Additional file 5 Risk of bias for all included studies (n=51)

For reference number please see reference list in manuscript.

− high risk of bias

\+ low risk of bias

? risk of bias unclear

Mental disorders as a predictor of school dropout

(Studies investigating both sides of the mental health – dropout association are marked with *)

First author (reference)	Year	Selection bias	Detection bias	Attrition bias	Reporting bias	Confounding	Overall risk of bias (without considering confounding)	Comments
Hemphälä	2014	?	+	+	+	−	unclear	Small sample, no information about representativeness Loss to follow-up: 18%, not differential No confounding
Quiroga	2013	+	+	?	+	+	unclear	Particular sample of at-risk students, limited generalization Non-response rate of 18%, no information about differences between respondents and nonrespondents Control for sociodemographic and academic variables
Quiroga	2012	+	+	−	+	+	high	Particular sample of at-risk students, limited generalization Differential loss to follow-up of 24.8% in 1 years: non-respondents were more likely to drop out Control for sociodemographic and academic variables
McLeod	2012	+	+	?	+	+	unclear	No information about attrition, appendices are not available Control for sociodemographic, family and academic variables

First author (reference)	Year	Selection bias	Detection bias	Attrition bias	Reporting bias	Confounding	Overall risk of bias	Comments
Borges	2011	+	+	+	?	+	low	Stratified multistage probability sample, representative Response rate of 76.6%, weighting to avoid differential loss No clear indication whether results present crude or adjusted odds ratios Control for sociodemographic and family variables
Porche	2011	+	+	?	+	−	unclear	Low risk of recall bias despite efforts to use valid methods No information about reponse rate Control for psychiatric mobidity, service use and sociodemographic variables only
Kent	2011	+	?	−	+	−	high	Matching not taken into account in statistical analyses? Loss to follow-up: 29.5% (364 participants out of 516) Higher conduct disorder symptom rating for non-participants Control for parental education and IQ
Breslau	2010	+	+	+	+	+	low	Low risk of recall bias despite efforts to use valid methods Loss of 30% for longer term follow-up (> 1 year) Control for sociodemographic and family variables (childhood adversities)
LeCook	2010	+	?	+	+	−	unclear	No information about considered disorder categories Weighted response rates between 65.6% and 75.5% Control for sociodemographic variables only
McCaffrey	2010	+	?	+	+	+	unclear	Unknown risk of detection bias regarding self-reported drug use given the discrepancies regarding dropout information (self-report versus school-based) Follow-up response rates of 91%, 87% and 83% Attrition handled by propensity score-based nonresponse weights, missing data imputation Control for sociodemographic, academic and family variables

First author (reference)	Year	Selection bias	Detection bias	Attrition bias	Reporting bias	Confounding	Overall risk of bias	Comments
Horwood	2010	Meta-analysis evaluated according to MOOSE					low	Cf. additional file 5 for checklist of MOOSE criteria (Stroup et al. 2008)
Goulding	2010	?	+	?	?	−	unclear	Prevalence estimates would need an evaluation of sample representativeness No information about response rate Descriptive statistics only, no control for confounding
Marti	2010	+	+	−	+	−	high	Low risk of detection bias regarding self-reported drug use Considerable loss to follow-up: 44% No control for confounding
Legleye	2010	?	+	+	+	+	unclear	No information about inclusion/exclusion criteria Low risk of detection bias regarding self-reported drug use Response rate of 98% Control for family and academic variables
Lee	2009	?	+	+	+	+	unclear	Weighted response rate of 70.8%, but potentially differential nonresponse regarding mental disorders Low risk of detection bias regarding self-reported data Control for sociodemographic and family variables (childhood adversities)
Fletcher	2008	?	+	+	+	+	unclear	No indication on inclusion/exclusion criteria, representativeness Small but differential loss to follow-up (10% after imputation for mother education and family income), shown in appendix table Control for sociodemographic, family and academic variables
Breslau	2008	+	+	+	+	+	low	Low risk of recall bias despite efforts to use valid methods No control for co-occurring disorders, but cluster analyses Response rate of 70.9%, non-respondents may be more likely to have psychiatric disorders Control for sociodemographic and family variables

First author (reference)	Year	Selection bias	Detection bias	Attrition bias	Reporting bias	Confounding	Overall risk of bias	Comments
Degenhardt	2007	?	+	−	+	−	high	No indication on inclusion/exclusion criteria, representativeness Low risk of detection bias regarding self-reported data Differential loss to follow-up (25%): males and smokers were overrepresented in wave 8 Control for sociodemographic variables only
Bohon	2007	+	+	+	+	−	low	Blinding of interviewers, low risk of detection bias regarding self-reported data Loss to follow-up: 19%, no differential attrition Control for IQ, maternal education and adolescent behaviour problems
Barbaresi	2007	+	+	+	+	−	low	Inclusion/exclusion criteria well defined Data from school and medical records Outcome results based on case-control design Control for matching variables (age, gender) only
Daniel *	2006	?	+	+	+	−	unclear	No information about representativeness, small sample Small loss to follow-up: 7% Control for sociodemographic variables and psychiatric morbidity
Kogan *	2005	+	+	+	+	+	low	Small but differential loss to follow-up (9%): non-participants were more likely to have dropped out, be male, smoke and have behavior problems Control for sociodemographic and school-related variables
McShane	2004	+	+	−	+	+	high	Clinical sample High and differential loss to follow-up (39%) Control for sociodemographic, family and school-related variables
Fergusson *	2003	+	+	+	+	+	low	Loss to follow up (28-31%), weighting of data by the inverse of the probability of sample inclusion Control for sociodemographic, academic and family variables

First author (reference)	Year	Selection bias	Detection bias	Attrition bias	Reporting bias	Confounding	Overall risk of bias	Comments
Ensminger	2003	+	?	−	+	−	high	Study population drawn from a specific community, dependent and confounding variables measured in 1966-1967 Maternal distress evlauation based on two simple questions Differential loss to follow-up (23%): non-participants more likely to be poor and less likely to be living with both parents Control for sociodemographic variables, mother's physical illness, child's social adjustment and psychological symptoms
Van Ameringen	2003	?	?	?	?	−	unclear	Small clinical sample with specific characteristics, exclusion criteria were unclear Potential recall bias No information about response rate Descriptive statistics, unclear pourcentages (cumulative?) Descriptive statistics, no control for confounding
Lynskey	2003	+	+	−	+	−	high	Low risk of detection bias regarding self-reported data Differential loss to follow-up (21%): non-participants were more likely to be male, to have separated parents or parents with lower education Control for sociodemographic, smoking and psychiatric morbidity
Van der Stoep	2003	?	+	?	?	−	unclear	No information about inclusion/exclusion criteria, non-response rate or representativeness (the title refers to US population while representativeness of the sample is compromised) No information about attrition, control for socioeconomic status
Ellickson	2001	+	+	+	+	+	low	Self-reported smoking was cross-checked with saliva sample Differential loss to follow-up (33%), but the sample was weighted to reduce bias by 90% Control for sociodemographic and family variables

First author (reference)	Year	Selection bias	Detection bias	Attrition bias	Reporting bias	Confounding	Overall risk of bias	Comments
Bray	2000	?	+	−	+	+	high	Response rate and representativeness unclear Low risk of detection bias regarding self-reported data Loss to follow-up: 45%, compensated by a stratified random cross-sectional sample to be included for final analyses Control for sociodemographic, family and academic variables
Hansen	1999	−	+	−	+	−	high	Variables measured in mid until late 80s, very small sample (n=36) Differential loss to follow-up (44%) for ADHD group Descriptive statistics, no control for potential confounding
Miech *	1999	+	+	+	+	+	low	Birth cohort, 9 waves Categorical and dimensional assessment of mental disorders Loss to follow-up: 9% Control for sociodemographic and academic variables
Krohn *	1997	+	+	+	+	+	low	Acceptable loss to follow-up (22%) Control for sociodemographic, family and academic variables
Kessler	1995	+	+	+	+	+	low	Low risk of recall bias despite efforts to use valid methods Response rate of 82.4%, non-respondents may be more likely to have psychiatric disorders Control for sociodemographic and academic variables

School dropout as a predictor of mental disorders								
First author (reference)	**Year**	**Selection bias**	**Detection bias**	**Attrition bias**	**Reporting bias**	**Confounding**	**Overall risk of bias**	**Comments**
Apantaku-Olajide	2014	?	+	?	+	−	unclear	No information about representativeness of the sample No information about differential attrition Descriptive statistics, no control for potential confounding
Ohayon	2014	+	+	?	+	?	unclear	No information about response rate Univariate logistic regressions?
Benjet	2012	+	+	+	+	−	low	Sample designed to be representative of Mexico City youth Response rate of 71%, weighting of data to account for differential loss Control for sociodemographic variables only
Lee	2010	+	+	?	+	−	unclear	Unclear information about loss to follow-up Control for psychiatric morbidity and family variables (8 risk factors were tested indpendently and simultaneously)
Benjet	2009	+	+	?	+	+	unclear	Unclear information about response rate: were non-participnats different from participants? Control for adolescent burden, sociodemographic and family variables
Crosnoe	2007	+	+	+	+	+	low	Acceptable overall loss to follow-up: 23% Differential attrition across waves and unequal probability of selection into the final sample were balanced by weighting Control for sociodemographic, family and school-related variables

First author (reference)	Year	Selection bias	Detection bias	Attrition bias	Reporting bias	Confounding	Overall risk of bias	Comments
Fothergill	2007	?	+	+	+	+	unclear	Study population drawn from a specific community, independent and confounding variables measured in 1966-1967 Acceptable but differential loss to follow-up (23%), however balanced by multiple imputation Control for gender and mother's drug use
Williams	2006	+	+	?	+	+	unclear	Differential nonresponse was compensated by weighting, however no detail provided Control for sociodemographic and academic variables
Harford	2006	+	+	?	+	−	unclear	Low nonresponse rate, but no information about differences between respondents and nonrespondents Control for sociodemographic and behavioral characteristics
D'Amico	2005	+	+	+	+	+	low	Substantial sample attrition over the 11-year period (70%), accounted for by weighting techniques that reduced attrition bias by 90% Control for sociodemographic, family and deviance variables
Liem	2001	?	+	?	+	+	unclear	Unclear information about inclusion/exclusion criteria No information about attrition Control for sociodemographic and family variables
Obot	2000	?	+	?	+	−	unclear	5 matched controls per case? Unclear information Low risk of detection bias regarding self-reported data No information about response rate Control for sociodemographic variables only
Obot	1999	?	+	?	+	−	unclear	No indication about the number of matched controls per case Low risk of detection bias regarding self-reported data No information about response rate Control for sociodemographic variables only

First author (reference)	Year	Selection bias	Detection bias	Attrition bias	Reporting bias	Confounding	Overall risk of bias	Comments
Obot	1999b	?	+	?	+	−	unclear	No indication about the number of matched controls per case Low risk of detection bias regarding self-reported data No information about response rate Control for sociodemographic variables only
Crum	1998	+	+	−	+	−	high	Study population drawn from a specific community, independent and confounding variables measured in 1966-1967 Acceptable but differential loss to follow-up (23%): non-participants more likely to be poor and to have dropped out of school Control for gender only
Gfoerer	1997	?	+	?	+	−	unclear	Unclear information about inclusion/exclusion criteria, gender Low risk of detection bias regarding self-reported data Response rate of 83%, no information about differences between participants and non-participants Control for sociodemographic variables only
Tresidder	1997	?	+	−	+	−	high	Representativeness unclear, but difficult to estimate cinsidering the target population Low risk of detection bias regarding self-reported data Very low response rate: 17% Control for gender and method of recruitment respectively