) Odds ratio/95% CI	0.77 (0.69 to 0.86)
Cumulative effect of 2 or more ACEd (comparison not reported) Measured by nine adverse childhood event experience questions (parent-reported) (lower ORs = worse emotional regulation) Odds ratio/95% CI	0.59 (0.52 to 0.66)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.50 Totsika, 2011

Bibliographic Reference	Totsika, Vasiliki; Hastings, Richard P.; Emerson, Eric; Lancaster, Gillian A.; Berridge, Damon M.; A Population-Based Investigation of Behavioural and Emotional Problems and Maternal Mental Health: Associations with Autism Spectrum Disorder and Intellectual Disability; Journal of Child Psychology and Psychiatry; 2011; vol. 52 (no. 1); 91-99

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Study start date	1999
Study end date	2004
Aim	• To investigate the levels of behavioural and emotional problems among children with autism spectrum disorders (ASD), intellectual disabilities (ID), ASD and ID, and those without ASD or ID (comparison group) in a population-representative sample • To investigate maternal mental health in these four sub-groups • To examine the independent association of ASD and ID with the presence of behavioural and emotional problems, controlling for any associations with maternal mental health and socioeconomic position • To examine the association of ASD and ID with maternal mental health, over and above any associations with socioeconomic position and increased child behaviour problems.

Country/geographical location	United Kingdom
Setting	Home-based
Inclusion criteria	Children included in two UK national surveys on psychiatric morbidity of 5–16-year olds
Exclusion criteria	Not reported
Study methods	The study is a secondary analysis of data from two UK national surveys on psychiatric morbidity of 5–16-yearolds. A total of 18,415 children and adolescents participated in the current study. Data were obtained via face-to-face interviews with the children's primary caregiver. Among the sample, 641 children were identified as having intellectual disabilities (ID) and 90 were diagnosed with autism spectrum disorders (ASD). The presence of an ASD was evaluated by clinicians using the Development and Well-Being Assessment. Children's behavioural and emotional problems were measured with the Strengths and Difficulties Questionnaire (SDQ). Maternal mental health was assessed with the General Health Questionnaire (GHQ-12).
Confounders	Age, gender, adversity, maternal mental health, any moderating effects of adversity
Statistical method(s) used to analyse the data	• Power analysis was conducted to determine the power of the existing sample to detect group differences. • Group differences in elevated hyperactivity, emotional symptoms, conduct problems and maternal mental health were examined using chi-square tests. • Appropriate effect sizes (Cramer's V) were used to indicate the strength of the association between group status and the presence of elevated behavioural and emotional problems. • Logistic regression was used to investigate the association of autism spectrum disorders (ASD) and intellectual disabilities (ID) with child behaviour problems or maternal mental health over and above associations with other important variables.
Attrition	Not applicable
Study limitations (author)	Not reported
Study limitations (reviewer)	Lack of data on exclusion criteria and author limitations
Source of funding	The study was supported by a research grant from the Economic and Social Research Council, UK (ESRC; RES-000-22-3216).

Characteristics

Study-level characteristics

Characteristic	**Study (N = 18415)**
Age (years) Range	5 to 16
Age (years) Mean (SD)	10 (3)
Gender Sample size	n = NR ; % = NR
Male Sample size	n = NR ; % = 50.6
Female Sample size	n = NR ; % = 49.4

Outcomes

Study timepoints

- 10 year (Mean age of children was 10 years (SD: 3))

Outcomes

Outcome	Study, 10 year vs 10 year, N = 18415
Risk factor for emotional symptoms Measured by the Strengths and Difficulties Questionnaire: emotional symptoms sub-scale,, characterised by borderline or abnormal cut-off scores (reporter unclear) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Presence of autism spectrum disorder (compared to no presence of autism spectrum disorder) Measured by the Development and Well-Being Assessment, based on ICD-10 criteria (clinician-reported) Odds ratio/95% CI	8.32 (4.94 to 14.01)
Presence of intellectual disability (compared to no presence of intellectual disability) Measured by a combination of information provided by parent and teacher Odds ratio/95% CI	2.75 (2.29 to 3.3)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Low

D.51 Vanaelst, 2012

Bibliographic Reference	Vanaelst, Barbara; De Vriendt, Tineke; Ahrens, Wolfgang; Bammann, Karin; Hadjigeorgiou, Charalambos; Konstabel, Kenn; Lissner, Lauren; Michels, Nathalie; Molnar, Denes; Moreno, Luis A; Reisch, Lucia; Siani, Alfonso; Sioen, Isabelle; De Henauw,

Stefaan; Prevalence of psychosomatic and emotional symptoms in European school-aged children and its relationship with childhood adversities: results from the IDEFICS study.; European child & adolescent psychiatry; 2012; vol. 21 (no. 5); 253-65

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Study start date	Sep-2009
Study end date	May-2010
Aim	To describe the prevalence of PES in children from 8 European countries (N=4066) and to examine the relationship between psychosomatic and emotional symptoms (PES) and childhood adversities cross-nationally by investigating the following research questions: • Do children with and without PES differ in their exposure to childhood adversities? • Does the number of adversities (regardless of the nature of adversities) influence the occurrence of PES? Is the risk for PES in children affected by specific types of experienced adversities?
Country/geographical location	Belgium, Cyprus, Estonia, Germany, Hungary, Italy, Spain and Sweden
Setting	Home-based
Inclusion criteria	Those included in the control regions of the countries participating in the IDEFICS project
Exclusion criteria	• Children younger than 4 years of age • Children from whom any information on childhood adversities and psychosomatic and emotional symptoms was missing • Children in the intervention groups of the IDEFICS project

Study methods	From September 2009 to May 2010, information on childhood adversities and PES in children 31 was obtained for 4066 children as part of the follow-up survey of the IDEFICS study. In order to obtain information on socio-demographics, family lifestyle, and health and mental well-being of the children, parents were asked to complete the 'IDEFICS Parental Questionnaire' and the 'IDEFICS Questionnaire on Health and Medical History' at home and to return them to the schools. Parents were asked to complete questions on the life-time occurrence of negative life events and more chronic familial and social situations which may constitute potential childhood adversity, such as ethnicity, education, employment, family structure and family relationships. These childhood adversity variables were all of dichotomous nature (occurrence or no occurrence of event/adversity).
Confounders	Age and sex of the child and survey centre
Statistical method(s) used to analyse the data	• The prevalence of the children's psychosomatic and emotional symptoms (PES) was compared between countries, age groups and sex using a X^2 test. • Independent sample t-tests and odds ratios (OR) were calculated to study age differences and childhood adversity differences between these two groups, respectively. • Logistic regression analyses (OR and 95% confidence intervals (CIs)) were calculated to investigate the contribution of the number of adversities on the occurrence of each PES. • Further logistic regression analyses were conducted to investigate the independent explanatory value of specific types of adversities as predictors for the occurrence of PES using a backward stepwise regression procedure. • Results from all logistic regression were confirmed by multilevel analyses, more specifically with Generalised Linear Models.
Attrition	Not applicable
Study limitations (author)	• The dichotomous nature of the variables may not consider the complexity of certain events (e.g. family structure). • The study only assessed a limited number of adversities and psychosomatic and emotional outcomes. • Outcomes were exclusively parent-reported and did not take into account children's perspectives. • The authors could not examine the severity of the adversities as the 'IDEFICS Parental Questionnaire'. • Selection or non-participation bias related to education or income-level as well as a response bias cannot be ruled out and may thus have influenced prevalence results in both directions. • The study did not allow investigating causality or directionality in the relationship between adversities and psychosomatic and emotional symptoms.

Study limitations (reviewer)	None to add
Source of funding	• The authors received financial support of the European Community within the Sixth RTD Framework Programme Contract No. 016181 (FOOD). • Barbara Vanaelst, Tineke De Vriendt and Isabelle Sioen are financially supported by the Research Foundation - Flanders (Grant n°: 1.1.894.11.N.00,1.1.746.09.N.01, 1.2.683.11.N.00, respectively).

Characteristics

Study-level characteristics

Characteristic	**Study (N = 4066)**
Age (years) Sample size	n = NR ; % = NR
4 years Sample size	n = 237 ; % = 5.8
5 years Sample size	n = 511 ; % = 12.6
6 years Sample size	n = 640 ; % = 15.7
7 years Sample size	n = 518 ; % = 12.7

Characteristic	Study (N = 4066)
8 years Sample size	n = 631 ; % = 15.5
9 years Sample size	n = 991 ; % = 24.4
10 and 11 years Sample size	n = 538 ; % = 13.2
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 2019 ; % = 49.7
Female Sample size	n = 2047 ; % = 50.3
Ethnicity Survey centre country reported Sample size	n = NR ; % = NR
Belgium Sample size	n = 343 ; % = 8.4
Cyprus Sample size	n = 469 ; % = 11.5

Characteristic	Study (N = 4066)
Estonia Sample size	n = 763 ; % = 18.8
Germany Sample size	n = 337 ; % = 8.3
Hungary Sample size	n = 643 ; % = 15.8
Italy Sample size	n = 520 ; % = 12.8
Spain Sample size	n = 472 ; % = 11.6
Sweden Sample size	n = 519 ; % = 12.8

Outcomes

Study timepoints

- 7.91 year (Mean age of children was 7.91 years (SD: 1.82))

Outcomes

Outcome	Study, 7.91 year vs 7.91 year, N = 4066
Risk factor for low emotional wellbeing Measured by KINDL Questionnaire for Measuring Health-Related Quality of Life in Children and Adolescents, sex and age-specific cut-offs were 82.89 for boys and 83.11 for girls (parent-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
1 familial and social adversity (compared to no familial and social adversities) Measured by questions on chronic familial and social situations which may constitute potential childhood adversity, such as ethnicity, education, employment, family structure and family relationships; variable dichotomised to occurrence or no occurrence (parent-reported) Odds ratio/95% CI	1.27 (1.09 to 1.48)
2 familial and social adversities (compared to no familial and social adversities) Measured by questions on chronic familial and social situations which may constitute potential childhood adversity, such as ethnicity, education, employment, family structure and family relationships; variable dichotomised to occurrence or no occurrence (parent-reported) Odds ratio/95% CI	1.81 (1.49 to 2.21)
3 familial and social adversities (compared to no familial and social adversities) Measured by questions on chronic familial and social situations which may constitute potential childhood adversity, such as ethnicity, education, employment, family structure and family relationships; variable dichotomised to occurrence or no occurrence (parent-reported) Odds ratio/95% CI	3.28 (2.42 to 4.45)
≥4 familial and social adversities (compared to no familial and social adversities) Measured by questions on chronic familial and social situations which may constitute potential childhood adversity, such as ethnicity, education, employment, family structure and family relationships; variable dichotomised to occurrence or no occurrence (parent-reported)	6.98 (3.74 to 13.02)

Outcome	Study, 7.91 year vs 7.91 year, N = 4066
Odds ratio/95% CI	
1 negative life event (compared to no negative life events) Measured by questions on negative life events which may constitute potential childhood adversity, such as ethnicity, education, employment, family structure and family relationships; variable dichotomised to occurrence or no occurrence (parent-reported) Odds ratio/95% CI	1.35 (1.16 to 1.57)
2 negative life events (compared to no negative life events) Measured by questions on negative life events which may constitute potential childhood adversity, such as ethnicity, education, employment, family structure and family relationships; variable dichotomised to occurrence or no occurrence (parent-reported) Odds ratio/95% CI	1.72 (1.37 to 2.15)
≥3 negative life events (compared to no negative life events) Measured by questions on negative life events which may constitute potential childhood adversity, such as ethnicity, education, employment, family structure and family relationships; variable dichotomised to occurrence or no occurrence (parent-reported) Odds ratio/95% CI	2.74 (1.92 to 3.91)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Low

D.52 Visser, 2003

Bibliographic Reference	Visser, Jeroen Heijmens; van der Ende, Jan; Koot, Hans M; Verhulst, Frank C; Predicting change in psychopathology in youth referred to mental health services in childhood or adolescence.; Journal of child psychology and psychiatry, and allied disciplines; 2003; vol. 44 (no. 4); 509-19

Study details

Study design	Cohort studies
Study start date	Jun-1982
Study end date	Jun-1997
Aim	To determine: 1. The change in level of scores of empirically derived problem patterns 2. The factors that influence the change in level of psychopathology
Country/geographical location	The Netherlands
Setting	Not reported
Inclusion criteria	Children, aged 4 to 18, referred to the outpatient clinic of the Academic Hospital Rotter dam – Sophia, Department of Child and Adolescent Psychiatry, between June 1982 and January 1995.This department is a university clinic, with specialist child and adolescent psychiatric care.
Exclusion criteria	Not reported
Study methods	Subjects were 2,441 children, aged 4 to 18, referred to the outpatient clinic of the Academic Hospital Rotterdam – Sophia, Department of Child and Adolescent Psychiatry, between June 1982 and January 1995 (Time 1 [T1]). Follow-up was between June 1995 and June 1997 Time 2 [T2]). This study deals only with those aged 4–18 years of age at follow-up (N = 1,652). Scorable rating forms were obtained at T2 from at least one informant for 1,286 (77.8%) of the 1,652 eligible subjects. The Child Behavior Checklist (CBCL), the Teacher's Report Form (TRF), and the Youth Self-Report (YSR) were reported by parents or parent surrogates, teachers and adolescents (11–18 years old), respectively. For this

	study, 10 raters were trained to collect and code T1 case-record information. Information on change in family composition and mental health service (MHS) use by subjects and family was obtained from parents, using structured, pre-coded questionnaires.
Confounders	Age at baseline, gender, and length of follow-up interval
Statistical method(s) used to analyse the data	• Differences between the mean follow-up scores for the referred sample and norm scores obtained in a non-referred gender and age matched sample were tested using t-tests. Cross-tabulations were used to present change from deviant to non-deviant categories (and vice versa) for these scores. • To evaluate the power of different factors in predicting change of psychopathology, we used stepwise logistic regression analyses. • When data were missing incidentally, their values were prorated by the most frequent value of the factor.
Attrition	1652/2441 = 32.2% attrition
Study limitations (author)	• The self- and teacher-reported information is gathered from specific sub groups (children over 10 years), which causes a (possible) selection bias. • It is difficult to determine what part, if any, of the improvement is attributable to spontaneous recovery, treatment, or – for that matter – statistical effects, such as regression-to-the mean. • Most limitations of the present study are shared by similar studies: attrition bias, selection bias, a one-clinic sample, and a widely varying follow-up interval. • Only a limited number of predictive factors were assessed using standardised measures. • The different operationalisation and use of predictive factors across studies is also a concern.
Study limitations (reviewer)	Lack of data on setting and exclusion criteria
Source of funding	This study was financially supported by grant number 4344 from the Dutch National Foundation for Mental Health (NFGV).

Characteristics

Study-level characteristics

Characteristic	Study (N = 1286)
Age Characteristics at baseline Mean (SD)	NR (NR)
Male Mean (SD)	8.4 (2.7)
Female Mean (SD)	8.6 (2.7)
Gender Characteristics at baseline Sample size	n = NR ; % = NR
Male Sample size	n = 907 ; % = 70.5
Female Sample size	n = 379 ; % = 29.5
Ethnicity Characteristics at baseline Sample size	n = NR ; % = NR

Characteristic	Study (N = 1286)
Dutch Children born in the Netherlands of Dutch parents Sample size	n = 1193 ; % = 92.8
Other Sample size	n = 93 ; % = 7.2

Outcomes

Study timepoints

- 6.2 year (Mean follow-up period)

Outcomes

Outcome	Study, 6.2 year vs 6.2 year, N = 1286
Risk factor for internalising problems: Parent report Measured by the Child Behavior Checklist (CBCL): internalising sub-scale, dichotomised using cut-off points based on based on Dutch normative scores (parent-reported) Custom value	NR
Special education (comparison not reported) Data obtained from case-record information Custom value	1.6 (Sig)

Outcome	Study, 6.2 year vs 6.2 year, N = 1286
Risk factor for social problems: Parent report Measured by the Child Behavior Checklist (CBCL): social problems syndrome, dichotomised using cut-off points based on based on Dutch normative scores (parent-reported) Custom value	NR
Special education (comparison not reported) Data obtained from case-record information Custom value	1.6 (sig)
Risk factor for social problems: Teacher report Measured by the Teacher Report Form (TRF): social problems syndrome, dichotomised using cut-off points based on based on Dutch normative scores (teacher-reported) Custom value	NR
Special education (comparison not reported) Data obtained from case-record information Custom value	2.0 (sig)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.53 Waenerlund, 2016

Bibliographic Reference	Waenerlund, Anna-Karin; Stenmark, Helena; Bergstrom, Erik; Hagglof, Bruno; Ohman, Ann; Petersen, Solveig; School experiences may be important determinants of mental health problems in middle childhood - a Swedish longitudinal population-based study.; Acta paediatrica (Oslo, Norway : 1992); 2016; vol. 105 (no. 4); 407-15

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study start date	2003
Study end date	2006
Aim	To explore the cross-sectional and prospective associations between school experiences, that is school satisfaction, relationships with teachers and the ability to perform, and overall mental health, as well as specific common mental health problems in middle childhood in girls and boys, this taking into account the potential confounders of migrant status, family structure, socioeconomic status and previous mental health.
Country/geographical location	Sweden
Setting	Primary/middle school
Inclusion criteria	Participants of the Study of Health in School Children in Umea (SISU)
Exclusion criteria	Children with intellectual disabilities
Study methods	Data were derived from the Study of Health in School Children in Umea (SISU) and started in 2003 with a follow-up 3 years later. Data were collected by a research assistant (a school health nurse) and children were asked about school experiences and parenst were asked about the child's mental health and family's socio-demographic characteristics.

Confounders	Analyses adjusted for • socio-demographics in grade six, • mental health problems in grade three • worse school experiences in grade six.
Statistical method(s) used to analyse the data	• Multilevel regression models suggested little clustering by schools. • Main analyses targeted individual level associations. • For all CBCL and SDQ scales, independent samples t-tests established the differences in mean sum scores of mental health problems by school experiences in grade three in general and in its three underlying aspects. • Cohen's d determined the size of the differences, conventionally nominated as small = 0.2, moderate = 0.5 or large = 0.8. • Mann–Whitney U-test conducted as a sensitivity test. • Multivariate logistic regression established the odds of a mental health score above the 75th percentile in grade three and six or a prosocial behaviour score above the 25th percentile in grade six (dependent variables) if the child had a school experience score below the 25th percentile in grade three (independent variable).
Attrition	566/719 = 21.3% attrition
Study limitations (author)	• School perception could be influenced by the outcome variable internalising problems. • There was a relatively large internal loss of responses to the CBCL questionnaire. • The relationship between school perception and mental health problems could be confounded by school achievements and other unmeasured variables. • The relationship between school perception and mental health problems could be confounded by school achievements and other unmeasured variables.
Study limitations (reviewer)	None to add
Source of funding	The study was financed by the Clas Groschinskys Memorial Fund, the Vardal Foundation and the County Council of Vasterbotten

Characteristics

Study-level characteristics

Characteristic	Study (N = 592)
Gender Characteristics at baseline Sample size	n = NR ; % = NR
Male Sample size	n = 290 ; % = 49
Female Sample size	n = 302 ; % = 51
Ethnicity Characteristics at baseline Sample size	n = NR ; % = NR
Born outside Sweden Sample size	n = 36 ; % = 6

Outcomes

Study timepoints

- 12 year (Approximate age of children at follow-up)

Outcomes

Outcome	Study, 12 year vs 12 year, N = 566
Risk factor for mental health problems (total) Measured by Strengths and Difficulties Questionnaire, characterised as scores in the upper quartile (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Worse school experience at age 9 (compared to better school experience) Measured by KIDSCREEN-52 questionnaire, characterised as scores in the lower three quartiles (self-reported) Odds ratio/95% CI	2.14 (1.34 to 3.42)
Risk factor for emotional problems Measured by Strengths and Difficulties Questionnaire subscale, characterised as scores in the upper quartile (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Worse school experience at age 9 (compared to better school experience) Measured by KIDSCREEN-52 questionnaire, characterised as scores in the lower three quartiles (self-reported) Odds ratio/95% CI	1.49 (0.94 to 2.39)
Risk factor for peer problems Measured by Strengths and Difficulties Questionnaire subscale, characterised as scores in the upper quartile (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Worse school experience at age 9 (compared to better school experience) Measured by KIDSCREEN-52 questionnaire, characterised as scores in the lower three quartiles (self-reported) Odds ratio/95% CI	1.46 (0.9 to 2.37)

Outcome	Study, 12 year vs 12 year, N = 566
Predictor of prosocial behaviour Measured by Strengths and Difficulties Questionnaire subscale, characterised as scores in the upper three quartiles (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Worse school experience at age 9 (compared to better school experience) Measured by KIDSCREEN-52 questionnaire, characterised as scores in the lower three quartiles (self-reported) Odds ratio/95% CI	0.53 (0.32 to 0.87)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.54 Wang, 2019

Bibliographic Reference	Wang, C.; Li, K.; Kim, M.; Lee, S.; Seo, D.-C.; Association between psychological distress and elevated use of electronic devices among U.S. adolescents: Results from the youth risk behavior surveillance 2009-2017; Addictive Behaviors; 2019; vol. 90; 112-118

Study details

Study design	Cross-sectional study

Trial registration number	Not reported
Study start date	2009
Study end date	2017
Aim	• To document the prevalence and temporal trends of EUED in nationally representative samples of U.S. adolescents from 2009 to 2017 • To determine whether there is a significant association between EUED and psycho logical health across multiple years
Country/geographical location	United States
Setting	Public, Catholic and private secondary schools
Inclusion criteria	Participants of the national Youth Risk Behavior Survey (YRBS) in grades 9-12
Exclusion criteria	Not reported
Study methods	Data was collected from the national Youth Risk Behavior Survey (YRBS) from years 2009, 2011, 2013, 2015, and 2017. As the outcome variable, psychological distress was created based on three questions. Poor mental health status was recorded if students answered yes to any of the three questions. Psychological distress was then created as an ordinal variable (ranging from 0 to 3) by summing the three yes/no dummy variables to indicate multitudes of psychological distress. The major independent variable, elevated use of electronic devices (EUED) in leisure time, was measured with a single question consistently across all the five survey years. Several demographic variables were included in analysis as covariates, including age, gender, race/ethnicity, and body weight status. Body weight status was classified as underweight, normal weight, and overweight/obesity based on the age and gender-specific body mass index cut-points (i.e., 15th and 85th percentiles on the Centers for Disease Control and Prevention's growth charts).
Confounders	Sex, race/ethnicity, and age
Statistical method(s) used to analyse the data	• To estimate weighted percentages of participants' demographic characteristics, descriptive statistics were computed. • Taylor series weighted linear regression method to describe and compare prevalence and changes of elevated use of electronic devices (EUED) and psychological distress by gender. • To examine the association between psychological distress and EUED, Rao-Scott design-adjusted chi-square tests were conducted.

	• Statistical significance for prevalence estimates was determined at the p-value<.001 rather than 0.05 due to multiple statistical tests.
Attrition	14765/16410 = 10.0% attrition
Study limitations (author)	• Due to the cross-sectional nature, causal inference between EUED and psychological distress is not warranted. • As in all observational studies, we cannot rule out the possibility of residual and unmeasured confounding. • The use of electronic devices may include many different activities, such as playing video games, chatting with friends through social networks, or simply surfing on the Internet. However, the authors could not measure each of these activities as the YRBS combined these activities in a question. • Although each of the three items that measure psychological distress has shown its association with psychological distress in prior research, future validation studies of the ordinal composite measure of psychological distress would be desirable.
Study limitations (reviewer)	Lack of data on exclusion criteria
Source of funding	No financial disclosures are reported by the authors of this paper

Characteristics

Study-level characteristics

Characteristic	**Study (N = 16410)**
Age (years) Characteristic from first data collection point (2009), data from other years can be found in the publiction Sample size	n = NR ; % = NR
≥16 years Percentage weighted to adjust for nonresponse bias and different selection probabilities due to oversampling of black and Hispanic students	n = 6178 ; % = 37.8

Characteristic	Study (N = 16410)
Sample size	
≥16 years Percentage weighted to adjust for nonresponse bias and different selection probabilities due to oversampling of black and Hispanic students Sample size	n = 10165 ; % = 62.2
Gender Characteristic from first data collection point (2009), data from other years can be found in the publiction Sample size	n = NR ; % = NR
Male Percentage weighted to adjust for nonresponse bias and different selection probabilities due to oversampling of black and Hispanic students Sample size	n = 7816 ; % = 52.2
Female Percentage weighted to adjust for nonresponse bias and different selection probabilities due to oversampling of black and Hispanic students Sample size	n = 8537 ; % = 47.8
Ethnicity Characteristic from first data collection point (2009), data from other years can be found in the publiction Sample size	n = NR ; % = NR
White Percentage weighted to adjust for nonresponse bias and different selection probabilities due to oversampling of black and Hispanic students Sample size	n = 9452 ; % = 58.7

Characteristic	Study (N = 16410)
Black Percentage weighted to adjust for nonresponse bias and different selection probabilities due to oversampling of black and Hispanic students Sample size	n = 2320 ; % = 14.4
Hispanic Percentage weighted to adjust for nonresponse bias and different selection probabilities due to oversampling of black and Hispanic students Sample size	n = 2989 ; % = 18.6
Other Percentage weighted to adjust for nonresponse bias and different selection probabilities due to oversampling of black and Hispanic students Sample size	n = 1349 ; % = 9.3

Outcomes

Study timepoints

- 2009 year (First year of data collection)
- 2011 year (Second year of data collection)
- 2013 year (Third year of data collection)
- 2015 year (Fourth year of data collection)
- 2017 year (Fifth year of data collection)

Outcomes

Outcome	Study, 2009 year vs 2009 year, N = 16410	Study, 2011 year vs 2011 year, N = 15425	Study, 2013 year vs 2013 year, N = 13583	Study, 2015 year vs 2015 year, N = 15624	Study, 2017 year vs 2017 year, N = 14765
Risk factor for psychological distress Measured by three yes/no questions, characterised as an ordinal variable (ranging from 0 to 3) by summing the three yes/no dummy variables to indicate multitudes of psychological distress (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)	NR (*empty data* to *empty data*)	NR (*empty data* to *empty data*)	NR (*empty data* to *empty data*)	NR (*empty data* to *empty data*)
Physical activity <5 days per week (compared to physical activity ≥5 days per week) Physical activity classified as at least 60 min per day Odds ratio/95% CI	1.25 (1.11 to 1.42)	1.29 (1.14 to 1.48)	1.2 (1.09 to 1.33)	1.28 (1.08 to 1.51)	1.14 (0.93 to 1.39)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.55 Wang, 2008

Bibliographic Reference	Wang, F; Veugelers, P J; Self-esteem and cognitive development in the era of the childhood obesity epidemic.; Obesity reviews : an official journal of the International Association for the Study of Obesity; 2008; vol. 9 (no. 6); 615-23

Study details

Study design	Cross-sectional study
Trial registration number	Not reported
Aim	To reveal the relationships between obesity, self-esteem and school performance among grade 5 students who are primarily 10 and 11 years old.
Country/geographical location	Canada
Setting	Primary school
Inclusion criteria	Fifth grade students from 291 public schools
Exclusion criteria	Not reported, but students with outlying observations based on energy intakes less than 500 kcal or greater than 5000 kcal per day in accordance with established recommendations, or students with incomplete information of self-esteem were excluded during analysis.
Study methods	The 2003 Children's Lifestyle and School-Performance Study (CLASS) is a large study of fifth grade students and their parents in the Canadian province of Nova Scotia. Trained CLASS representatives visited 5517 consenting students from 282 participating schools to administer the Harvard's Youth Adolescent Food Frequency Questionnaire (YAQ). The administration of the surveys and measurement of heights and weights took generally less than 45 min to complete. School performance was measured by the Elementary Literacy Assessment. Self esteem was measured using 11 selected items from existing instruments. Score ranged from 11 to 33. The inter-item reliability (Cronbach's alpha) of the 11 items was 0.78. Other influencing factors that the authors considered were child's gender, rural or urban residency, household income, parental education, child's physical and sedentary activity level, diet quality, school neighbourhood income level and school-level academic performance.
Confounders	Energy intake following established recommendations

Statistical method(s) used to analyse the data	• Structural equation models (SEM) were applied to determine the relationships between body weight, self-esteem and school performance (the three endogenous concepts). • The authors started with trying to confirm a model that included six relational combinations. Upon failure to confirm this model (i.e. when the goodness-of-fit Chi-square test statistic revealed a statistically significant difference between the hypothesized model and the observations) the authors tried to confirm a reduced model with satisfactory goodness of fit. • Due to the limitations of SEM, multi-level regression methods were applied to more accurately quantify the associations of body-weight status and of school performance with self-esteem.
Attrition	4945/5517 = 10.4% attrition
Study limitations (author)	• Assessment tools for self-esteem are based on self-report and therefore prone to error. • Selection bias may have occurred as participation was voluntary and required parental consent, urging caution with generalising the study observation to the population at large. • Observations were cross-sectional, therefore the associations should not be interpreted as causal.
Study limitations (reviewer)	Lack of detail regarding exclusion criteria
Source of funding	This research was funded by the Canadian Population Health Initiative and through a Canada Research Chair in Population Health and Alberta Heritage Foundation for Medical Research Scholarship to Dr Paul J. Veugelers and through an Alberta Heritage Foundation for Medicine Research traineeship award to Dr Fangfang Wang.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 4945)**
Gender Sample size	n = NR ; % = NR

Characteristic	Study (N = 4945)
Male Sample size	n = 2423 ; % = 49
Female Sample size	n = 2522 ; % = 51

Outcomes

Study timepoints

- 10.5 year (Children were primarily 10 and 11 years old)

Outcomes

Outcome	Study, 10.5 year vs 10.5 year, N = 4945
Risk factor for low self-esteem Measured by 11 items from existing instruments to measure self-esteem, characterised as scores >15th percentile (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Physical activity >2 and ≤4 times per week (compared to physical activity ≤twice a week) Odds ratio/95% CI	0.63 (0.49 to 0.82)
Physical activity >4 and ≤7 times per week (compared to physical activity ≤twice a week)	0.74 (0.6 to 0.92)

Outcome	Study, 10.5 year vs 10.5 year, N = 4945
Odds ratio/95% CI	
Physical activity >7 times per week (compared to physical activity ≤twice a week) Odds ratio/95% CI	0.78 (0.57 to 1.07)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.56 Wirback, 2014

Bibliographic Reference	Wirback, T.; Moller, J.; Larsson, J.-O.; Galanti, M.R.; Engstrom, K.; Social factors in childhood and risk of depressive symptoms among adolescents - a longitudinal study in Stockholm, Sweden; International Journal for Equity in Health; 2014; vol. 13 (no. 1); 96

Study details

Study design	Longitudinal studies
Trial registration number	Not reported
Study start date	Jan-1998

Study end date	Jan-2004
Aim	To investigate whether multiple measures of low social status of the family are longitudinally associated with depressive symptoms in adolescence. Secondary aim: to explore potential gender effect modification.
Country/geographical location	Sweden
Setting	Secondary school
Inclusion criteria	Adolescents and participating within the BROMS cohort study (designed to investigate tobacco use among adolescents in Stockholm, Sweden)
Exclusion criteria	Participants with missing data were excluded from all analyses
Study methods	Data is taken from the BROMS (acronym in Swedish for Children's Smoking and Environment in Stockholm County), a cohort study designed to investigate tobacco use among adolescents in Stockholm, Sweden. The BROMS study started in 1998 and were followed up each eight surveys have been conducted with the same adolescents, once every year, starting in 5th grade, with a pause the first year after compulsory school (1998–2005) and one five years later (2010) Most information on social factors was obtained from the baseline parental survey in 1998.
Confounders	Analysed were adjusted for • gender • each other variable
Statistical method(s) used to analyse the data	• Odds ratios (OR), with corresponding 95% confidence intervals, calculated through logistic regression models, were used to estimate the association between family's social status at age 11–12 and self-reported depressive symptoms later in adolescence (17–18 years old). • Adjustments were done for a) gender, and b) mutually for all social factors, to distil the effect of each of them. • A Synergy Index (SI) was calculated in order to assess additive interactions between gender and social factors. • Participants with missing data were excluded from all analyses.
Attrition	1,880/2,622 = 28.3% attrition

Study limitations (author)	• Parents with college education were overrepresented and foreign-born parents were underrepresented in comparison with the regional average. • The most socially vulnerable groups, e.g. undocumented children and children in families with alcohol or drug abuse, are unlikely to be represented at all, which may lead to underestimation of prevalences. • Parental history of mental disease could not be adjusted for. • Potential misclassification of outcome may have occurred because of inadequate ability among adolescents to recognize and report symptoms, and this misclassification might theoretically differ between socioeconomic groups but particular between boys and girls. • The inventory for the assessment of depression used here has not been previously validated. • This study had insufficient statistical power to closely investigate subgroup differences.
Study limitations (reviewer)	None to add
Source of funding	Not reported

Characteristics

Study-level characteristics

Characteristic	**Study (N = 2622)**
Gender Sample size	n = NR ; % = NR
Male Sample size	n = 1314 ; % = 50.1
Female Sample size	n = 1308 ; % = 49.9

Characteristic	Study (N = 2622)
Ethnicity Characterised as country of birth (inside or outside Sweden) Sample size	n = NR ; % = NR
Sweden Sample size	n = 1925 ; % = 73.4
Outised Sweden Sample size	n = 296 ; % = 11.3
MIssing Sample size	n = 401 ; % = 15.3
Socioeconomic status Characterised by parental occupation Sample size	n = NR ; % = NR
High non-manual workers Sample size	n = 336 ; % = 12.8
Intermediate non-manual workers Sample size	n = 545 ; % = 20.8
Lower non-manual workers Sample size	n = 385 ; % = 14.7
Skilled workers	n = 304 ; % = 11.6

Characteristic	Study (N = 2622)
Sample size	
Unskilled workers Sample size	n = 472 ; % = 18
Self-employed Sample size	n = 176 ; % = 6.7
Other Sample size	n = 73 ; % = 2.8
MIssing Sample size	n = 333 ; % = 12.7

Outcomes

Study timepoints

- 17.5 year (All children were aged between 17-18 years at follow-up)

Outcomes

Outcome	Study, 17.5 year vs 17.5 year, N = 1880
Risk factor for depressive symptoms Depressive symptoms measured by a 12-item inventory, a cut-off of 17 out of 30 or higher was used to characterise depressive symptoms (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Low parental education at 11-12 years (compared to high perental education) Characterised as 0-9 school years completed by parent with the highest education (parent-reported) Odds ratio/95% CI	1.5 (0.9 to 2.5)
Unskilled parental occupation at 11-12 years (compared to higher non-manual occupation) Characterised according to Statistics Sweden's socioeconomic classification (parent-reported) Odds ratio/95% CI	2 (1.1 to 3.6)
Parent born outside of Sweden (compared to parent born in Sweden) Characterised as both parents or the single parent were born outside Sweden (parent-reported) Odds ratio/95% CI	1.1 (0.7 to 1.7)
Parental unemployment at 11-12 years (compared to parent employment) Characterised as children who did not have at least one parent, part- or full time employed (parent-reported) Odds ratio/95% CI	1.8 (0.7 to 4.5)
Living exclusively with one adult at 11-12 years (compared to living with two or more adults) Does not include children with separated parents, living with both parents equal time or only occasionally with one, and children living with only one parent who is cohabiting with another adult (self-reported) Odds ratio/95% CI	2.8 (1.1 to 7.5)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Moderate

D.57 Yu, 2020

Bibliographic Reference	Yu, E.J.; Choe, S.-A.; Yun, J.-W.; Son, M.; Association of Early Menarche with Adolescent Health in the Setting of Rapidly Decreasing Age at Menarche; Journal of Pediatric and Adolescent Gynecology; 2020; vol. 33 (no. 3); 264-270

Study details

Study design	Retrospective cohort study
Trial registration number	Not reported
Study start date	2007
Study end date	2015
Aim	To explore the compositional change of age at menarche AAM and association between AAM and adverse adolescent health indicators by leveraging a national population-based sample of adolescent girls born in the 1990s and 2000s
Country/geographical location	South Korea
Setting	Web-based
Inclusion criteria	Adolescent girls who participated in the 3rd-11th Korea Youth Risk Behaviour Web-based Survey (KYRBS) conducted by the Ministry of Education, Ministry of Health and Welfare, Korea Centres for Disease Control and Prevention (KCDC) from 2007 to 2015
Exclusion criteria	Participants with missing or implausible age at menarche

Study methods	The authors used data from adolescent girls who participated in the 3rd-11th Korea Youth Risk Behaviour Web-based Survey (KYRBS) conducted by the Ministry of Education, Ministry of Health and Welfare, Korea Centres for Disease Control and Prevention (KCDC) from 2007 to 2015 was used. A multi-stage cluster sampling was used to obtain a nationally representative sample of Korean students. Annually, approximately 70,000 girls and boys, corresponding to 2% of the total population of middle- and high-school students, are enrolled in the survey. All the information used was obtained from the anonymous self-administered Web based survey. The primary exposure in this study was AAM in years obtained from the self-administered questionnaire ("When did you experience your first menstruation?"). Four health-related outcomes of interest (self-rated health, psychological stress, unhappiness, and adolescent pregnancy) were selected based on recommended indicators to measure adolescent health, social development, and well-being.
Confounders	• Participant's body mass index (BMI) • Living with families, • Parent's education • Household wealth • Living with family • Presence of older or younger siblings • Year of birth • Single-sex education • Level of schooling • Urbanisation level of school area • Regional deprivation index
Statistical method(s) used to analyse the data	• The authors removed the variables that showed a coefficient value from Spearman correlation tests O0.9 from the regression models to avoid possible redundancy. • The weighted prevalence of each of the covariates was calculated considering sampling design. • Secular trend of compositional change in AAM was tested using Cochran-Mantel-Haenszel statistics. • Characteristics of the AAM groups were compared for covariates and health indicators. • Odds ratios (ORs) for each adverse health indicator except adolescent pregnancy were examined by each AAM group using multivariable regression analyses. • A log-binomial regression model was used to calculate relative risks (RRs) for pregnancy.
Attrition	Not applicable
Study limitations (author)	• Due to the cross-sectional nature of the study, the authors could not assess the onset of health related outcomes.

	• Given that there is accelerated weight gain after menarche, BMI could potentially be on the causal pathway between early menarche and adverse health outcomes. • Questionnaires regarding psychological stress and unhappiness were not validated.
Study limitations (reviewer)	None to add
Source of funding	This work was supported by the National Research Foundation of Korea grant (NRF-2016R1D1A1B03933410 and 2018R1D1A1B07048821), which is funded by the Korean Government.

Characteristics

Study-level characteristics

Characteristic	**Study (N = 319437)**
Age (years) Mean (SD)	15 (NR)

Outcomes

Study timepoints

- 15.0 year (The mean age of children was 15.0 years)

Outcomes

Outcome	Study, 15.0 year vs 15.0 year, N = 319437
Risk factor fo high psychological stress Measured by the question “How often do you feel stress?”, characterised as a score <2 on a 5-point scale (self-reported) Odds ratio/95% CI	NR (*empty data* to *empty data*)
Menarche ≤10 years (compared to menarche ≥12 years) Measured by the question "when did you experience your first menstruation?" Odds ratio/95% CI	1.19 (1.14 to 1.23)
Menarche at 11 years (compared to menarche ≥12 years) Measured by the question "when did you experience your first menstruation?" Odds ratio/95% CI	1.1 (1.06 to 1.14)

Critical appraisal - QUIPS checklist

Section	Question	Answer
Overall risk of bias and directness	Risk of Bias	Low

Appendix E – Forest plots

No forest plots are presented as a meta-analysis was not conducted.

Appendix F – GRADE tables

Not applicable

Appendix G – Economic evidence study selection

No economic evidence is presented as the review does not concern interventions.

Appendix H – Economic evidence tables

No economic evidence is presented as the review does not concern interventions.

Appendix I – Health economic model

No economic model presented as review does not concern interventions.

Appendix J – Excluded studies

Study	Code [Reason]
Abela, John R Z, Fishman, Michael B, Cohen, Joseph R et al. (2012) Personality predispositions to depression in children of affectively-ill parents: the buffering role of self-esteem. Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53 41(4): 391-401	- Data not usable (study did not report aOR / aRR / aHR)
Abu-Rayya, Hisham Motkal and Yang, Baohui (2012) Emotional and behavioral problems and their underlying risk factors among children in New South Wales, Australia. International Journal of Mental Health 41(3): 3-23	- Cross-sectional (did not contain specific risk factors identified by the committee)
Achterberg, Michelle, Dobbelaar, Simone, Boer, Olga D et al. (2021) Perceived stress as mediator for longitudinal effects of the COVID-19 lockdown on wellbeing of parents and children. Scientific reports 11(1): 2971	- Data not usable (study did not report aOR / aRR / aHR)
Amone-P'Olak, Kennedy, Ormel, Johan, Huisman, Martijn et al. (2009) Life stressors as mediators of the relation between socioeconomic position and mental health problems in early adolescence: the TRAILS study. Journal of the American Academy of Child and Adolescent Psychiatry 48(10): 1031-1038	- Data not usable (study did not report aOR / aRR / aHR)
Anda, Robert F, Whitfield, Charles L, Felitti, Vincent J et al. (2002) Adverse childhood experiences, alcoholic parents, and later risk of alcoholism and depression. Psychiatric services 53(8): 1001-1009	- Population - adult
Anderson, Joanna K, Ford, Tamsin, Soneson, Emma et al. (2019) A systematic review of effectiveness and cost-effectiveness of school-based identification of children and young people at risk of, or currently experiencing mental health difficulties. Psychological medicine 49(1): 9-19	- outcomes not relevant
Araujo, L.A.D., Veloso, C.F., Souza, M.D.C. et al. (2020) The potential impact of the COVID-19 pandemic on child growth and development: a systematic review. Jornal de Pediatria	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Archambault, Isabelle, Janosz, Michel, Fallu, Jean-Sebastien et al. (2009) Student engagement and its relationship with early high school dropout. Journal of adolescence 32(3): 651-70	- No regression
Ardhanaari, M. and Harry, A. (2020) A systamatic review on effect of covid on children. European Journal of Molecular and Clinical Medicine 7(7): 5664-5670	- Data not usable (study did not report aOR / aRR / aHR)
ARNOLD Elizabeth, Mayfield and et, al (2014) When life is a drag: depressive symptoms associated with early adolescent smoking. Vulnerable Children and Youth Studies 9(1): 1-9	- Cross-sectional (did not contain specific risk factors identified by the committee)
Arora, Prerna G, Wheeler, Lorey A, Fisher, Sycarah et al. (2017) A prospective examination of anxiety as a predictor of depressive symptoms among Asian American early adolescent youth: The role of parent, peer, and teacher support and school engagement. Cultural diversity & ethnic minority psychology 23(4): 541-550	- Data not usable (study did not report aOR / aRR / aHR)
Arseneault, Louise, Walsh, Elizabeth, Trzesniewski, Kali et al. (2006) Bullying victimization uniquely contributes to adjustment problems in young children: a nationally representative cohort study. Pediatrics 118(1): 130-8	- Data not usable (study did not report aOR / aRR / aHR)
Astell-Burt, Thomas, Maynard, Maria J, Lenguerrand, Erik et al. (2012) Racism, ethnic density and psychological well-being through adolescence: evidence from the Determinants of Adolescent Social Well-Being and Health longitudinal study. Ethnicity & health 17(12): 71-87	- Data not usable (study did not report aOR / aRR / aHR)
Bagley, C., Bertrand, L., Bolitho, F. et al. (2001) Discrepant parent-adolescent views on family functioning: Predictors of poorer self-esteem and problems of emotion and behaviour in British and Canadian adolescents. Journal of Comparative Family Studies 32(3)	- Suitable for RQ 2.3
Bailey, T.; Hastings, R.P.; Totsika, V. (2021) COVID-19 impact on psychological outcomes of parents, siblings and children with intellectual disability: longitudinal before and during	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
lockdown design. Journal of Intellectual Disability Research	
Baldry, Anna C (2004) The Impact of Direct and Indirect Bullying on the Mental and Physical Health of Italian Youngsters. Aggressive Behavior 30(5): 343-355	- Cross-sectional (did not contain specific risk factors identified by the committee)
Baldry, Anna C and Winkel, Frans Willem (2004) Mental and physical health of Italian youngsters directly and indirectly victimized at school and at home. The International Journal of Forensic Mental Health 3(1): 77-91	- Data not usable (study did not report aOR / aRR / aHR)
Barbosa, L.P., Quevedo, L., Da Silva, G.D.G. et al. (2014) Relationship between maternal depression as a risk factor for childhood trauma and mood disorders in young adults. Revista de Psiquiatria Clinica 41(3): 72-76	- Population - adult
Barile, John P., Grogan, Kathryn E., Henrich, Christopher C. et al. (2012) Symptoms of Depression in Israeli Adolescents Following a Suicide Bombing: The Role of Gender. Journal of Early Adolescence 32(4): 502-515	- Data not usable (study did not report aOR / aRR / aHR)
Basanez, Tatiana, Unger, Jennifer B, Soto, Daniel et al. (2013) Perceived discrimination as a risk factor for depressive symptoms and substance use among Hispanic adolescents in Los Angeles. Ethnicity & health 18(3): 244-61	- Data not usable (study did not report aOR / aRR / aHR)
Bauman, L.J., Camacho, S., Silver, E.J. et al. (2002) Behavioral problems in school-aged children of mothers with HIV/AIDS. Clinical Child Psychology and Psychiatry 7(1): 39-54	- Data not usable (study did not report aOR / aRR / aHR)
Behnke, Andrew O, Plunkett, Scott W, Sands, Tovah et al. (2011) The relationship between Latino adolescents' perceptions of discrimination, neighborhood risk, and parenting on self-esteem and depressive symptoms. Journal of Cross-Cultural Psychology 42(7): 1179-1197	- No regression
Beitchman, Joseph H, Wilson, Beth, Brownlie, E. B et al. (1996) Long-term consistency in speech/language profiles: II. Behavioral, emotional, and social outcomes. Journal of the American Academy of Child & Adolescent Psychiatry 35(6): 815-825	- Pre-1995 data

Study	Code [Reason]
Belanger, R.E., Akre, C., Berchtold, A. et al. (2011) A U-shaped association between intensity of internet use and adolescent health. Pediatrics 127(2): e330-e335	- Cross-sectional (did not contain specific risk factors identified by the committee)
Berasategi, Naiara, Idoiaga, Nahia, Dosil, Maria et al. (2020) Design and validation of a scale for measuring well-being of children in lockdown (WCL). Frontiers in Psychology 11: 2225	- RQ 2.3 non-UK study
Bignardi, G., Dalmaijer, E.S., Anwyl-Irvine, A.L. et al. (2020) Longitudinal increases in childhood depression symptoms during the COVID-19 lockdown. Archives of Disease in Childhood: 320372	- Duplicate
Bignardi, Giacomo, Dalmaijer, Edwin S, Anwyl-Irvine, Alexander L et al. (2020) Longitudinal increases in childhood depression symptoms during the COVID-19 lockdown. Archives of Disease in Childhood: 320372	- Data not usable (study did not report aOR / aRR / aHR)
Bilginer, Cilem, Yildirim, Selman, Cekin Yilmaz, Berire et al. (2021) Changes in adolescent mental health during the covid pandemic. Minerva pediatrics	- Cross-sectional (did not contain specific risk factors identified by the committee)
Birndorf, Susan, Ryan, Sheryl, Auinger, Peggy et al. (2005) High self-esteem among adolescents: longitudinal trends, sex differences, and protective factors. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 37(3): 194-201	- Pre-1995 data
Blaas, Sabrina (2014) The relationship between social-emotional difficulties and underachievement of gifted students. Journal of Psychologists and Counsellors in Schools 24(2): 243-255	- Data not usable (study did not report aOR / aRR / aHR)
Blatt-Eisengart, Ilana, Drabick, Deborah A G, Monahan, Kathryn C et al. (2009) Sex differences in the longitudinal relations among family risk factors and childhood externalizing symptoms. Developmental psychology 45(2): 491-502	- No regression
Boe, Tormod, Sivertsen, Borge, Heiervang, Einar et al. (2014) Socioeconomic status and child mental health: the role of parental emotional well-being and parenting practices.	- No regression

Study	Code [Reason]
Journal of abnormal child psychology 42(5): 705-15	
Boer, Maartje, van den Eijnden, Regina J J M, Boniel-Nissim, Meyran et al. (2020) Adolescents' Intense and Problematic Social Media Use and Their Well-Being in 29 Countries. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 66(6s): 89-s99	- Data not usable (study did not report aOR / aRR / aHR)
Bogosian, Angeliki; Moss-Morris, Rona; Hadwin, Julie (2010) Psychosocial adjustment in children and adolescents with a parent with multiple sclerosis: a systematic review. Clinical rehabilitation 24(9): 789-801	- No quantitative data reported
Booth-LaForce, Cathryn and Oxford, Monica L. (2008) Trajectories of Social Withdrawal from Grades 1 to 6: Prediction from Early Parenting, Attachment, and Temperament. Developmental Psychology 44(5): 1298-1313	- No regression
Bosmans, Guy, Van de Walle, Magali, Bijttebier, Patricia et al. (2020) Children's attention to mother and adolescent stress moderate the attachment-depressive symptoms link. Psiholoska Obzorja / Horizons of Psychology 60(1)	- Data not usable (study did not report aOR / aRR / aHR)
Bottino, Sara Mota Borges, Bottino, Cassio M C, Regina, Caroline Gomez et al. (2015) Cyberbullying and adolescent mental health: systematic review. Cadernos de saude publica 31(3): 463-75	- Cross-sectional (did not contain specific risk factors identified by the committee)
Boulton, Michael J, Boulton, Louise, Down, James et al. (2017) Perceived barriers that prevent high school students seeking help from teachers for bullying and their effects on disclosure intentions. Journal of adolescence 56: 40-51	- Suitable for RQ 2.2
Bourion-Bedes, S Tarquinio, C Batt, M Tarquinio, P Lebreuilly, R Sorsana, C Legrand, K Rousseau, H Baumann, C (2021) Psychological impact of the COVID-19 outbreak on students in a French region severely affected by the disease: results of the PIMS-CoV 19 study. PSYCHIATRY RESEARCH 295	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
Bowes, Lucy, Maughan, Barbara, Ball, Harriet et al. (2013) Chronic bullying victimization across school transitions: the role of genetic and environmental influences. Development and psychopathology 25(2): 333-46	- Data not usable (study did not report aOR / aRR / aHR)
Breaux, Rosanna, Dvorsky, Melissa R, Marsh, Nicholas P et al. (2021) Prospective impact of COVID-19 on mental health functioning in adolescents with and without ADHD: protective role of emotion regulation abilities. Journal of child psychology and psychiatry, and allied disciplines	- No regression
Brenne, Edel and Rimehaug, Tormond (2019) Pragmatic language impairment general and specific associations to mental health symptom dimensions in a child psychiatric sample. Scandinavian Journal of Child and Adolescent Psychiatry and Psychology 7(1): 3-12	- Data not usable (study did not report aOR / aRR / aHR)
Brent Jackson, S., Stevenson, K.T., Larson, L.R. et al. (2021) Outdoor activity participation improves adolescents' mental health and well-being during the covid-19 pandemic. International Journal of Environmental Research and Public Health 18(5): 1-19	- Data not usable (study did not report aOR / aRR / aHR)
Briere, Frederic N, Pascal, Sophie, Dupere, Veronique et al. (2017) Depressive and anxious symptoms and the risk of secondary school noncompletion. The British Journal of Psychiatry 211(3): 163-168	- outcomes not relevant
Brinkman, Jesse, Garnett, Bernice, Kolodinsky, Jane et al. (2021) Intra-and Interpersonal Factors Buffer the Relationship between Food Insecurity and Mental Well-Being among Middle Schoolers. Journal of School Health 91(2): 102-110	- outcomes not relevant
Brunstein Klomek, Anat, Marrocco, Frank, Kleinman, Marjorie et al. (2007) Bullying, depression, and suicidality in adolescents. Journal of the American Academy of Child and Adolescent Psychiatry 46(1): 40-49	- Cross-sectional (did not contain specific risk factors identified by the committee)
Buehler, Cheryl and Gerard, Jean M (2013) Cumulative family risk predicts increases in adjustment difficulties across early adolescence. Journal of youth and adolescence 42(6): 905-20	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Bulhoes, Claudia, Ramos, Elisabete, Lindert, Jutta et al. (2013) Depressive symptoms and its associated factors in 13-year-old urban adolescents. International journal of environmental research and public health 10(10): 5026-38	- Cross-sectional (did not contain specific risk factors identified by the committee)
Bulut, N.S., Carkaxhiu Bulut, G., Yorguner Kupeli, N. et al. (2019) Living in difficult conditions: an analysis of the factors associated with resilience in youth of a disadvantaged city. Psychiatry and Clinical Psychopharmacology 29(4): 587-596	- Cross-sectional (did not contain specific risk factors identified by the committee)
Bureau, Jean-Francois; Easterbrooks, M Ann; Lyons-Ruth, Karlen (2009) Maternal depressive symptoms in infancy: unique contribution to children's depressive symptoms in childhood and adolescence?. Development and psychopathology 21(2): 519-37	- Data not usable (study did not report aOR / aRR / aHR)
Burlaka, Viktor, Kim, Yi Jin, Crutchfield, Jandel M et al. (2017) Predictors of Internalizing Behaviors in Ukrainian Children. Family relations 66(5): 854-866	- Data not usable (study did not report aOR / aRR / aHR)
Burnett-Zeigler, Inger, Walton, Maureen A, Ilgen, Mark et al. (2012) Prevalence and correlates of mental health problems and treatment among adolescents seen in primary care. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 50(6): 559-64	- Cross-sectional (did not contain specific risk factors identified by the committee)
Bylund, B., Cervin, T., Finnstrom, O. et al. (2000) Very low-birth-weight children at 9 years: School performance and behavior in relation to risk factors. Prenatal and Neonatal Medicine 5(2): 124-133	- No regression
Cachon-Zagalaz, J, Sanchez-Zafra, M, Sanabrias-Moreno, D et al. (2020) Systematic Review of the Literature About the Effects of the COVID-19 Pandemic on the Lives of School Children. Frontiers in Psychology 11: 569348	- No quantitative data reported
Calam, Rachel; Gregg, Lynsey; Goodman, Robert (2005) Psychological adjustment and asthma in children and adolescents: the UK Nationwide Mental Health Survey. Psychosomatic medicine 67(1): 105-10	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
Callender, Kevin A, Olson, Sheryl L, Choe, Daniel E et al. (2012) The effects of parental depressive symptoms, appraisals, and physical punishment on later child externalizing behavior. Journal of abnormal child psychology 40(3): 471-83	- Data not usable (study did not report aOR / aRR / aHR)
Carotenuto, Marco, Esposito, Maria, Parisi, Lucia et al. (2012) Depressive symptoms and childhood sleep apnea syndrome. Neuropsychiatric disease and treatment 8: 369-73	- Cross-sectional (did not contain specific risk factors identified by the committee)
Carter, Jocelyn Smith and Garber, Judy (2011) Predictors of the first onset of a major depressive episode and changes in depressive symptoms across adolescence: stress and negative cognitions. Journal of abnormal psychology 120(4): 779-96	- Data not usable (study did not report aOR / aRR / aHR)
Casline, Elizabeth P, Ginsburg, Golda S, Piacentini, John et al. (2021) Negative Life Events as Predictors of Anxiety Outcomes: An Examination of Event Type. Research on child and adolescent psychopathology 49(1): 91-102	- Clinical diagnosis
Chadi, Nicholas, Li, Guilin, Cerda, Natalie et al. (2019) Depressive Symptoms and Suicidality in Adolescents Using e-Cigarettes and Marijuana: A Secondary Data Analysis From the Youth Risk Behavior Survey. Journal of addiction medicine 13(5): 362-365	- Cross-sectional (did not contain specific risk factors identified by the committee)
Chadwick, O., Piroth, N., Walker, J. et al. (2000) Factors affecting the risk of behaviour problems in children with severe intellectual disability. Journal of Intellectual Disability Research 44(2): 108-123	- outcomes not relevant
Chandra, Anita, Lara-Cinisomo, Sandraluz, Jaycox, Lisa H et al. (2010) Children on the homefront: the experience of children from military families. Pediatrics 125(1): 16-25	- Cross-sectional (did not contain specific risk factors identified by the committee)
Chaplin, Tara M.; Gillham, Jane E.; Seligman, Martin E. P. (2009) Gender, Anxiety, and Depressive Symptoms: A Longitudinal Study of Early Adolescents. Journal of Early Adolescence 29(2): 307-327	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Chapman, Daniel P; Dube, Shanta R; Anda, Robert F (2007) Adverse childhood events as risk factors for negative mental health outcomes. Psychiatric Annals 37(5)	- Population - adult
Chen, Chao-Ying, Chen, I-Hua, O'Brien, Kerry S et al. (2021) Psychological distress and internet-related behaviors between schoolchildren with and without overweight during the COVID-19 outbreak. International journal of obesity (2005) 45(3): 677-686	- Data not usable (study did not report aOR / aRR / aHR)
Chen, Yafan; Cheung, Shannon; Huang, Chien-Chung (2020) Intimate Partner Violence During Pregnancy: Effects of Maternal Depression Symptoms and Parenting on Teen Depression Symptoms. Journal of interpersonal violence: 886260520967754	- Data not usable (study did not report aOR / aRR / aHR)
Clements-Nolle, Kristen, Oman, Roy F, Lu, Minggen et al. (2019) Youth assets and alcohol-related problems among male and female youth: Results from a longitudinal cohort study. Preventive medicine 123: 192-196	- outcomes not relevant
Cohen, Joseph R, So, Felix K, Hankin, Benjamin L et al. (2019) Translating Cognitive Vulnerability Theory Into Improved Adolescent Depression Screening: A Receiver Operating Characteristic Approach. Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53 48(4): 582-595	- Data not usable (study did not report aOR / aRR / aHR)
Cohen, Joseph R, Spiro, Carolyn N, Young, Jami F et al. (2015) Interpersonal risk profiles for youth depression: A person-centered, multi-wave, longitudinal study. Journal of Abnormal Child Psychology 43(8): 1415-1426	- Data not usable (study did not report aOR / aRR / aHR)
Cole, D A, Peeke, L G, Martin, J M et al. (1998) A longitudinal look at the relation between depression and anxiety in children and adolescents. Journal of consulting and clinical psychology 66(3): 451-60	- Data not usable (study did not report aOR / aRR / aHR)
Colizzi, M., Sironi, E., Antonini, F. et al. (2020) Psychosocial and behavioral impact of COVID-19 in autism spectrum disorder: An online parent survey. Brain Sciences 10(6): 341	- ORs not adjusted

Study	Code [Reason]
Conti, E., Sgandurra, G., De Nicola, G. et al. (2020) Behavioural and emotional changes during covid-19 lockdown in an italian paediatric population with neurologic and psychiatric disorders. Brain Sciences 10(12): 1-15	- Data not usable (study did not report aOR / aRR / aHR)
Correa-Velez, Ignacio; Gifford, Sandra M; McMichael, Celia (2015) The persistence of predictors of wellbeing among refugee youth eight years after resettlement in Melbourne, Australia. Social science & medicine (1982) 142: 163-8	- Data not usable (study did not report aOR / aRR / aHR)
Cortes, Rebecca C., Fleming, Charles B., Catalano, Richard F. et al. (2006) Gender Differences in the Association between Maternal Depressed Mood and Child Depressive Phenomena from Grade 3 through Grade 10. Journal of Youth and Adolescence 35(5): 810-821	- Data not usable (study did not report aOR / aRR / aHR)
Cosma, Alina; Balazsi, Robert; Baban, Adriana (2018) Bullying victimization and internalizing problems in school aged children: A longitudinal approach. Cognition, Brain, Behavior: An Interdisciplinary Journal 22(1): 31-45	- Data not usable (study did not report aOR / aRR / aHR)
Courtney, Darren, Watson, Priya, Battaglia, Marco et al. (2020) COVID-19 Impacts on Child and Youth Anxiety and Depression: Challenges and Opportunities. Canadian journal of psychiatry. Revue canadienne de psychiatrie 65(10): 688-691	- Commentary article
Crews, S Dean, Bender, Hermine, Cook, Clayton R et al. (2007) Risk and protective factors of emotional and/or behavioral disorders in children and adolescents: A mega-analytic synthesis. Behavioral Disorders 32(2): 64-77	- Data not usable (study did not report aOR / aRR / aHR)
Cuschieri, S Agius, JC (2020) Spotlight on the Shift to Remote Anatomical Teaching During Covid-19 Pandemic: Perspectives and Experiences from the University of Malta. ANATOMICAL SCIENCES EDUCATION 13(6): 671-679	- outcomes not relevant
D'Sa, Saskia, Foley, Deirdre, Hannon, Jessica et al. (2021) The psychological impact of childhood homelessness-a literature review. Irish Journal of Medical Science 190(1): 411-417	- Non-systematic review

Study	Code [Reason]
da Mata Alicce, Abreu, Silva Ana Carla Ferreira Lana, e, de Souza Bernardes, Fl?via et al. (2021) Impacto da pandemia de covid-19 na sa?de mental de crian?as e adolescentes: Uma revis?o integrativa / The impact of covid-19 pandemic on mental health of children and adolescents: An integrative review. Brazilian Journal of Development 7(1): 6901-6917	- Non-English Language
Datar, A and Sturm, R (2006) Childhood overweight and elementary school outcomes. International journal of obesity (2005) 30(9): 1449-60	- Data not usable (study did not report aOR / aRR / aHR)
Davico, C., Ghiggia, A., Marcotulli, D. et al. (2021) Psychological Impact of the COVID-19 Pandemic on Adults and Their Children in Italy. Frontiers in Psychiatry 12: 572997	- Data not usable (study did not report aOR / aRR / aHR)
Davis, Elise, Sawyer, Michael G, Lo, Sing Kai et al. (2010) Socioeconomic risk factors for mental health problems in 4-5-year-old children: Australian population study. Academic pediatrics 10(1): 41-7	- Cross-sectional (did not contain specific risk factors identified by the committee)
Davis, Jordan P, Dumas, Tara M, Merrin, Gabriel J et al. (2018) Examining the pathways between bully victimization, depression, academic achievement, and problematic drinking in adolescence. Psychology of addictive behaviors : journal of the Society of Psychologists in Addictive Behaviors 32(6): 605-616	- Data not usable (study did not report aOR / aRR / aHR)
Davis, Sarah K; Nowland, Rebecca; Qualter, Pamela (2019) The Role of Emotional Intelligence in the Maintenance of Depression Symptoms and Loneliness Among Children. Frontiers in psychology 10: 1672	- Data not usable (study did not report aOR / aRR / aHR)
Deighton, J., Lereya, S.T., Casey, P. et al. (2019) Prevalence of mental health problems in schools: Poverty and other risk factors among 28 000 adolescents in England. British Journal of Psychiatry 215(3): 565-567	- Data not usable (study did not report aOR / aRR / aHR)
Delva, Jorge, Kaylor, Andrew Grogan, Steinhoff, Emily et al. (2007) Using tobit regression analysis to further understand the association of youth alcohol problems with depression and parental factors among Korean adolescent females. Journal of preventive medicine and	- outcomes not relevant

Study	Code [Reason]
public health = Yebang Uihakhoe chi 40(2): 145-9	
Deolmi, Michela and Pisani, Francesco (2020) Psychological and psychiatric impact of COVID-19 pandemic among children and adolescents. Acta bio-medica : Atenei Parmensis 91(4): e2020149	- Narrative review
DePaolis, Kathryn J and Williford, Anne (2019) Pathways from cyberbullying victimization to negative health outcomes among elementary school students: A longitudinal investigation. Journal of Child and Family Studies 28(9): 2390-2403	- Data not usable (study did not report aOR / aRR / aHR)
DePrince, Anne P; Weinzierl, Kristin M; Combs, Melody D (2009) Executive function performance and trauma exposure in a community sample of children. Child abuse & neglect 33(6): 353-61	- Data not usable (study did not report aOR / aRR / aHR)
Desmet, Ann, Walrave, Michel, Rodelli, Maddalena et al. (2021) The moderating role of parenting dimensions in the association between traditional or cyberbullying victimization and mental health among adolescents of different sexual orientation. International Journal of Environmental Research and Public Health 18(6): 1-20	- Cross-sectional (did not contain specific risk factors identified by the committee)
Deutz, Marike H F, Shi, Qinxin, Vossen, Helen G M et al. (2018) Evaluation of the Strengths and Difficulties Questionnaire-Dysregulation Profile (SDQ-DP). Psychological assessment 30(9): 1174-1185	- Suitable for RQ 2.3
Dewa, L.H., Crandell, C., Choong, E. et al. (2021) CCopeY: A Mixed-Methods Coproduced Study on the Mental Health Status and Coping Strategies of Young People During COVID-19 UK Lockdown. Journal of Adolescent Health 68(4): 666-675	- Population - adult
Dinnen, Hannah L., Baker, Jack, Dallal, Renee et al. (2020) An Exploration of School Mobility: Risks and Protective Factors in Late Elementary. Psychology in the Schools 57(12): 1864-1877	- Data not usable (study did not report aOR / aRR / aHR)
Doi, Satomi, Fujiwara, Takeo, Isumi, Aya et al. (2019) Pathway of the Association Between	- No regression

Study	Code [Reason]
Child Poverty and Low Self-Esteem: Results From a Population-Based Study of Adolescents in Japan. Frontiers in psychology 10: 937	
Dooley, B.; Fitzgerald, A.; Mac Giollabhui, N. (2015) The risk and protective factors associated with depression and anxiety in a national sample of Irish adolescents. Irish Journal of Psychological Medicine 32(1): 93-105	- No regression
Dovi, A., Lindwall, J., Sato, T. et al. (2019) Perceived school connectedness as it relates to parent-reported behavior and adaptive skills in youth with recently diagnosed cancer. Children's Health Care	- No regression
DuPont-Reyes, Melissa J., Villatoro, Alice P., Phelan, Jo C. et al. (2021) Estimating school race/ethnic enrollment effects on student mental health: Density and diversity as a risk or protective factor. Ethnicity and Disease 31(2): 205-216	- Cohort/proportion of cohort received an intervention
Duraku, Zamira Hyseni and Hoxha, Naime (2020) The impact of COVID-19, school closure, and social isolation on gifted students? wellbeing and attitudes toward remote (online) learning. doi 10: 1-28	- Qualitative study conducted outside the UK
Ehrler, Melanie, Werninger, Isabelle, Schnider, Barbara et al. (2021) Impact of the COVID-19 pandemic on children with and without risk for neurodevelopmental impairments. Acta paediatrica (Oslo, Norway : 1992) 110(4): 1281-1288	- Data not usable (study did not report aOR / aRR / aHR)
El-Aarbaoui, Tarik, Bustamante, Joel Jose Herranz, Heron, Megane et al. (2021) Risk and protective factors related to children's symptoms of emotional difficulties and hyperactivity/inattention during the COVID-19-related lockdown in France: results from a community sample. European Child and Adolescent Psychiatry	- Cross-sectional (did not contain specific risk factors identified by the committee)
Elgen, Irene, Johansson, Kjell A, Markestad, Trond et al. (2005) A non-handicapped cohort of low-birthweight children: growth and general health status at 11 years of age. Acta paediatrica (Oslo, Norway : 1992) 94(9): 1203-7	- outcomes not relevant

Study	Code [Reason]
Elliott, Gregory C., Cunningham, Susan M., Linder, Meadow et al. (2005) Child Physical Abuse and Self-Perceived Social Isolation among Adolescents. Journal of Interpersonal Violence 20(12): 1663-1684	- Pre-1995 data
Ellis, Wendy E.; Crooks, Claire V.; Wolfe, David A. (2009) Relational Aggression in Peer and Dating Relationships: Links to Psychological and Behavioral Adjustment. Social Development 18(2): 253-269	- Data not usable (study did not report aOR / aRR / aHR)
Erickson, Julie D, Patterson, Joan M, Wall, Melanie et al. (2005) Risk Behaviors and Emotional Well-Being in Youth With Chronic Health Conditions. Children's Health Care 34(3): 181-192	- Cross-sectional (did not contain specific risk factors identified by the committee)
Eriksen, T.M., Gaulke, A., Thingholm, P.R. et al. (2020) Association of type 1 diabetes and school wellbeing: a population-based cohort study of 436,439 Danish schoolchildren. Diabetologia	- outcomes not relevant
Ertesv?g, Sigrun K. and Havik, Trude (2021) Students' Proactive Aggressiveness, Mental Health Problems and Perceived Classroom Interaction. Scandinavian Journal of Educational Research 65(1): 1-20	- No regression
Estevez, Estefania; Jimenez, Teresa I; Moreno, David (2018) Aggressive behavior in adolescence as a predictor of personal, family, and school adjustment problems. Psicothema 30(1): 66-73	- Cross-sectional (did not contain specific risk factors identified by the committee)
ETHIER Louise, S.; LEMELIN, Jean-Pascal; LACHARITE, Carl (2004) A longitudinal study of the effects of chronic maltreatment on children's behavioral and emotional problems. Child Abuse and Neglect 28(12): 1265-1278	- No regression
Evans, Brittany E, Buil, J. Marieke, Burk, William J et al. (2018) Urbanicity is associated with behavioral and emotional problems in elementary school-aged children. Journal of Child and Family Studies 27(7): 2193-2205	- Data not usable (study did not report aOR / aRR / aHR)
Evans, E.; Hawton, K.; Rodham, K. (2004) Factors associated with suicidal phenomena in adolescents: A systematic review of population-	- No quantitative data reported

Study	Code [Reason]
based studies. Clinical Psychology Review 24(8): 957-979	
Evans, Spencer C, Cooley, John L, Blossom, Jennifer B et al. (2020) Examining ODD/ADHD Symptom Dimensions as Predictors of Social, Emotional, and Academic Trajectories in Middle Childhood. Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53 49(6): 912-929	- Data not usable (study did not report aOR / aRR / aHR)
Ezpeleta, Lourdes, Navarro, Jose Blas, de la Osa, Nuria et al. (2020) Life Conditions during COVID-19 Lockdown and Mental Health in Spanish Adolescents. International journal of environmental research and public health 17(19)	- Data not usable (study did not report aOR / aRR / aHR)
Farooqi, A.; Hagglof, B.; Serenius, F. (2013) Behaviours related to executive functions and learning skills at 11 years of age after extremely preterm birth: A Swedish national prospective follow-up study. Acta Paediatrica, International Journal of Paediatrics 102(6): 625-634	- outcomes not relevant
Fergusson, D.M. and Woodward, L.J. (2000) Educational, psychosocial, and sexual outcomes of girls with conduct problems in early adolescence. Journal of Child Psychology and Psychiatry and Allied Disciplines 41(6): 779-792	- Outcomes reported as prevalence data
Fernandes, Blossom, Biswas, Urmi Nanda, Tan-Mansukhani, Roseann et al. (2020) The impact of COVID-19 lockdown on internet use and escapism in adolescents. Revista de Psicologia Clinica con Ninos y Adolescentes 7(3): 59-65	- Data not usable (study did not report aOR / aRR / aHR)
Fevang, Silje Katrine Elgen, Hysing, Mari, Markestad, Trond et al. (2016) Mental health in children born extremely preterm without severe neurodevelopmental disabilities. Pediatrics 137(4): 1-11	- outcomes not relevant
Finnstrom, O, Gaddlin, P O, Leijon, I et al. (2003) Very-low-birth-weight children at school age: academic achievement, behavior and self-esteem and relation to risk factors. The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians 14(2): 75-84	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Flanagan, Kelly S; Erath, Stephen A; Bierman, Karen L (2008) Unique associations between peer relations and social anxiety in early adolescence. Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53 37(4): 759-69	- Cross-sectional (did not contain specific risk factors identified by the committee)
Fletcher, Richard J, Feeman, Emily, Garfield, Craig et al. (2011) The effects of early paternal depression on children's development. The Medical journal of Australia 195(1112): 685-9	- Relevant outcomes measured before school age
Flouri, E (2008) Fathering and adolescents' psychological adjustment: the role of fathers' involvement, residence and biology status. Child: care, health and development 34(2): 152-61	- Data not usable (study did not report aOR / aRR / aHR)
Flouri, Eirini and Kallis, Constantinos (2011) Adverse life events and mental health in middle adolescence. Journal of adolescence 34(2): 371-7	- Data not usable (study did not report aOR / aRR / aHR)
Fore, H.H. (2020) A wake-up call: COVID-19 and its impact on children's health and wellbeing. The Lancet Global Health 8(7): e861-e862	- Commentary article
Forney, William Scott; Forney, Judith Cardona; Crutsinger, Christy (2005) Gender, Delinquent Status, and Social Acceptance as Predictors of the Global Self-Esteem of Teens. Family and Consumer Sciences Research Journal 33(3): 208-219	- Data not usable (study did not report aOR / aRR / aHR)
Francisco, R., Pedro, M., Delvecchio, E. et al. (2020) Psychological Symptoms and Behavioral Changes in Children and Adolescents During the Early Phase of COVID-19 Quarantine in Three European Countries. Frontiers in Psychiatry 11: 570164	- Data not usable (study did not report aOR / aRR / aHR)
Fredstrom, Bridget K.; Adams, Ryan E.; Gilman, Rich (2011) Electronic and School-Based Victimization: Unique Contexts for Adjustment Difficulties during Adolescence. Journal of Youth and Adolescence 40(4): 405-415	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Fulco, Celia J; Bears Augustyn, Megan; Henry, Kimberly L (2020) Maternal Depressive Symptoms and Adolescent Health Risk Problems: The Role of School Engagement. Journal of youth and adolescence 49(1): 102-118	- Data not usable (study did not report aOR / aRR / aHR)
Fulkerson, Jayne A, Strauss, Jaine, Neumark-Sztainer, Dianne et al. (2007) Correlates of psychosocial well-being among overweight adolescents: the role of the family. Journal of consulting and clinical psychology 75(1): 181-6	- Data not usable (study did not report aOR / aRR / aHR)
Fussner, Lauren M., Luebbe, Aaron M., Mancini, Kathryn J. et al. (2018) Emotion Dysregulation Mediates the Longitudinal Relation between Peer Rejection and Depression: Differential Effects of Gender and Grade. International Journal of Behavioral Development 42(2): 155-166	- Data not usable (study did not report aOR / aRR / aHR)
Gaete, Jorge, Rojas-Barahona, Cristian A, Olivares, Esterbina et al. (2016) Brief report: Association between psychological sense of school membership and mental health among early adolescents. Journal of adolescence 50: 1-5	- Data not usable (study did not report aOR / aRR / aHR)
Galanaki, Evangelia P.; Polychronopoulou, Stavroula A.; Babalis, Thomas K. (2008) Loneliness and Social Dissatisfaction among Behaviourally At-Risk Children. School Psychology International 29(2): 214-229	- Cross-sectional (did not contain specific risk factors identified by the committee)
Garber, J. and Flynn, C. (2001) Predictors of depressive cognitions in young adolescents. Cognitive Therapy and Research 25(4): 353-376	- Data not usable (study did not report aOR / aRR / aHR)
Garc?a Ron, A and Cu?llar-Flores, I (2020) Psychological impact of lockdown (confinement) on young children and how to mitigate its effects: Rapid review of the evidence. Anales De Pediatria 93(1): 57-58	- Letter to editor
Garcia, Gabriel Macasiray, Hedwig, Travis, Hanson, Bridget L et al. (2019) The Relationship Between Mixed Race/Ethnicity, Developmental Assets, and Mental Health Among Youth. Journal of racial and ethnic health disparities 6(1): 77-85	- Ordered but not received

Study	Code [Reason]
Garnefski, Nadia and Diekstra, Rene F. W (1996) Perceived social support from family, school, and peers: Relationship with emotional and behavioral problems among adolescents. Journal of the American Academy of Child & Adolescent Psychiatry 35(12): 1657-1664	- Pre-1995 data
Ge, X; Conger, R D; Elder, G H Jr (2001) Pubertal transition, stressful life events, and the emergence of gender differences in adolescent depressive symptoms. Developmental psychology 37(3): 404-17	- Data not usable (study did not report aOR / aRR / aHR)
Gerard, Jean M. and Buehler, Cheryl (2004) Cumulative Environmental Risk and Youth Maladjustment: The Role of Youth Attributes. Child Development 75(6): 1832-1849	- Data not usable (study did not report aOR / aRR / aHR)
Gibson-Young, Linda, Martinasek, Mary P., Clutter, Michiko et al. (2014) Are Students with Asthma at Increased Risk for Being a Victim of Bullying in School or Cyberspace? Findings from the 2011 Florida Youth Risk Behavior Survey. Journal of School Health 84(7): 429-434	- outcomes not relevant
Gini, Gianluca, Marino, Claudia, Pozzoli, Tiziana et al. (2018) Associations between peer victimization, perceived teacher unfairness, and adolescents' adjustment and well-being. Journal of school psychology 67: 56-68	- Data not usable (study did not report aOR / aRR / aHR)
Giovagnoli, Sara, Mandolesi, Luca, Magri, Sara et al. (2020) Internalizing Symptoms in Developmental Dyslexia: A Comparison Between Primary and Secondary School. Frontiers in psychology 11: 461	- Data not usable (study did not report aOR / aRR / aHR)
Gloppen, Kari, McMorris, Barbara, Gower, Amy et al. (2018) Associations between bullying involvement, protective factors, and mental health among American Indian youth. The American journal of orthopsychiatry 88(4): 413-421	- Cross-sectional (did not contain specific risk factors identified by the committee)
Golberstein, Ezra; Wen, Hefei; Miller, Benjamin F (2020) Coronavirus Disease 2019 (COVID-19) and Mental Health for Children and Adolescents. JAMA pediatrics 174(9): 819-820	- Commentary article
Goldwasser, M.A. and Fitzmaurice, G.M. (2001) Multivariate linear regression analysis of	- Pre-1995 data

Study	Code [Reason]
childhood psychopathology using multiple informant data. International Journal of Methods in Psychiatric Research 10(1): 1-10	
Gollub, Erica L, Green, Jakevia, Richardson, Lisa et al. (2019) Indirect violence exposure and mental health symptoms among an urban public-school population: Prevalence and correlates. PloS one 14(11): e0224499	- Cross-sectional (did not contain specific risk factors identified by the committee)
Gomez-Baya, Diego; Mendoza, Ramon; Paino, Susana (2016) Perceived Emotional Intelligence as a Predictor of Depressive Symptoms after a One Year Follow-Up during Adolescence. International Journal of Emotional Education 8(1): 35-47	- Data not usable (study did not report aOR / aRR / aHR)
Gore, Susan; Farrell, Florence; Gordon, Jennifer (2001) Sports involvement as protection against depressed mood. Journal of Research on Adolescence 11(1): 119-130	- Pre-1995 data
Graham, Benjamin C; Keys, Christopher B; McMahon, Susan D (2014) Transportation and socioemotional well-being of urban students with and without disabilities. Journal of prevention & intervention in the community 42(1): 31-44	- Data not usable (study did not report aOR / aRR / aHR)
Graham, C A and Easterbrooks, M A (2000) School-aged children's vulnerability to depressive symptomatology: the role of attachment security, maternal depressive symptomatology, and economic risk. Development and psychopathology 12(2): 201-13	- Data not usable (study did not report aOR / aRR / aHR)
Grandjean, P.; Petot, D.; Petot, J.-M. (2016) Victimization by peers and anxiety among French children aged 8 to 12 years. Neuropsychiatrie de l'Enfance et de l'Adolescence 64(8): 491-497	- Non-English Language
Greenberg, Mark T, Lengua, Liliana J, Coie, John D et al. (1999) Predicting developmental outcomes at school entry using a multiple-risk model: Four American communities. Developmental Psychology 35(2): 403-417	- Cross-sectional (did not contain specific risk factors identified by the committee)
Greenberger, E., Chena, C., Tallya, S.R. et al. (2000) Family, peer, and individual correlates of depressive symptomatology among U.S. and	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
Chinese adolescents. Journal of Consulting and Clinical Psychology 68(2): 209-219	
Griffith, Julianne M, Crawford, Christopher M, Oppenheimer, Caroline W et al. (2019) Parenting and Youth Onset of Depression Across Three Years: Examining the Influence of Observed Parenting on Child and Adolescent Depressive Outcomes. Journal of abnormal child psychology 47(12): 1969-1980	- Clinical diagnosis
Grills-Taquechel, Amie E; Norton, Peter; Ollendick, Thomas H (2010) A longitudinal examination of factors predicting anxiety during the transition to middle school. Anxiety, Stress & Coping: An International Journal 23(5): 493-513	- Data not usable (study did not report aOR / aRR / aHR)
Guido, CA Amedeo, I Avenoso, F Bruni, J Zicari, AM Loffredo, L Spalice, A (2020) Risk Factors and Mental Health Promotion Strategies in Children During COVID-19. FRONTIERS IN PUBLIC HEALTH 8	- Commentary article
Guille, C. and Aujla, R. (2019) Developmental Consequences of Prenatal Substance Use in Children and Adolescents. Journal of Child and Adolescent Psychopharmacology 29(7): 479-486	- No quantitative data reported
Gunther, Nicole, Drukker, Marjan, Feron, Frans et al. (2007) No ecological effect modification of the association between negative life experiences and later psychopathology in adolescence: A longitudinal community study in adolescents. European psychiatry : the journal of the Association of European Psychiatrists 22(5): 296-304	- Data not usable (study did not report aOR / aRR / aHR)
Hall, William J (2018) Psychosocial Risk and Protective Factors for Depression Among Lesbian, Gay, Bisexual, and Queer Youth: A Systematic Review. Journal of homosexuality 65(3): 263-316	- Data not usable (study did not report aOR / aRR / aHR)
Hall-Lande, Jennifer A, Eisenberg, Marla E, Christenson, Sandra L et al. (2007) Social isolation, psychological health, and protective factors in adolescence. Adolescence 42(166): 265-86	- Data not usable (study did not report aOR / aRR / aHR)
Harland, P, Reijneveld, S A, Brugman, E et al. (2002) Family factors and life events as risk	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
factors for behavioural and emotional problems in children. European child & adolescent psychiatry 11(4): 176-84	
Harris, J. and Lord, C. (2016) Mental health of children with vision impairment at 11 years of age. Developmental Medicine and Child Neurology 58(7): 774-779	- Data not usable (study did not report aOR / aRR / aHR)
Harris, Johari and Kruger, Ann C. (2021) Exploring the Influence of Racial-Ethnic and Gender Identity on the Prosocial Behaviors of African American Adolescent Males. Youth & Society 53(3): 512-535	- Data not usable (study did not report aOR / aRR / aHR)
Hase, Craig N., Goldberg, Simon B., Smith, Douglas et al. (2015) Impacts of Traditional Bullying and Cyberbullying on the Mental Health of Middle School and High School Students. Psychology in the Schools 52(6): 607-617	- Cross-sectional (did not contain specific risk factors identified by the committee)
Hatchel, Tyler; Espelage, Dorothy L; Huang, Yuanhong (2018) Sexual harassment victimization, school belonging, and depressive symptoms among LGBTQ adolescents: Temporal insights. The American journal of orthopsychiatry 88(4): 422-430	- Data not usable (study did not report aOR / aRR / aHR)
Hawes, Mariah T, Szenczy, Aline K, Klein, Daniel N et al. (2021) Increases in depression and anxiety symptoms in adolescents and young adults during the COVID-19 pandemic. Psychological medicine: 1-9	- Data not usable (study did not report aOR / aRR / aHR)
Hawley, Carol A (2012) Self-esteem in children after traumatic brain injury: an exploratory study. NeuroRehabilitation 30(3): 173-81	- No regression
Heiden-Rootes, Katie, Salas, Joanne, Moore, Rachel et al. (2020) Peer Victimization and Mental Health Outcomes for Lesbian, Gay, Bisexual, and Heterosexual Youth: A Latent Class Analysis. Journal of School Health 90(10): 771-778	- Cross-sectional (did not contain specific risk factors identified by the committee)
Helweg-Larsen, Karin; Frederiksen, Marie Louise; Larsen, Helmer Boving (2011) Violence, a risk factor for poor mental health in adolescence: a Danish nationally representative youth survey. Scandinavian journal of public health 39(8): 849-56	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
Hemphill, Sheryl and Hargreaves, John (2009) The impact of school suspensions: A student wellbeing issue. ACHPER Australia Healthy Lifestyles Journal 56	- outcomes not relevant
Herrenkohl, Todd I, Kosterman, Rick, Hawkins, J David et al. (2009) Effects of growth in family conflict in adolescence on adult depressive symptoms: mediating and moderating effects of stress and school bonding. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 44(2): 146-152	- Relevant outcomes measured in adults
Hicks, Megan R.; Kernsmith, Poco; Smith-Darden, Joanne (2021) The Effects of Adverse Childhood Experiences on Internalizing and Externalizing Behaviors among Black Children and Youth. Journal of Child and Adolescent Trauma 14(1): 115-122	- Data not usable (study did not report aOR / aRR / aHR)
Hilario, Carla T, Vo, Dzung X, Johnson, Joy L et al. (2014) Acculturation, gender, and mental health of Southeast Asian immigrant youth in Canada. Journal of immigrant and minority health 16(6): 1121-9	- Cross-sectional (did not contain specific risk factors identified by the committee)
Hille, Elys?e TM, Den Ouden, A Lya, Bauer, Leni et al. (1994) School performance at nine years of age in very premature and very low birth weight infants: perinatal risk factors and predictors at five years of age. The Journal of pediatrics 125(3): 426-434	- Pre-1995 data
Hillis, Susan D, Anda, Robert F, Dube, Shanta R et al. (2004) The association between adverse childhood experiences and adolescent pregnancy, long-term psychosocial consequences, and fetal death. Pediatrics 113(2): 320-327	- Population - adult
Hong, Irene K, Wang, Weijun, Pepler, Debra J et al. (2020) Peer victimization through a trauma lens: Identifying who is at risk for negative outcomes. Scandinavian journal of psychology 61(1): 6-16	- Cross-sectional (did not contain specific risk factors identified by the committee)
HOOPER Lisa, M. and et, al (2014) The Fit Families pilot study: preliminary findings on how parental health and other family system factors relate to and predict adolescent obesity and depressive symptoms. Journal of Family Therapy 36(3): 308-336	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
HORNFECK, Fabienne and et, al (2019) Emotional and behavior problems in adopted children - the role of early adversities and adoptive parents' regulation and behavior. Child Abuse and Neglect 98: 104221	- Cross-sectional (did not contain specific risk factors identified by the committee)
Houghton, S., Lawrence, D., Hunter, S.C. et al. (2020) Loneliness Accounts for the Association Between Diagnosed Attention Deficit-Hyperactivity Disorder and Symptoms of Depression Among Adolescents. Journal of Psychopathology and Behavioral Assessment 42(2): 237-247	- Data not usable (study did not report aOR / aRR / aHR)
Huang, Chien-Chung; Chen, Yafan; Cheung, Shannon (2020) Early childhood exposure to intimate partner violence and teen depression symptoms in the U.S. Health & social care in the community	- Data not usable (study did not report aOR / aRR / aHR)
Huang, Francis L, Lewis, Crystal, Cohen, Daniel R et al. (2018) Bullying involvement, teacher-student relationships, and psychosocial outcomes. School psychology quarterly : the official journal of the Division of School Psychology, American Psychological Association 33(2): 223-234	- Data not usable (study did not report aOR / aRR / aHR)
Huffman, Lynne C; Mehlinger, Sarah L; Kerivan, Amy S (2000) Risk factors for academic and behavioral problems at the beginning of school. Off to a good start: Research on the risk factors for early school problems and selected federal policies affecting children?s social and emotional development and their readiness for school	- Data not usable (study did not report aOR / aRR / aHR)
Husky, Mathilde M, Keyes, Katherine, Hamilton, Ava et al. (2017) Maternal Problem Drinking and Child Mental Health. Substance use & misuse 52(14): 1823-1831	- Cross-sectional (did not contain specific risk factors identified by the committee)
Hysing, Mari, Elgen, Irene, Gillberg, Christopher et al. (2007) Chronic physical illness and mental health in children. Results from a large-scale population study. Journal of child psychology and psychiatry, and allied disciplines 48(8): 785-92	- Cross-sectional (did not contain specific risk factors identified by the committee)
Iachini, Aidyn L; Petiwala, Aliza F; DeHart, Dana D (2016) Examining adverse childhood experiences among students repeating the ninth	- No regression

Study	Code [Reason]
grade: Implications for school dropout prevention. Children & Schools 38(4): 218-226	
Imran, N., Aamer, I., Sharif, M.I. et al. (2020) Psychological burden of quarantine in children and adolescents: A rapid systematic review and proposed solutions. Pakistan Journal of Medical Sciences 36(5): 1106-1116	- Non-UK qualitative data
Imtiaz, Memon, R, Imran, N et al. (2020) 1.16 The Effect of Quarantine on the Emotional Well-Being of Kids: A Systematic Review. Journal of the American Academy of Child and Adolescent Psychiatry 59(10supplement): 144	- Abstract only
In-Albon, Tina, Meyer, Andrea H, Metzke, Christa Winkler et al. (2017) A Cross-Lag Panel Analysis of Low Self-Esteem as a Predictor of Adolescent Internalizing Symptoms in a Prospective Longitudinal Study. Child psychiatry and human development 48(3): 411-422	- Data not usable (study did not report aOR / aRR / aHR)
Ingoldsby, Erin M, Kohl, Gwynne O, McMahon, Robert J et al. (2006) Conduct problems, depressive symptomatology and their co-occurring presentation in childhood as predictors of adjustment in early adolescence. Journal of abnormal child psychology 34(5): 603-21	- Data not usable (study did not report aOR / aRR / aHR)
Isaacs, David (2013) Adolescent depression and school environment. Journal of Paediatrics and Child Health 49(11): 983-984	- Abstract only
Islam, Umna A, Poole, Kristie L, Schmidt, Louis A et al. (2018) Childhood language skills and adolescent self-esteem in preterm survivors. Journal of child health care : for professionals working with children in the hospital and community 22(1): 34-45	- Data not usable (study did not report aOR / aRR / aHR)
Isomaa, Rasmus, Vaananen, Juha-Matti, Frojd, Sari et al. (2013) How low is low? Low self-esteem as an indicator of internalizing psychopathology in adolescence. Health education & behavior : the official publication of the Society for Public Health Education 40(4): 392-9	- Data not usable (study did not report aOR / aRR / aHR)
Itani, Osamu, Kaneita, Yoshitaka, Doi, Kazuto et al. (2018) Longitudinal Epidemiologic Study of Poor Mental Health Status in Japanese	- Ordered but not received

Study	Code [Reason]
Adolescents: Incidence of Predictive Lifestyle Factors. The Journal of clinical psychiatry 79(4)	
Jablonska, B. and Lindberg, L. (2007) Risk behaviours, victimisation and mental distress among adolescents in different family structures. Social Psychiatry and Psychiatric Epidemiology 42(8): 656-663	- Cross-sectional (did not contain specific risk factors identified by the committee)
Jackson, Mary H and Canada, Richard (1995) Self-concept and math among potential school droputs. Journal of Instructional Psychology 22(3): 234-237	- Data not usable (study did not report aOR / aRR / aHR)
Janosz, Michel, Briere, Frederic N, Galand, Benoit et al. (2018) Witnessing violence in early secondary school predicts subsequent student impairment. Journal of epidemiology and community health 72(12): 1117-1123	- Data not usable (study did not report aOR / aRR / aHR)
Johnson, S., Hollis, C., Kochhar, P. et al. (2010) Psychiatric Disorders in Extremely Preterm Children: Longitudinal Finding at Age 11 Years in the EPICure Study. Journal of the American Academy of Child and Adolescent Psychiatry 49(5): 453	- Relevant outcomes measured before school age
Jones, E.A.K.; Mitra, A.K.; Bhuiyan, A.R. (2021) Impact of covid-19 on mental health in adolescents: A systematic review. International Journal of Environmental Research and Public Health 18(5): 1-9	- SR does not report study designs
Kaltiala-Heino, R., Rimpela, M., Rantanen, P. et al. (2001) Adolescent depression: The role of discontinuities in life course and social support. Journal of Affective Disorders 64(23): 155-166	- Cross-sectional (did not contain specific risk factors identified by the committee)
KALTIALA-HEINO, Rittakerttu and et, al (2000) Bullying at school: an indicator of adolescents at risk for mental disorder. Journal of Adolescence 23(6): 661-674	- Cross-sectional (did not contain specific risk factors identified by the committee)
Kaman, Anne, Otto, Christiane, Klasen, Fionna et al. (2021) Risk and resource factors for depressive symptoms during adolescence and emerging adulthood - A 5-year follow-up using population-based data of the BELLA study. Journal of Affective Disorders 280: 258-266	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Kaneita, Yoshitaka, Yokoyama, Eise, Harano, Satoru et al. (2009) Associations between sleep disturbance and mental health status: a longitudinal study of Japanese junior high school students. Sleep medicine 10(7): 780-6	- Ordered but not received
Kasehagen, Laurin, Omland, Laurel, Bailey, Melissa et al. (2018) Relationship of Adverse Family Experiences to Resilience and School Engagement Among Vermont Youth. Maternal and child health journal 22(3): 298-307	- Cross-sectional (did not contain specific risk factors identified by the committee)
Kashy-Rosenbaum, Gabriela and Aizenkot, Dana (2020) Exposure to cyberbullying in WhatsApp classmates' groups and classroom climate as predictors of students' sense of belonging: A multi-level analysis of elementary, middle and high schools. Children and Youth Services Review 108	- Data not usable (study did not report aOR / aRR / aHR)
KERNIC Mary, A. and et, al (2003) Behavioural problems among children whose mothers are abused by an intimate partner. Child Abuse and Neglect 27(11): 1231-1246	- Cross-sectional (did not contain specific risk factors identified by the committee)
Ketelaars, Mieke P., Cuperus, Juliane, Jansonius, Kino et al. (2010) Pragmatic Language Impairment and Associated Behavioural Problems. International Journal of Language & Communication Disorders 45(2): 204-214	- Cross-sectional (did not contain specific risk factors identified by the committee)
Kidger, Judi, Araya, Ricardo, Donovan, Jenny et al. (2012) The effect of the school environment on the emotional health of adolescents: a systematic review. Pediatrics 129(5): 925-49	- Ordered but not received
Kidger, Judi, Heron, Jon, Leon, David A et al. (2015) Self-reported school experience as a predictor of self-harm during adolescence: a prospective cohort study in the South West of England (ALSPAC). Journal of affective disorders 173: 163-9	- outcomes not relevant
Kim, Su Yeong, Wang, Yijie, Deng, Shiying et al. (2011) Accent, perpetual foreigner stereotype, and perceived discrimination as indirect links between English proficiency and depressive symptoms in Chinese American adolescents. Developmental psychology 47(1): 289-301	- No regression

Study	Code [Reason]
Kimball, Hayley, Douglas, Tonia, Sanders, Matthew et al. (2021) Anxiety in Children with Cystic Fibrosis and Their Parents: A Systematic Review. Clinical child and family psychology review 24(2): 370-390	- SR of cross-sectional studies
Kingery, Julie Newman; Erdley, Cynthia A.; Marshall, Katherine C. (2011) Peer Acceptance and Friendship as Predictors of Early Adolescents' Adjustment across the Middle School Transition. Merrill-Palmer Quarterly: Journal of Developmental Psychology 57(3): 215-243	- Data not usable (study did not report aOR / aRR / aHR)
Klinck, Melanie; Vannucci, Anna; Ohannessian, Christine McCauley (2020) Bidirectional Relationships between School Connectedness and Internalizing Symptoms during Early Adolescence. Journal of Early Adolescence 40(9): 1336-1368	- Data not usable (study did not report aOR / aRR / aHR)
Koenig, Julian, Kohls, Elisabeth, Moessner, Markus et al. (2021) The impact of COVID-19 related lockdown measures on self-reported psychopathology and health-related quality of life in German adolescents. European child & adolescent psychiatry	- Cross-sectional (did not contain specific risk factors identified by the committee)
Kreski, Noah, Platt, Jonathan, Rutherford, Caroline et al. (2021) Social Media Use and Depressive Symptoms Among United States Adolescents. Journal of Adolescent Health 68(3): 572-579	- Cross-sectional (did not contain specific risk factors identified by the committee)
Kutob, Randa M, Senf, Janet H, Crago, Marjorie et al. (2010) Concurrent and longitudinal predictors of self-esteem in elementary and middle school girls. The Journal of school health 80(5): 240-8	- Data not usable (study did not report aOR / aRR / aHR)
Kwak, Y., Mihalec-Adkins, B., Mishra, A.A. et al. (2018) Differential impacts of participation in organized activities and maltreatment types on adolescent academic and socioemotional development. Child Abuse and Neglect 78: 107-117	- Data not usable (study did not report aOR / aRR / aHR)
Kwak, Young-Sook, Lee, Chang-In, Hong, Seong-Chul et al. (2008) Depressive symptoms in elementary school children in Jeju Island, Korea: prevalence and correlates. European child & adolescent psychiatry 17(6): 343-51	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
Ladd, G.W.; Herald-Brown, S.L.; Andrews, R.K. (2009) The Child Behavior Scale (CBS) Revisited: A Longitudinal Evaluation of CBS Subscales With Children, Preadolescents, and Adolescents. Psychological Assessment 21(3): 325-339	- Suitable for RQ 2.3
LAI Betty, S. and et, al (2014) Disasters and depressive symptoms in children: a review. Child and Youth Care Forum 43(4): 489-504	- No quantitative data reported
Larsen, L.; Helland, M.S.; Holt, T. (2021) The impact of school closure and social isolation on children in vulnerable families during COVID-19: a focus on children's reactions. European Child and Adolescent Psychiatry	- Data not usable (study did not report aOR / aRR / aHR)
Laser, Julie; Luster, Tom; Oshio, Toko (2007) Risk and promotive factors related to depressive symptoms among Japanese youth. The American journal of orthopsychiatry 77(4): 523-33	- Data not usable (study did not report aOR / aRR / aHR)
Laucht, M.; Esser, G.; Schmidt, M.H. (2002) Vulnerability and resilience in the development of children at risk: The role of early mother-child interaction. Revista de Psiquiatria Clinica 29(1): 20-27	- Data not usable (study did not report aOR / aRR / aHR)
Lee, A.; Lee, K.-S.; Park, H. (2019) Association of the use of a heated tobacco product with perceived stress, physical activity, and internet use in Korean adolescents: A 2018 national survey. International Journal of Environmental Research and Public Health 16(6): 965	- Cross-sectional (did not contain specific risk factors identified by the committee)
Lee, Hyun Hwa and Cranford, James A (2008) Does resilience moderate the associations between parental problem drinking and adolescents' internalizing and externalizing behaviors? A study of Korean adolescents. Drug and alcohol dependence 96(3): 213-21	- Data not usable (study did not report aOR / aRR / aHR)
Lee, Jinhee, Kim, Tae Hui, Min, Seongho et al. (2018) Depressive symptoms and suicidal behaviours in adolescent non-daily smokers compared to daily smokers and never-smokers in Korea: National cross-sectional study. PloS one 13(11): e0207182	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
Lee, Joyce (2020) Mental health effects of school closures during COVID-19. The Lancet. Child & adolescent health 4(6): 421	- Commentary article
Lee, Kirsty S and Vaillancourt, Tracy (2018) Longitudinal Associations Among Bullying by Peers, Disordered Eating Behavior, and Symptoms of Depression During Adolescence. JAMA psychiatry 75(6): 605-612	- Data not usable (study did not report aOR / aRR / aHR)
Legkauskas, Visvaldas and Magelinskaite-Legkauskiene, ?arune (2021) Social Competence in the 1st Grade Predicts School Adjustment Two Years Later. Early Child Development and Care 191(1): 83-92	- Data not usable (study did not report aOR / aRR / aHR)
Lehtinen, Henri, Raikkonen, Katri, Heinonen, Kati et al. (2006) School Performance in Childhood and Adolescence as a Predictor of Depressive Symptoms in Adulthood. School Psychology International 27(3): 281-295	- Population - adult
Lepore, Stephen J and Kliewer, Wendy (2019) Social intelligence attenuates association between peer victimization and depressive symptoms among adolescents. Psychology of Violence 9(6): 644-652	- Data not usable (study did not report aOR / aRR / aHR)
Lereya, Suzet Tanya, Copeland, William E, Zammit, Stanley et al. (2015) Bully/victims: a longitudinal, population-based cohort study of their mental health. European child & adolescent psychiatry 24(12): 1461-71	- Relevant outcomes measured in adults
Lester, Leanne and Cross, Donna (2015) The Relationship Between School Climate and Mental and Emotional Wellbeing Over the Transition from Primary to Secondary School. Psychology of well-being 5(1): 9	- Data not usable (study did not report aOR / aRR / aHR)
Leve, Leslie D., Harold, Gordon T., Van Ryzin, Mark J. et al. (2012) Girls' Tobacco and Alcohol Use during Early Adolescence: Prediction from Trajectories of Depressive Symptoms across Two Studies. Journal of Child & Adolescent Substance Abuse 21(3): 254-272	- outcomes not relevant
Levendosky, A A; Okun, A; Parker, J G (1995) Depression and maltreatment as predictors of social competence and social problem-solving	- Ordered but not received

Study	Code [Reason]
skills in school-age children. Child abuse & neglect 19(10): 1183-95	
Liao, Shujuan, Luo, Biru, Liu, Hanmin et al. (2021) Bilateral associations between sleep duration and depressive symptoms among Chinese adolescents before and during the COVID-19 pandemic. Sleep Medicine 84: 289-293	- Ordered but not received
Lieber, Mark (2017) Assessing the Mental Health Impact of the 2011 Great Japan Earthquake, Tsunami, and Radiation Disaster on Elementary and Middle School Children in the Fukushima Prefecture of Japan. PloS one 12(1): e0170402	- Data not usable (study did not report aOR / aRR / aHR)
Lien, Lars, Sagatun, Ase, Heyerdahl, Sonja et al. (2009) Is the relationship between smoking and mental health influenced by other unhealthy lifestyle factors? Results from a 3-year follow-up study among adolescents in Oslo, Norway. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 45(6): 609-17	- Ordered but not received
Lim, Hyo Jin; Chung, Sung Suk; Joung, Kyoung Hwa (2016) Factors of Depressive Symptoms Among Elementary, Middle, and High School Students. Archives of psychiatric nursing 30(3): 302-8	- Cross-sectional (did not contain specific risk factors identified by the committee)
Lindberg, Lene and Swanberg, Inga (2006) Well-being of 12-year-old children related to interpersonal relations, health habits and mental distress. Scandinavian journal of caring sciences 20(3): 274-81	- Cross-sectional (did not contain specific risk factors identified by the committee)
Lindfred, H, Saalman, R, Nilsson, S et al. (2008) Inflammatory bowel disease and self-esteem in adolescence. Acta paediatrica (Oslo, Norway : 1992) 97(2): 201-5	- Data not usable (study did not report aOR / aRR / aHR)
Liu, Jia Jia, Bao, Yanping, Huang, Xiaolin et al. (2020) Mental health considerations for children quarantined because of COVID-19. The Lancet. Child & adolescent health 4(5): 347-349	- Commentary article
LOADES Maria, Elizabeth and et, al (2020) Rapid systematic review: the impact of social isolation and loneliness on the mental health of children and adolescents in the context of	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
COVID-19. Journal of the American Academy of Child and Adolescent Psychiatry 59(11): 1218-1239	
Lombardi, Caitlin McPherran, Coley, Rebekah Levine, Sims, Jacqueline et al. (2019) Social norms, social connections, and sex differences in adolescent mental and behavioral health. Journal of Child and Family Studies 28(1): 91-104	- Data not usable (study did not report aOR / aRR / aHR)
Lorenzo-Blanco, Elma I, Unger, Jennifer B, Ritt-Olson, Anamara et al. (2011) Acculturation, gender, depression, and cigarette smoking among U.S. Hispanic youth: the mediating role of perceived discrimination. Journal of youth and adolescence 40(11): 1519-33	- Data not usable (study did not report aOR / aRR / aHR)
Losel, Friedrich and Bender, Doris (2011) Emotional and antisocial outcomes of bullying and victimization at school: A follow-up from childhood to adolescence. Journal of Aggression, Conflict and Peace Research 3(2): 89-96	- Data not usable (study did not report aOR / aRR / aHR)
Luo, Yun, Xiang, Zhoulei, Zhang, Hui et al. (2017) Protective Factors for Depressive Symptoms in Adolescents: Interpersonal Relationships and Perceived Social Support. Psychology in the Schools 54(8): 808-820	- Non-OECD country
Luthar, Suniya S; Ebbert, Ashley M; Kumar, Nina L (2020) The Well-Being Index (WBI) for schools: A brief measure of adolescents' mental health. Psychological assessment 32(10): 903-914	- RQ 2.3 non-UK study
Luthar, Suniya S; Ebbert, Ashley M; Kumar, Nina L (2020) Risk and resilience during COVID-19: A new study in the Zigler paradigm of developmental science. Development and psychopathology: 1-16	- Data not usable (study did not report aOR / aRR / aHR)
Lynch, Thuy, Azuero, Andres, Lochman, John E et al. (2019) The Influence of Psychological Stress, Depressive Symptoms, and Cortisol on Body Mass and Central Adiposity in 10- to-12-Year-Old Children. Journal of pediatric nursing 44: 42-49	- Data not usable (study did not report aOR / aRR / aHR)
Lyyra, Nelli, Valimaa, Raili, Thorsteinsson, Einar Baldvin et al. (2021) The association between	- Outcomes reported as prevalence data

Study	Code [Reason]
loneliness, mental well-being, and self-esteem among adolescents in four nordic countries. International Journal of Environmental Research and Public Health 18(14): 7405	
Machmutow, K., Perren, S., Sticca, F. et al. (2012) Peer victimisation and depressive symptoms: Can specific coping strategies buffer the negative impact of cybervictimisation?. Emotional and Behavioural Difficulties 17(34): 403-420	- Data not usable (study did not report aOR / aRR / aHR)
Madjar, Nir; Sarel-Mahlev, Ella; Brunstein Klomek, Anat (2020) Depression Symptoms as Mediator Between Adolescents' Sense of Loneliness at School and Nonsuicidal Self-Injury Behaviors. Crisis: 1-8	- No regression
Maekelae, MJ Reggev, N Dutra, N Tamayo, RM Silva-Sobrinho, RA Klevjer, K Pfuhl, G (2020) Perceived efficacy of COVID-19 restrictions, reactions and their impact on mental health during the early phase of the outbreak in six countries. ROYAL SOCIETY OPEN SCIENCE 7(8)	- Population - adult
Magson, Natasha R, Freeman, Justin Y A, Rapee, Ronald M et al. (2021) Risk and Protective Factors for Prospective Changes in Adolescent Mental Health during the COVID-19 Pandemic. Journal of youth and adolescence 50(1): 44-57	- Duplicate
Magson, Natasha R, Freeman, Justin Y. A, Rapee, Ronald M et al. (2021) Risk and protective factors for prospective changes in adolescent mental health during the COVID-19 pandemic. Journal of Youth and Adolescence 50(1): 44-57	- Data not usable (study did not report aOR / aRR / aHR)
Majnemer, Annette, Shevell, Michael, Rosenbaum, Peter et al. (2007) Determinants of life quality in school-age children with cerebral palsy. The Journal of pediatrics 151(5): 470-3	- Data not usable (study did not report aOR / aRR / aHR)
Malhi, Prahbhjot; Bharti, Bhavneet; Sidhu, Manjit (2021) Stress and Parenting During the COVID-19 Pandemic: Psychosocial Impact on Children. Indian journal of pediatrics	- Abstract only
Malinauskiene, Vilija and Malinauskas, Romualdas (2021) Predictors of adolescent	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
depressive symptoms. International Journal of Environmental Research and Public Health 18(9): 4508	
Mangot-Sala, Lluis, Bosque-Prous, Marina, Bartroli, Montse et al. (2019) The role of individual and social mediators in the association between drug consumption and mental health among adolescents in Barcelona. International Journal of Mental Health and Addiction 17(6): 1374-1388	- Data not usable (study did not report aOR / aRR / aHR)
Marie-Mitchell, Ariane and O?Connor, Thomas G (2013) Adverse childhood experiences: translating knowledge into identification of children at risk for poor outcomes. Academic pediatrics 13(1): 14-19	- outcomes not relevant
Markward, Martha J; Renner, Lynette M; Evans, Carol J (2008) Peer victimization and self-efficacy in coping with conflict as predictors of depressive feelings among females in early adolescence. Advances in School Mental Health Promotion 1(3): 49-57	- Data not usable (study did not report aOR / aRR / aHR)
Marquet, Satoko (2020) The Impact of Adverse Childhood Experiences, Social-Emotional Functioning, and Perceived Support on Well-Being from Early Childhood to Young Adulthood.	- Dissertation preview
Martinez-Lopez, E.J., Hita-Contreras, F., Moral-Garcia, J.E. et al. (2015) Association of low weekly physical activity and sedentary lifestyle with self-perceived health, pain, and well-being in a Spanish teenage population. Science and Sports 30(6): 342-351	- Ordered but not received
Martinsen, Kristin D, Neumer, Simon-Peter, Holen, Solveig et al. (2016) Self-reported quality of life and self-esteem in sad and anxious school children. BMC psychology 4(1): 45	- Data not usable (study did not report aOR / aRR / aHR)
Masfety, Viviane Kovess, Woodward, Miriam J, Keyes, Katherine et al. (2020) Gender, the gender gap, and their interaction; analysis of relationships with children's mental health problems. Social Psychiatry and Psychiatric Epidemiology: The International Journal for Research in Social and Genetic Epidemiology and Mental Health Services: no-specified	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
Matamura, M., Tochigi, M., Usami, S. et al. (2014) Associations between sleep habits and mental health status and suicidality in a longitudinal survey of monozygotic twin adolescents. Journal of Sleep Research 23(3): 290-294	- Data not usable (study did not report aOR / aRR / aHR)
Mathew, Gina Marie; Hale, Lauren; Chang, Anne-Marie (2019) Sex Moderates Relationships Among School Night Sleep Duration, Social Jetlag, and Depressive Symptoms in Adolescents. Journal of biological rhythms 34(2): 205-217	- Data not usable (study did not report aOR / aRR / aHR)
Mathiesen, Kristin S., Sanson, Ann, Stoolmiller, Mike et al. (2009) The Nature and Predictors of Undercontrolled and Internalizing Problem Trajectories across Early Childhood. Journal of Abnormal Child Psychology 37(2): 209-222	- Data not usable (study did not report aOR / aRR / aHR)
Matta, Punit N., Baul, Tithi D., Loubeau, Krystel et al. (2021) Low sports participation is associated with withdrawn and depressed symptoms in urban, school-age children. Journal of Affective Disorders 280: 24-29	- Cross-sectional (did not contain specific risk factors identified by the committee)
Mayer, Laszlo, Lopez-Duran, Nestor L, Kovacs, Maria et al. (2009) Stressful life events in a clinical sample of depressed children in Hungary. Journal of affective disorders 115(12): 207-14	- Clinical diagnosis
Mazza, James J., Abbott, Robert D., Fleming, Charles B. et al. (2009) Early Predictors of Adolescent Depression: A 7-Year Longitudinal Study. Journal of Early Adolescence 29(5): 664-692	- Data not usable (study did not report aOR / aRR / aHR)
McCarty, Carolyn A; Vander Stoep, Ann; McCauley, Elizabeth (2007) Cognitive features associated with depressive symptoms in adolescence: directionality and specificity. Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53 36(2): 147-58	- No regression
McClure, Auden C, Tanski, Susanne E, Kingsbury, John et al. (2010) Characteristics associated with low self-esteem among US	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
adolescents. Academic pediatrics 10(4): 238-44e2	
McCormick, M C; Workman-Daniels, K; Brooks-Gunn, J (1996) The behavioral and emotional well-being of school-age children with different birth weights. Pediatrics 97(1): 18-25	- Pre-1995 data
McKay, M.T., Andretta, J.R., Cole, J.C. et al. (2020) Socio-demographic predictors of well-being in United Kingdom adolescents, and the impact of well-being on a range of health-related outcomes. Psychiatry Research 285: 112728	- Data not usable (study did not report aOR / aRR / aHR)
McWhirter, Benedict T, Besett-Alesch, Tricia M, Horibata, Jarrett et al. (2002) Loneliness in high risk adolescents: The role of coping, self-esteem, and empathy. Journal of Youth Studies 5(1): 69-84	- Data not usable (study did not report aOR / aRR / aHR)
Meherali, S., Punjani, N., Louie-Poon, S. et al. (2021) Mental health of children and adolescents amidst covid-19 and past pandemics: A rapid systematic review. International Journal of Environmental Research and Public Health 18(7): 3432	- SR of cross-sectional studies
Mendez-Lopez, Claudia; Pereda, Noemi; Guilera, Georgina (2021) Lifetime poly-victimization and psychopathological symptoms in Mexican adolescents. Child Abuse and Neglect 112: 104883	- Cross-sectional (did not contain specific risk factors identified by the committee)
Metsapelto, Riitta-Leena, Zimmermann, Friederike, Pakarinen, Eija et al. (2020) School grades as predictors of self-Esteem and changes in internalizing problems: A longitudinal study from fourth through seventh grade. Learning and Individual Differences 77	- Data not usable (study did not report aOR / aRR / aHR)
Mian, Nicholas D., Wainwright, Laurel, Briggs-Gowan, Margaret J. et al. (2011) An Ecological Risk Model for Early Childhood Anxiety: The Importance of Early Child Symptoms and Temperament. Journal of Abnormal Child Psychology 39(4): 501-512	- Data not usable (study did not report aOR / aRR / aHR)
Milam, Adam J, Furr-Holden, C Debra, Whitaker, Damiya et al. (2012) Neighborhood environment and internalizing problems in African American children. Community mental health journal 48(1): 39-44	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
Moore, Graham F., Anthony, Rebecca E., Hawkins, Jemma et al. (2020) Socioeconomic Status, Mental Wellbeing and Transition to Secondary School: Analysis of the School Health Research Network/Health Behaviour in School-Aged Children Survey in Wales. British Educational Research Journal 46(5): 1111-1130	- Data not usable (study did not report aOR / aRR / aHR)
Morin, Hillary K; Bradshaw, Catherine P; Kush, Joseph M (2018) Adjustment outcomes of victims of cyberbullying: The role of personal and contextual factors. Journal of school psychology 70: 74-88	- Data not usable (study did not report aOR / aRR / aHR)
Moulin, F., El-Aarbaoui, T., Bustamante, J.J.H. et al. (2021) Risk and protective factors related to children's symptoms of emotional difficulties and hyperactivity/inattention during the COVID-19-related lockdown in France: results from a community sample. European Child and Adolescent Psychiatry	- Cross-sectional (did not contain specific risk factors identified by the committee)
Murdock, Karla Klein, Robinson, Elizabeth M, Adams, Sue K et al. (2009) Family-school connections and internalizing problems among children living with asthma in urban, low-income neighborhoods. Journal of child health care : for professionals working with children in the hospital and community 13(3): 275-94	- Data not usable (study did not report aOR / aRR / aHR)
Murray, Joseph; Farrington, David P; Sekol, Ivana (2012) Children's antisocial behavior, mental health, drug use, and educational performance after parental incarceration: a systematic review and meta-analysis. Psychological bulletin 138(2): 175-210	- Data not usable (study did not report aOR / aRR / aHR)
Na, Kyoung-Sae, Lee, Soyoung Irene, Hong, Hyun Ju et al. (2014) The influence of unsupervised time on elementary school children at high risk for inattention and problem behaviors. Child abuse & neglect 38(6): 1120-7	- Cross-sectional (did not contain specific risk factors identified by the committee)
Navarro-Soria, I Real-Fernandez, M de Mier, RJR Costa-Lopez, B Sanchez, M Lavigne, R (2021) Consequences of Confinement Due to COVID-19 in Spain on Anxiety, Sleep and Executive Functioning of Children and Adolescents with ADHD. SUSTAINABILITY 13(5)	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Nearchou, Finiki, Flinn, Clodagh, Niland, Rachel et al. (2020) Exploring the Impact of COVID-19 on Mental Health Outcomes in Children and Adolescents: A Systematic Review. International journal of environmental research and public health 17(22)	- SR of cross-sectional studies
Needham, Belinda L and Crosnoe, Robert (2005) Overweight status and depressive symptoms during adolescence. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 36(1): 48-55	- Data not usable (study did not report aOR / aRR / aHR)
Netsi, Elena, Pearson, Rebecca M, Murray, Lynne et al. (2018) Association of Persistent and Severe Postnatal Depression With Child Outcomes. JAMA psychiatry 75(3): 247-253	- Clinical diagnosis
Newlove-Delgado, Tamsin, McManus, Sally, Sadler, Katharine et al. (2021) Child mental health in England before and during the COVID-19 lockdown. The lancet. Psychiatry	- Commentary article
Niemeier, Jill and Fitzpatrick, Kevin M (2019) Examining food insecurity among high school students: A risks and resources model. Appetite 135: 20-27	- Dissertation/thesis
Nijs, Miesje M, Bun, Clothilde J E, Tempelaar, Wanda M et al. (2014) Perceived school safety is strongly associated with adolescent mental health problems. Community mental health journal 50(2): 127-34	- Cross-sectional (did not contain specific risk factors identified by the committee)
Nurunnabi, M.; Almusharraf, N.; Aldeghaither, D. (2020) Mental health and well-being during the covid-19 pandemic in higher education: Evidence from g20 countries. Journal of Public Health Research 9(s1): 60-68	- No regression
Nyberg, Lillianne; Henricsson, Lisbeth; Rydell, Ann-Margaret (2008) Low Social Inclusion in Childhood: Adjustment and Early Predictors. Infant and Child Development 17(6): 639-656	- Data not usable (study did not report aOR / aRR / aHR)
O'Reilly, A., Tibbs, M., Booth, A. et al. (2020) A rapid review investigating the potential impact of a pandemic on the mental health of young people aged 12-25 years. Irish Journal of Psychological Medicine	- Non-systematic review

Study	Code [Reason]
Oberle, Eva, Ji, Xuejun Ryan, Kerai, Salima et al. (2020) Screen time and extracurricular activities as risk and protective factors for mental health in adolescence: A population-level study. Preventive medicine 141: 106291	- Data not usable (study did not report aOR / aRR / aHR)
Okuyama, Junko, Seto, Shuji, Fukuda, Yu et al. (2021) Mental Health and Physical Activity among Children and Adolescents during the COVID-19 Pandemic. The Tohoku journal of experimental medicine 253(3): 203-215	- Non-systematic review
Olivier, Elizabeth, Azarnia, Parin, Morin, Alexandre J S et al. (2020) The moderating role of teacher-student relationships on the association between peer victimization and depression in students with intellectual disabilities. Research in developmental disabilities 98: 103572	- Data not usable (study did not report aOR / aRR / aHR)
Olson, Jonathan R. and Goddard, H. Wallace (2015) Applying Prevention and Positive Youth Development Theory to Predict Depressive Symptoms among Young People. Youth & Society 47(2): 222-244	- Data not usable (study did not report aOR / aRR / aHR)
Paley, Blair, O'connor, Mary J, Frankel, Fred et al. (2006) Predictors of stress in parents of children with fetal alcohol spectrum disorders. Journal of developmental and behavioral pediatrics : JDBP 27(5): 396-404	- Ordered but not received
Panourgia, C. and Comoretto, A. (2017) Do cognitive distortions explain the longitudinal relationship between life adversity and emotional and behavioural problems in secondary school children?. Stress and Health 33(5): 590-599	- Data not usable (study did not report aOR / aRR / aHR)
Park, Chul-Min, Kim, Moon-Doo, Hong, Seong-Chul et al. (2009) Effects of obesity and obesity-induced stress on depressive symptoms in Korean elementary school children. The International journal of social psychiatry 55(4): 322-35	- Cross-sectional (did not contain specific risk factors identified by the committee)
Parra, Gilbert R.; DuBois, David L.; Sher, Kenneth J. (2006) Investigation of Profiles of Risk Factors for Adolescent Psychopathology: A Person-Centered Approach. Journal of Clinical Child and Adolescent Psychology 35(3): 386-402	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Patalay, Praveetha, Belsky, Jay, Fonagy, Peter et al. (2015) The Extent and Specificity of Relative Age Effects on Mental Health and Functioning in Early Adolescence. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 57(5): 475-81	- Data not usable (study did not report aOR / aRR / aHR)
Patalay, Praveetha and Fitzsimons, Emla (2018) Development and predictors of mental ill-health and wellbeing from childhood to adolescence. Social psychiatry and psychiatric epidemiology 53(12): 1311-1323	- Data not usable (study did not report aOR / aRR / aHR)
Pate, Christina M, Maras, Melissa A, Whitney, Stephen D et al. (2017) Exploring Psychosocial Mechanisms and Interactions: Links Between Adolescent Emotional Distress, School Connectedness, and Educational Achievement. School mental health 9(1): 28-43	- Data not usable (study did not report aOR / aRR / aHR)
Paterson, Janis; Lusitini, Leon; Taylor, Steve (2014) Pacific Islands Families Study: depressive symptoms in 9-year-old Pacific children living in New Zealand. The New Zealand medical journal 127(1390): 13-22	- Data not usable (study did not report aOR / aRR / aHR)
Paul, E. and Eckenrode, J. (2015) Childhood psychological maltreatment subtypes and adolescent depressive symptoms. Child Abuse and Neglect 47: 38-47	- Data not usable (study did not report aOR / aRR / aHR)
Perales, Francisco and Campbell, Alice (2019) Early roots of sexual-orientation health disparities: associations between sexual attraction, health and well-being in a national sample of Australian adolescents. Journal of epidemiology and community health 73(10): 954-962	- Data not usable (study did not report aOR / aRR / aHR)
Perren, Sonja, von Wyl, Agnes, Stadelmann, Stephanie et al. (2006) Associations between behavioral/emotional difficulties in kindergarten children and the quality of their peer relationships. Journal of the American Academy of Child and Adolescent Psychiatry 45(7): 867-76	- Data not usable (study did not report aOR / aRR / aHR)
Piche, Genevieve; Huynh, Christophe; Villatte, Aude (2019) Physical activity and child depressive symptoms: Findings from the QLSCD. Canadian Journal of Behavioural	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Science / Revue canadienne des sciences du comportement 51(2): 114-121	
Piko, Bettina F and Fitzpatrick, Kevin M (2003) Depressive symptomatology among Hungarian youth: a risk and protective factors approach. The American journal of orthopsychiatry 73(1): 44-54	- Data not usable (study did not report aOR / aRR / aHR)
Pleban, Francis T (2020) Assessing Risk and Protective Factors Among High School Students: Development and Reliability of the School Environment Subscale.	- Abstract only
Poole, Kristie L, Schmidt, Louis A, Missiuna, Cheryl et al. (2015) Motor coordination and mental health in extremely low birth weight survivors during the first four decades of life. Research in developmental disabilities 4344: 87-96	- Data not usable (study did not report aOR / aRR / aHR)
Porche, Michelle V; Costello, Darce M; Rosen-Reynoso, Myra (2016) Adverse family experiences, child mental health, and educational outcomes for a national sample of students. School Mental Health: A Multidisciplinary Research and Practice Journal 8(1): 44-60	- Data not usable (study did not report aOR / aRR / aHR)
Potochnick, Stephanie R and Perreira, Krista M (2010) Depression and anxiety among first-generation immigrant Latino youth. Journal of Nervous and Mental Disease 198(7): 470-477	- Duplicate
Potochnick, Stephanie R and Perreira, Krista M (2010) Depression and anxiety among first-generation immigrant Latino youth: key correlates and implications for future research. The Journal of nervous and mental disease 198(7): 470-7	- Cross-sectional (did not contain specific risk factors identified by the committee)
Prelow, Hazel M; Bowman, Marvella A; Weaver, Scott R (2007) Predictors of psychosocial well-being in urban African American and European American youth: The role of ecological factors. Journal of Youth and Adolescence 36(4): 543-553	- Data not usable (study did not report aOR / aRR / aHR)
Psychogiou, Lamprini; Russell, Ginny; Owens, Matthew (2020) Parents' postnatal depressive symptoms and their children's academic attainment at 16 years: Pathways of risk	- outcomes not relevant

Study	Code [Reason]
transmission. British journal of psychology (London, England : 1953) 111(1): 1-16	
Qualter, Pamela, Brown, Stephen L, Munn, Penny et al. (2010) Childhood loneliness as a predictor of adolescent depressive symptoms: an 8-year longitudinal study. European child & adolescent psychiatry 19(6): 493-501	- Data not usable (study did not report aOR / aRR / aHR)
Quiroga, Cintia V., Janosz, Michel, Bisset, Sherri et al. (2013) Early Adolescent Depression Symptoms and School Dropout: Mediating Processes Involving Self-Reported Academic Competence and Achievement. Journal of Educational Psychology 105(2): 552-560	- outcomes not relevant
QUISENBERRY Carolyn, M. and FOLTZ, Robert (2013) Resilient youth in residential care. Residential Treatment for Children and Youth 30(4): 280-293	- outcomes not relevant
Quon, Elizabeth C and McGrath, Jennifer J (2015) Community, family, and subjective socioeconomic status: Relative status and adolescent health. Health psychology : official journal of the Division of Health Psychology, American Psychological Association 34(6): 591-601	- Data not usable (study did not report aOR / aRR / aHR)
Rapee, Ronald M (2009) Early adolescents' perceptions of their mother's anxious parenting as a predictor of anxiety symptoms 12 months later. Journal of abnormal child psychology 37(8): 1103-12	- Data not usable (study did not report aOR / aRR / aHR)
Raskauskas, Juliana (2010) Multiple Peer Victimization among Elementary School Students: Relations with Social-Emotional Problems. Social Psychology of Education: An International Journal 13(4): 523-539	- No regression
Ravens-Sieberer, U., Kaman, A., Erhart, M. et al. (2021) Impact of the COVID-19 pandemic on quality of life and mental health in children and adolescents in Germany. European Child and Adolescent Psychiatry	- Data not usable (study did not report aOR / aRR / aHR)
Ravens-Sieberer, Ulrike, Kaman, Anne, Otto, Christiane et al. (2020) Mental Health and Quality of Life in Children and Adolescents During the COVID-19 Pandemic-Results of the	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Copsy Study. Deutsches Arzteblatt international 117(48): 828-829	
Rawana, Jennine S (2013) The relative importance of body change strategies, weight perception, perceived social support, and self-esteem on adolescent depressive symptoms: longitudinal findings from a national sample. Journal of psychosomatic research 75(1): 49-54	- Data not usable (study did not report aOR / aRR / aHR)
Rens, E., Smith, P., Nicaise, P. et al. (2021) Mental Distress and Its Contributing Factors Among Young People During the First Wave of COVID-19: A Belgian Survey Study. Frontiers in Psychiatry 12: 575553	- Cross-sectional (did not contain specific risk factors identified by the committee)
Repetto, Paula B; Caldwell, Cleopatra H; Zimmerman, Marc A (2004) Trajectories of depressive symptoms among high risk African-American adolescents. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 35(6): 468-77	- No regression
Respress, Brandon N, Morris, Diana L, Gary, Faye A et al. (2013) Social determinants of adolescent depression: an examination of racial differences. Issues in mental health nursing 34(7): 539-49	- Data not usable (study did not report aOR / aRR / aHR)
REY Joseph, M and et, al (2002) Mental health of teenagers who use cannabis. British Journal of Psychiatry 180: 216-221	- Cross-sectional (did not contain specific risk factors identified by the committee)
Rita, Niina, Elovainio, Marko, Raaska, Hanna et al. (2017) Child and family-related predictors of psychological outcomes in children adopted from abroad; What is the role of caregiver time?. Scandinavian Journal of Psychology 58(4): 312-317	- Data not usable (study did not report aOR / aRR / aHR)
Riva, Anna, Nacinovich, Renata, Brivio, Elisa et al. (2018) Psychopathological risk in a sample of immigrant preadolescents in Italy. Minerva pediatrica	- Ordered but not received
Rizvi, S.F.I. and Najam, N. (2014) Parental psychological abuse toward children and mental health problems in adolescence. Pakistan Journal of Medical Sciences 30(2): 256-260	- Non-OECD country

Study	Code [Reason]
Roberts, R E; Roberts, C R; Chen, Y R (1997) Ethnocultural differences in prevalence of adolescent depression. American journal of community psychology 25(1): 95-110	- Pre-1995 data
Robinson, Lauren, Campbell, Iain, Irish, Madeleine et al. (2020) Original investigation , psychiatry association of genetic and phenotypic assessments with onset of disordered eating behaviors and comorbid mental health problems among adolescents. JAMA Network Open 3(12): e20226874	- Duplicate
Rodriguez, Geovanna; Drastal, Kim; Hartley, Sigan L (2021) Cross-lagged model of bullying victimization and mental health problems in children with autism in middle to older childhood. Autism 25(1): 90-101	- Data not usable (study did not report aOR / aRR / aHR)
Rosen, Lisa H, Underwood, Marion K, Beron, Kurt J et al. (2009) Persistent versus periodic experiences of social victimization: predictors of adjustment. Journal of abnormal child psychology 37(5): 693-704	- No regression
Rosenthal, Eliana; Franklin Gillette, Sara; DuPaul, George J. (2021) Pediatric siblings of children with special health care needs: Well-being outcomes and the role of family resilience. Children's Health Care	- Data not usable (study did not report aOR / aRR / aHR)
Rucinski, Christina L., Sutton, Essie, Carlton, Richmond et al. (2021) Classroom Racial/Ethnic Diversity and Upper Elementary Children's Social-Emotional Development. Applied Developmental Science 25(2): 183-199	- Data not usable (study did not report aOR / aRR / aHR)
Rudolph, Karen D., Monti, Jennifer D., Flynn, Megan et al. (2020) Maladaptive Social Consequences of Emotional Clarity Deficits in Early Adolescence. Journal of Early Adolescence 40(8): 1226-1243	- Data not usable (study did not report aOR / aRR / aHR)
Rudolph, Karen D, Troop-Gordon, Wendy, Hessel, Elenda T et al. (2011) A latent growth curve analysis of early and increasing peer victimization as predictors of mental health across elementary school. Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American	- No regression

Study	Code [Reason]
Psychological Association, Division 53 40(1): 111-22	
RUSSELL, David; SPRINGER Kristen, W.; GREENFIELD Emily, A. (2010) Witnessing domestic abuse in childhood as an independent risk factor for depressive symptoms in young adulthood. Child Abuse and Neglect 34(6): 448-553	- Population - adult
Rytila-Manninen, Minna, Lindberg, Nina, Haravuori, Henna et al. (2014) Adverse childhood experiences as risk factors for serious mental disorders and inpatient hospitalization among adolescents. Child Abuse & Neglect 38(12): 2021-2032	- Cross-sectional (did not contain specific risk factors identified by the committee)
Saint-Georges, Zacharie and Vaillancourt, Tracy (2019) The temporal sequence of depressive symptoms, peer victimization, and self-esteem across adolescence: Evidence for an integrated self-perception driven model. Development and psychopathology: 1-10	- Data not usable (study did not report aOR / aRR / aHR)
Sakiz, Halis; Mert, Abdullah; Sari?am, Hakan (2021) Self-Esteem and Perceived Social Competence Protect Adolescent Students against Ostracism and Loneliness. Journal of Psychologists and Counsellors in Schools 31(1): 94-109	- outcomes not relevant
Sameroff, Arnold J and Seifer, Ronald (2021) Accumulation of environmental risk and child mental health. Children of poverty: 233-258	- Book chapter
Sandoval, Marta; Lemos, Serafin; Vallejo, Guillermo (2006) Self-reported competences and problems in Spanish adolescents: a normative study of the YSR. Psicothema 18(4): 804-9	- Data not usable (study did not report aOR / aRR / aHR)
Sandstrom, Marlene J and Schanberg, Laura E (2004) Peer rejection, social behavior, and psychological adjustment in children with juvenile rheumatic disease. Journal of pediatric psychology 29(1): 29-34	- Data not usable (study did not report aOR / aRR / aHR)
Satici, Begum (2020) Social exclusion and adolescent wellbeing: Stress, school satisfaction, and academic self-efficacy as multiple mediators. The Educational and Developmental Psychologist 37(1): 67-74	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Sayal, Kapil, Draper, Elizabeth S, Fraser, Robert et al. (2013) Light drinking in pregnancy and mid-childhood mental health and learning outcomes. Archives of disease in childhood 98(2): 107-11	- outcomes not relevant
Sayal, Kapil, Heron, Jon, Draper, Elizabeth et al. (2014) Prenatal exposure to binge pattern of alcohol consumption: mental health and learning outcomes at age 11. European child & adolescent psychiatry 23(10): 891-9	- outcomes not relevant
Schilling, Elizabeth A; Aseltine, Robert H; Gore, Susan (2007) Adverse childhood experiences and mental health in young adults: a longitudinal survey. BMC public health 7(1): 30	- Data not usable (study did not report aOR / aRR / aHR)
Scholes-Balog, Kirsty E., Hemphill, Sheryl A., Patton, George C. et al. (2015) Relationships between Substance Use and Depressive Symptoms: A Longitudinal Study of Australian Adolescents. Journal of Early Adolescence 35(4): 538-561	- Data not usable (study did not report aOR / aRR / aHR)
Schraedley, P K; Gotlib, I H; Hayward, C (1999) Gender differences in correlates of depressive symptoms in adolescents. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 25(2): 98-108	- No regression
Schwab, Susanne, Gebhardt, Markus, Hessels, Marco G P et al. (2016) Predicting a high rate of self-assessed and parent-assessed peer problems--Is it typical for students with disabilities?. Research in developmental disabilities 4950: 196-204	- Data not usable (study did not report aOR / aRR / aHR)
Schwartz, David, Gorman, Andrea Hopmeyer, Duong, Mylien T et al. (2008) Peer relationships and academic achievement as interacting predictors of depressive symptoms during middle childhood. Journal of abnormal psychology 117(2): 289-99	- Data not usable (study did not report aOR / aRR / aHR)
Schwartz, Kelly Dean, Exner-Cortens, Deinera, McMorris, Carly A. et al. (2021) COVID-19 and Student Well-Being: Stress and Mental Health during Return-to-School. Canadian Journal of School Psychology 36(2): 166-185	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Schwerdtfeger Gallus, Kami L., Shreffler, Karina M., Merten, Michael J. et al. (2015) Interpersonal Trauma and Depressive Symptoms in Early Adolescents: Exploring the Moderating Roles of Parent and School Connectedness. Journal of Early Adolescence 35(7): 990-1013	- Data not usable (study did not report aOR / aRR / aHR)
Sciberras, Emma, Patel, Pooja, Stokes, Mark A et al. (2020) Physical Health, Media Use, and Mental Health in Children and Adolescents With ADHD During the COVID-19 Pandemic in Australia. Journal of attention disorders: 1087054720978549	- Risk factor/outcome cause and effect unclear
Selkirk, Laura C.; Bouchey, Heather A.; Eccles, Jacquelynne S. (2011) Interactions among Domain-Specific Expectancies, Values, and Gender: Predictors of Test Anxiety during Early Adolescence. Journal of Early Adolescence 31(3): 361-389	- Data not usable (study did not report aOR / aRR / aHR)
Sharabi, Adi and Margalit, Malka (2014) Predictors of Positive Mood and Negative Mood among Children with Learning Disabilities and Their Peers. International Journal for Research in Learning Disabilities 2(1): 18-41	- No regression
Shaunak, Meera, Patel, Ravin, Driessens, Corine et al. (2021) COVID-19 symptom surveillance in immunocompromised children and young people in the UK: a prospective observational cohort study. BMJ open 11(3): e044899	- outcomes not relevant
Short, Jerome L (1998) Predictors of substance use and mental health of children of divorce: A prospective analysis. Journal of Divorce & Remarriage 29(12): 147-166	- Data not usable (study did not report aOR / aRR / aHR)
Shreffler, Karina M, Joachims, Christine N, Tiemeyer, Stacy et al. (2021) Childhood Adversity and Perceived Distress from the COVID-19 Pandemic. Adversity and resilience science: 1-4	- Data not usable (study did not report aOR / aRR / aHR)
Sibley, M.H., Ortiz, M., Gaias, L.M. et al. (2021) Top problems of adolescents and young adults with ADHD during the COVID-19 pandemic. Journal of Psychiatric Research 136: 190-197	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Sinclair, Keneisha R, Cole, David A, Dukewich, Tammy et al. (2012) Impact of physical and relational peer victimization on depressive cognitions in children and adolescents. Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53 41(5): 570-83	- Data not usable (study did not report aOR / aRR / aHR)
Singh, N.; Gupta, P.K.; Kar, S.K. (2020) Mental health impact of COVID-19 lockdown in children and adolescents: Emerging challenges for mental health professionals. Journal of Indian Association for Child and Adolescent Mental Health 16(3): 194-198	- Commentary article
Sjurs?, Ida Risanger; Fandrem, Hildegunn; Roland, Erling (2016) Emotional Problems in Traditional and Cyber Victimization. Journal of School Violence 15(1): 114-131	- No regression
SKRZYPIEC, Grace and et, al (2012) Associations between types of involvement in bullying, friendships and mental health status. Emotional and Behavioural Difficulties 17(34): 259-272	- No regression
Smokowski, Paul R, Bacallao, Martica L, Cotter, Katie L et al. (2015) The effects of positive and negative parenting practices on adolescent mental health outcomes in a multicultural sample of rural youth. Child psychiatry and human development 46(3): 333-45	- Data not usable (study did not report aOR / aRR / aHR)
Smokowski, Paul R, Evans, Caroline B R, Cotter, Katie L et al. (2014) Ecological correlates of depression and self-esteem in rural youth. Child psychiatry and human development 45(5): 500-18	- Data not usable (study did not report aOR / aRR / aHR)
Smokowski, Paul R, Guo, Shenyang, Rose, Roderick et al. (2014) Multilevel risk factors and developmental assets for internalizing symptoms and self-esteem in disadvantaged adolescents: modeling longitudinal trajectories from the Rural Adaptation Project. Development and psychopathology 26(4pt2): 1495-513	- Data not usable (study did not report aOR / aRR / aHR)
Smorti, M., Milone, A., Gonzalez Gonzalez, J. et al. (2019) Adolescent selfie: An Italian Society of	- No regression

Study	Code [Reason]
Paediatrics survey of the lifestyle of teenagers. Italian Journal of Pediatrics 45(1): 62	
Sofia, V., Cecilia, A., Charlotta, H. et al. (2016) Associations between problematic gaming and psychiatric symptoms among adolescents in two samples. Addictive Behaviors 61: 8-15	- Cross-sectional (did not contain specific risk factors identified by the committee)
Somersalo, Heidi; Solantaus, Tytti; Almqvist, Fredrik (2002) Classroom climate and the mental health of primary school children. Nordic journal of psychiatry 56(4): 285-90	- Data not usable (study did not report aOR / aRR / aHR)
Spiekerman, Allie M.; Witkow, Melissa R.; Nishina, Adrienne (2021) Peer Victimization and Depressive Symptoms during Adolescence: Examining the Roles of Social Support and Internalizing Coping. Journal of Early Adolescence 41(4): 505-526	- Data not usable (study did not report aOR / aRR / aHR)
Stadler, Christina, Feifel, Julia, Rohrmann, Sonja et al. (2010) Peer-victimization and mental health problems in adolescents: are parental and school support protective?. Child psychiatry and human development 41(4): 371-86	- Data not usable (study did not report aOR / aRR / aHR)
Stanton, Cassandra A.; Highland, Krista B.; Tercyak, Kenneth P. (2016) Tobacco Use Experimentation, Physical Activity, and Risk of Depression among Multiethnic Urban Preadolescents. Journal of Early Adolescence 36(3): 372-387	- Data not usable (study did not report aOR / aRR / aHR)
Stavridou, Androniki, Stergiopoulou, Angeliki-Argyroula, Panagouli, Eleni et al. (2020) Psychosocial consequences of COVID-19 in children, adolescents and young adults: A systematic review. Psychiatry and Clinical Neurosciences 74(11): 615-616	- Letter to editor
Stein, Gabriela Livas, Castro-Schilo, Laura, Cavanaugh, Alyson M et al. (2019) When Discrimination Hurts: The Longitudinal Impact of Increases in Peer Discrimination on Anxiety and Depressive Symptoms in Mexican-origin Youth. Journal of youth and adolescence 48(5): 864-875	- Data not usable (study did not report aOR / aRR / aHR)
Stevens, G.W.J.M., Vollebergh, W.A.M., Pels, T.V.M. et al. (2005) Predicting internalizing problems in Moroccan immigrant adolescents in	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
the Netherlands. Social Psychiatry and Psychiatric Epidemiology 40(12): 1003-1011	
Stiles, Allison A and Gudino, Omar G (2018) Examining bidirectional associations between school engagement and mental health for youth in child welfare. School Mental Health: A Multidisciplinary Research and Practice Journal 10(4): 372-385	- Data not usable (study did not report aOR / aRR / aHR)
Stirling, Katie; Toumbourou, John W; Rowland, Bosco (2015) Community factors influencing child and adolescent depression: A systematic review and meta-analysis. The Australian and New Zealand journal of psychiatry 49(10): 869-86	- Data not usable (study did not report aOR / aRR / aHR)
Suh, Suhyun and Suh, Jingyo (2007) Risk factors and levels of risk for high school dropouts. Professional School Counseling 10(3): 2156759x0701000312	- outcomes not relevant
Svetaz, M V; Ireland, M; Blum, R (2000) Adolescents with learning disabilities: risk and protective factors associated with emotional well-being: findings from the National Longitudinal Study of Adolescent Health. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 27(5): 340-8	- Cross-sectional (did not contain specific risk factors identified by the committee)
Swallen, Karen C, Reither, Eric N, Haas, Steven A et al. (2005) Overweight, obesity, and health-related quality of life among adolescents: the National Longitudinal Study of Adolescent Health. Pediatrics 115(2): 340-7	- Cross-sectional (did not contain specific risk factors identified by the committee)
Takakura, M and Sakihara, S (2000) Gender differences in the association between psychosocial factors and depressive symptoms in Japanese junior high school students. Journal of epidemiology 10(6): 383-91	- Data not usable (study did not report aOR / aRR / aHR)
Takakura, M and Sakihara, S (2001) Psychosocial correlates of depressive symptoms among Japanese high school students. The Journal of adolescent health : official publication of the Society for Adolescent Medicine 28(1): 82-9	- Cross-sectional (did not contain specific risk factors identified by the committee)
Tasso, Anthony F; Hisli Sahin, Nesrin; San Roman, Gabrielle J (2021) COVID-19 disruption	- Population - adult

Study	Code [Reason]
on college students: Academic and socioemotional implications. Psychological trauma : theory, research, practice and policy 13(1): 9-15	
Tearne, Jessica E, Allen, Karina L, Herbison, Carly E et al. (2015) The association between prenatal environment and children's mental health trajectories from 2 to 14 years. European child & adolescent psychiatry 24(9): 1015-24	- Data not usable (study did not report aOR / aRR / aHR)
Tejerina-Arreal, Maria, Parker, Claire, Paget, Amelia et al. (2020) Child and adolescent mental health trajectories in relation to exclusion from school from the Avon Longitudinal Study of Parents and Children. Child and adolescent mental health	- Data not usable (study did not report aOR / aRR / aHR)
THOMPSON Sanna, J.; BENDER, Kimberly; KIM, Jihye (2011) Family factors as predictors of depression among runaway youth: do males and females differ?. Child and Adolescent Social Work Journal 28(1): 35-48	- Data not usable (study did not report aOR / aRR / aHR)
Thompson, Lindsay A and Rasmussen, Sonja A (2021) One Year Later, How Does COVID-19 Affect Children?. JAMA pediatrics 175(2): 216	- Advice and information
THOMPSON, Richard and TABONE Jiyoung, K. (2010) The impact of early alleged maltreatment on behavioral trajectories. Child Abuse and Neglect 34(12): 907-916	- No regression
Thurm, Audrey E, Carlson, Ginger A, Lyons, Aoife L et al. (2014) Depressive symptoms in young, urban schoolchildren: environmental, social, and cognitive risk. Journal of prevention & intervention in the community 42(3): 169-82	- Data not usable (study did not report aOR / aRR / aHR)
Tomson, Lois Michaud, Pangrazi, Robert P, Friedman, Glenn et al. (2003) Childhood Depressive Symptoms, Physical Activity and Health Related Fitness. Journal of Sport & Exercise Psychology 25(4): 419-439	- No regression
Tran, Cong V.; Cole, David A.; Weiss, Bahr (2012) Testing Reciprocal Longitudinal Relations between Peer Victimization and Depressive Symptoms in Young Adolescents. Journal of Clinical Child and Adolescent Psychology 41(3): 353-360	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Tsaousis, I. (2016) The relationship of self-esteem to bullying perpetration and peer victimization among schoolchildren and adolescents: A meta-analytic review. Aggression and Violent Behavior 31: 186-199	- Data not usable (study did not report aOR / aRR / aHR)
Turner, Heather A; Finkelhor, David; Ormrod, Richard (2010) Child mental health problems as risk factors for victimization. Child maltreatment 15(2): 132-43	- Data not usable (study did not report aOR / aRR / aHR)
Turney, Kristin (2020) Cumulative adverse childhood experiences and children's health. Children and Youth Services Review 119	- Data not usable (study did not report aOR / aRR / aHR)
Tyler, Corine P., Geldhof, G. John, Settersten, Richard A., Jr. et al. (2021) How Do Discrimination and Self-Esteem Control Beliefs Affect Prosociality? An Examination among Black and Latinx Youth. Journal of Early Adolescence 41(2): 282-308	- Data not usable (study did not report aOR / aRR / aHR)
Ung, D., McBride, N., Collier, A. et al. (2016) The relationship between peer victimization and the psychological characteristics of youth with autism spectrum disorder. Research in Autism Spectrum Disorders 32: 70-79	- Data not usable (study did not report aOR / aRR / aHR)
Vallejo-Slocker, Laura; Fresneda, Javier; Vallejo, Miguel A (2020) Psychological Wellbeing of Vulnerable Children During the COVID-19 Pandemic. Psicothema 32(4): 501-507	- No regression
Van Cleave, Jeanne and Davis, Matthew M (2006) Bullying and peer victimization among children with special health care needs. Pediatrics 118(4): e1212-9	- Cross-sectional (did not contain specific risk factors identified by the committee)
van Gastel, W A, Tempelaar, W, Bun, C et al. (2013) Cannabis use as an indicator of risk for mental health problems in adolescents: a population-based study at secondary schools. Psychological medicine 43(9): 1849-56	- Cross-sectional (did not contain specific risk factors identified by the committee)
van Harmelen, Anne-Laura, Gibson, Jenny L, St Clair, Michelle C et al. (2016) Friendships and Family Support Reduce Subsequent Depressive Symptoms in At-Risk Adolescents. PloS one 11(5): e0153715	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
van Muilekom, Maud M., Teela, Lorynn, Oostrom, Kim J. et al. (2021) The impact of lockdown during the COVID-19 pandemic on mental and social health of children and adolescents. Quality of Life Research	- Outcomes reported as prevalence data
Vance, Stanley Ray, Boyer, Cherrie B., Glidden, David V. et al. (2021) Mental Health and Psychosocial Risk and Protective Factors among Black and Latinx Transgender Youth Compared with Peers. JAMA Network Open 4(3): e213256	- Cross-sectional (did not contain specific risk factors identified by the committee)
Vander Stoep, A, Weiss, N S, McKnight, B et al. (2002) Which measure of adolescent psychiatric disorder--diagnosis, number of symptoms, or adaptive functioning--best predicts adverse young adult outcomes?. Journal of epidemiology and community health 56(1): 56-65	- Suitable for RQ 2.3
Varga, Szabolcs; Piko, Bettina F; Fitzpatrick, Kevin M (2014) Socioeconomic inequalities in mental well-being among Hungarian adolescents: a cross-sectional study. International journal for equity in health 13(1): 100	- Cross-sectional (did not contain specific risk factors identified by the committee)
Vargo, Beverley (1995) Are withdrawn children at risk?. Canadian Journal of School Psychology 11(2): 166-177	- Data not usable (study did not report aOR / aRR / aHR)
Viner Russell, M., Russell, Simon, Saulle, Rosella et al. Impacts of school closures on physical and mental health of children and young people: a systematic review. medrxiv preprint	- Pre-print
Vollebergh, Wilma A M, ten Have, Margreet, Dekovic, Maja et al. (2005) Mental health in immigrant children in the Netherlands. Social psychiatry and psychiatric epidemiology 40(6): 489-96	- Data not usable (study did not report aOR / aRR / aHR)
Waasdorp, Tracy Evian; Mehari, Krista; Bradshaw, Catherine P (2018) Obese and overweight youth: Risk for experiencing bullying victimization and internalizing symptoms. American Journal of Orthopsychiatry 88(4): 483-491	- Cross-sectional (did not contain specific risk factors identified by the committee)

Study	Code [Reason]
Wagner, Jenny, Ludtke, Oliver, Robitzsch, Alexander et al. (2018) Self-esteem development in the school context: The roles of intrapersonal and interpersonal social predictors. Journal of personality 86(3): 481-497	- Data not usable (study did not report aOR / aRR / aHR)
WALSH, Judi and et, al (2009) Attachment and coping strategies in middle childhood children whose mothers have a mental health problem: implications for social work practice. British Journal of Social Work 39(1): 81-98	- No regression
Walsh, S.D., Sela, T., De Looze, M. et al. (2020) Clusters of Contemporary Risk and Their Relationship to Mental Well-Being Among 15-Year-Old Adolescents Across 37 Countries. Journal of Adolescent Health 66(6supplement): 40-s49	- Data not usable (study did not report aOR / aRR / aHR)
Wang, Cen, Williams, Kate E, Shahaeian, Ameneh et al. (2018) Early predictors of escalating internalizing problems across middle childhood. School psychology quarterly : the official journal of the Division of School Psychology, American Psychological Association 33(2): 200-212	- Data not usable (study did not report aOR / aRR / aHR)
Wang, Cixin, La Salle, Tamika P., Do, Kieu Anh et al. (2019) Does Parental Involvement Matter for Students' Mental Health in Middle School?. School Psychology 34(2): 222-232	- Data not usable (study did not report aOR / aRR / aHR)
Wang, Ming-Te, Degol, Jessica L, Amemiya, Jamie et al. (2020) Classroom climate and children?s academic and psychological wellbeing: A systematic review and meta-analysis. Developmental Review 57: 100912	- Data not usable (study did not report aOR / aRR / aHR)
Ward, S.; Sylva, J.; Gresham, F.M. (2010) School-Based Predictors of Early Adolescent Depression. School Mental Health: 1-7	- Ordered but not received
Wardle, J, Williamson, S, Johnson, F et al. (2006) Depression in adolescent obesity: cultural moderators of the association between obesity and depressive symptoms. International journal of obesity (2005) 30(4): 634-43	- Cross-sectional (did not contain specific risk factors identified by the committee)
Warren, S L; Emde, R N; Sroufe, L A (2000) Internal representations: predicting anxiety from children's play narratives. Journal of the	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
American Academy of Child and Adolescent Psychiatry 39(1): 100-7	
Webb, Lindsey; Musci, Rashelle; Mendelson, Tamar (2021) Co-Occurring Mental Health Symptoms in Urban Adolescents: Comorbidity Profiles and Correlates. Journal of clinical child and adolescent psychology : the official journal for the Society of Clinical Child and Adolescent Psychology, American Psychological Association, Division 53: 1-13	- Data not usable (study did not report aOR / aRR / aHR)
Westrupp, Elizabeth M., Mensah, Fiona K., Giallo, Rebecca et al. (2012) Mental Health in Low-to-Moderate Risk Preterm, Low Birth Weight, and Small for Gestational Age Children at 4 to 5 Years: The Role of Early Maternal Parenting. Journal of the American Academy of Child & Adolescent Psychiatry 51(3): 313-323	- Data not usable (study did not report aOR / aRR / aHR)
Westrupp, Elizabeth M, Brown, Stephanie, Woolhouse, Hannah et al. (2018) Repeated early-life exposure to inter-parental conflict increases risk of preadolescent mental health problems. European journal of pediatrics 177(3): 419-427	- Data not usable (study did not report aOR / aRR / aHR)
Whitney, Stephen D; Sullivan, Sybil; Herman, Keith (2010) Low self-esteem as an early indicator of youth depressive symptoms. Advances in School Mental Health Promotion 3(2): 5-16	- Data not usable (study did not report aOR / aRR / aHR)
Wichstrom, Lars, Chmielewski Anderson, A. M, Holte, A et al. (1996) Confirmatory and disconfirmatory family communication as predictor of offspring socio-emotional functioning: A 10 to 14 year follow-up of children at risk. Acta Psychiatrica Scandinavica 93(1): 49-56	- Pre-1995 data
Wiest, D J; Wong, E H; Kreil, D A (1998) Predictors of global self-worth and academic performance among regular education, learning disabled, and continuation high school students. Adolescence 33(131): 601-18	- Data not usable (study did not report aOR / aRR / aHR)
Wight, Richard G, Aneshensel, Carol S, Botticello, Amanda L et al. (2005) A multilevel analysis of ethnic variation in depressive symptoms among adolescents in the United States. Social science & medicine (1982) 60(9): 2073-84	- Data not usable (study did not report aOR / aRR / aHR)

Study	Code [Reason]
Wilhelm, April K, McRee, Annie-Laurie, Bonilla, Zobeida E et al. (2018) Mental health in Somali youth in the United States: the role of protective factors in preventing depressive symptoms, suicidality, and self-injury. Ethnicity & health: 1-24	- Cross-sectional (did not contain specific risk factors identified by the committee)
Williams, Susan G., Langhinrichsen-Rohling, Jennifer, Wornell, Cory et al. (2017) Adolescents Transitioning to High School: Sex Differences in Bullying Victimization Associated with Depressive Symptoms, Suicide Ideation, and Suicide Attempts. Journal of School Nursing 33(6): 467-479	- Cross-sectional (did not contain specific risk factors identified by the committee)
WILLIAMS, Zoe (2020) Review of the impact of mass disruption on the wellbeing and mental health of children and young people, and possible therapeutic interventions.: 79	- Non-systematic review
WILSON W., Cody; ROSENTHAL Beth, Spenciner; BATTLE William, S. (2007) Effects of gender, ethnicity and educational status on exposure to community violence and psychological distress in adolescence. Journal of Aggression Maltreatment and Trauma 15(1): 93-111	- No regression
Xing Tan, Tony, Wang, Yan, Hao, Sy-Woei et al. (2021) Female adopted Chinese-American youth's sense of exclusion and short-and long-term adjustment. American Journal of Orthopsychiatry: no-specified	- No regression
Yan, Ni and Dix, Theodore (2014) Mothers' Early Depressive Symptoms and Children's First-Grade Adjustment: A Transactional Analysis of Child Withdrawal as a Mediator. Journal of Child Psychology and Psychiatry 55(5): 495-504	- Data not usable (study did not report aOR / aRR / aHR)
Yockey, R. Andrew; King, Keith A; Vidourek, Rebecca A (2019) School factors and anxiety disorder among Hispanic youth: Results from the 2016 US National Survey on Children's Health. School Psychology International 40(4): 403-415	- Cross-sectional (did not contain specific risk factors identified by the committee)
Young, Jami F., Berenson, Kathy, Cohen, Patricia et al. (2005) The Role of Parent and Peer Support in Predicting Adolescent Depression: A Longitudinal Community Study.	- Pre-1995 data

Study	Code [Reason]
Journal of Research on Adolescence 15(4): 407-423	
Zeiders, Katharine H; Umana-Taylor, Adriana J; Derlan, Chelsea L (2013) Trajectories of depressive symptoms and self-esteem in Latino youths: examining the role of gender and perceived discrimination. Developmental psychology 49(5): 951-63	- No regression
Zendarski, Nardia, Sciberras, Emma, Mensah, Fiona et al. (2017) Early High School Engagement in Students with Attention/Deficit Hyperactivity Disorder. British Journal of Educational Psychology 87(2): 127-145	- Data not usable (study did not report aOR / aRR / aHR)
Zubrick, S R, Kurinczuk, J J, McDermott, B M et al. (2000) Fetal growth and subsequent mental health problems in children aged 4 to 13 years. Developmental medicine and child neurology 42(1): 14-20	- Pre-1995 data

Appendix K – Research recommendations – full details

K.1.1 Research recommendation

What are the early signs of social and emotional and mental wellbeing issues, including in children and young people who are internalising it?

a) What early factors predict poor social and emotional wellbeing?

b) How do children and young people with poor social and emotional wellbeing describe their thoughts and feelings before at early onset stage?

c) What are the barriers and facilitators to identifying children and young people at risk of poor social, emotional and mental wellbeing at school?

K.1.1.1 Why this is important

The committee noted that school staff and parents may find it difficult to identify internalising problems in CYP due to the lack of external symptoms. They speculated that being able to identify early risk factors and understanding how CYP describe their feelings before developing internalising issues will facilitate timely access to services that can meet CYP's SEMW needs.

K.1.1.2 Rationale for research recommendation

Importance to 'patients' or the population	There are difficulties associated with identifying CYP with internalising symptoms, which may lead to their SEMW to not be met. There is significant public and political concern surrounding the mental wellbeing of CYP.
Relevance to NICE guidance	Limited evidence currently exists on this area. Further research may affect future iterations of this guideline.
Relevance to the NHS	Identifying and meeting the SEMW needs of CYP with internalising symptoms early would reduce pressure on CAMHS.
National priorities	NICE will publish the current guideline on SEMW in primary and secondary education in July 2022.
Current evidence base	Minimal long-term data
Equality considerations	None known

K.1.1.3 Modified PICO table

Population	CYP in primary and secondary education with internalising symptoms
Exposure	Factors associated with poor SEMW
Comparator	CYP not presenting with internalising symptoms
Outcome	Internalising symptoms measured with a statistical measure such as adjusted hazard ratios, adjusted risk ratios, adjusted odds ratios.

	Qualitative data on barriers and facilitators to to identifying children and young people at risk of poor social, emotional and mental wellbeing at school.
Study design	Longitudinal and qualitative study designs
Timeframe	Long term
Additional information	None

K.1.2 Research recommendation

Are children and young people with special educational needs at higher risk of poor social, emotional and mental wellbeing?

K.1.2.1 Why this is important

The committee highlighted a lack longitudinal evidence around CYP with special educational needs as a risk factor for poor SEMW. The committee recognised that education professionals need to have a clear understanding of the individual needs of neurodiverse CYP, including those with autism spectrum disorders, ADHD and additional special education needs and disabilities (SEND). Determining whether special educational needs is a risk factor for poor SEMW may increase the understanding of SEMW needs for this sub-population of CYP.

K.1.2.2 Rationale for research recommendation

Importance to 'patients' or the population	Currently educational professionals may not be aware of the effect special educational needs has on the risk of poor SEMW. This could lead to CYP with special educational needs not receiving the required assistance needed to meet their SEMW needs.
Relevance to NICE guidance	Limited evidence exists on the effect of special educational needs and the risk of poor SEMW in CYP. However, the data present suggests that special educational needs may be a risk factor for poor social and emotional wellbeing and mental health concerns. This may affect future iterations of this guideline.
Relevance to the NHS	Understanding and meeting the SEMW needs of CYP with special educational needs may reduce the pressure on CAMHS.
National priorities	NICE will publish the current guideline on SEMW in primary and secondary education in July 2022
Current evidence base	Limited long and short term data.
Equality considerations	Determining whether special educational needs is a risk factor for poor SEMW may reduce inequalities by ensuring CYP with special educational needs are monitored and are provided with necessary interventions / services to meet their SEMW needs.

K.1.2.3 Modified PICO table

Population	CYP in primary and secondary education with special educational needs
Exposure	Special educational needs
Comparator	CYP without special educational needs
Outcome	Poor SEMW measured with a statistical measure such as adjusted hazard ratios, adjusted risk ratios, adjusted odds ratios
Study design	Longitudinal and cross-sectional study design
Timeframe	Long term
Additional information	None

K.1.3 Research recommendation

What is the role of intersecting social, cultural and personal factors in developing poor social and emotional wellbeing?

K.1.3.1 Why this is important

The committee agreed that it is highly important to consider the cumulative effect of multiple factors associated with an increased prevalence of poor SEMW. The committee were also keen that a decision to take action shouldn't be made on the basis of a single risk factor in isolation, as the broader context was important. They speculated that understanding how intersecting social and personal factors impact poor SEMW may improve the ability of educational staff to identify CYP at risk of poor SEMW.

K.1.3.2 Rationale for research recommendation

Importance to 'patients' or the population	Understanding the impact of a combination of intersecting risk factors will help inform educational professionals understand CYP SEMW needs from a holistic perspective.
Relevance to NICE guidance	There is very limited evidence on the impact of cumulative risk factors on poor SEM., More detailed information how different intersecting social and personal affect poor SEMW may affect future iterations of this guideline.
Relevance to the NHS	Understanding how intersecting social and personal factors affect the development of poor SEMW may lead to earlier identification and intervention for CYP at risk of poor SEMW, which may reduce the pressure on CAMHS
National priorities	NICE will publish the current guideline on SEMW in primary and secondary education in July 2022
Current evidence base	Limited data on the impact of cumulative risk factors on developing poor SEMW
Equality considerations	None known

K.1.3.3 Modified PICO table

Population	CYP in primary and secondary education
Exposure	A combination of at least two factors associated with poor SEMW
Comparator	CYP without poor SEMW
Outcome	Poor SEMW measured with a statistical measure such as adjusted hazard ratios, adjusted risk ratios, adjusted odds ratios
Study design	Longitudinal study design
Timeframe	Long term
Additional information	None

K.1.4 Research recommendation

What is the medium- to long-term impact of the COVID-19 pandemic on children and young people's social and emotional wellbeing?

K.1.4.1 Why this is important

Early evidence presented to the committee through expert testimony suggests that the COVID-19 pandemic will have a striking impact on the SEMW of CYP in primary and secondary education. Long-term cohort studies will be required to measure the impact of the pandemic and government measures implemented to contain the virus on the SEMW of CYP.

K.1.4.2 Rationale for research recommendation

Importance to 'patients' or the population	Little is known about the long-term SEMW risks associated with the COVID-19 pandemic. There is significant public and political concern about this
Relevance to NICE guidance	The COVID-19 pandemic and associated government measures is expected to cause an increase in SEMW concerns. This may affect future iterations of this guideline.
Relevance to the NHS	Understanding the impact of the pandemic on the SEMW of CYP will help NHS leaders to prepare and resource relevant CAMHS in order to combat the expected increase in SEMW concerns.
National priorities	High
Current evidence base	Very minimal short term data
Equality considerations	None known

K.1.4.3 Modified PICO table

Population	CYP in primary and secondary education
Exposure	COVID-19 and measures implemented to prevent the spread of the virus such as social distancing
Comparator	CYP without poor SEMW
Outcome	Poor SEMW measured with a statistical measure such as adjusted hazard ratios, adjusted risk ratios, adjusted odds ratios
Study design	Longitudinal study design
Timeframe	Long term
Additional information	None