**Supplementary Material**

S1. Text. Systematic review search terms

S2. Table. Results of the Strengthening the Reporting of Observational Studies in Epidemiology [STROBE] Checklist

S3. Table. Moderator analyses for meta-analysis 1a: Rates of psychotic-like experiences in adolescents with substance use

S4. Table. Moderator analyses for meta-analysis 1b: Odds of psychotic-like experiences in adolescents with versus without substance use

S5. Figure. Correlation meta-analysis assessing dose-dependence between the level of substance use (alcohol, cannabis, or any substance) and the number/severity of any PLE

S6. Table. Moderator analysis for meta-analysis 2a: Rates of substance use in adolescents with psychotic-like experiences

S7. Table. Moderator analyses for meta-analysis 2b: Odds of substance use in adolescents with versus without psychotic-like experiences

S8. Figure. Correlation meta-analysis assessing dose-dependence between the level of any PLE and the number/severity of any substance use

S1. Supplementary text. Systematic review search terms

*(Population terms)* adolescen\* OR teen\* OR young\* OR youth\* OR juvenile\* OR child\* OR offspring\* OR p#diatric\* or kid\* OR minor OR boy\* OR girl\* OR preschool\* OR pre-school\* OR “school age\*” OR schoolchild\*

AND

*(Psychotic-like experience terms)* hallucination\* OR delusion\* OR “attenuated psycho\*” OR “psychotic symptom\*” OR “psychosis symptom\*” OR “psychotic experience\*” OR “psychosis experience\*” OR “psychotic-like” OR “psychosis-like” OR paranoi\* OR prodrom\*

AND

*(Substance use terms)* "Illicit drug\*" OR "Illegal Drug\*" OR "Substance\* use" OR "Substance\* misuse" OR "Substance\* abuse" OR Cannab\* OR Hemp OR Weed OR THC OR Tetrahydrocannabinol OR Marijuana OR Tobacco OR Cigarette OR Smok\* OR Alcohol OR "Binge drink\*" OR Amphetamine\* OR Meth OR Methamphetamin\* OR "Crystal Meth" OR Ice OR Ecstasy OR MDMA OR Molly OR Cocaine OR Crack OR Opiat\* OR Opioid\* OR *LSD* OR "Lysergic acid diethylamide" OR Hallucinogen\* OR Inhalant\*

S2. Table. Results of the Strengthening the Reporting of Observational Studies in Epidemiology [STROBE] Checklist

|  |  |  |
| --- | --- | --- |
|  | Item Number |  |
| Study Name  | 1a | 1b | 2 | 3 | 4 | 5 | 6a | 6b | 7 | 8 | 9 | 10 | 11 | 12a | 12b | 12c | 12d | 12e | 13a | 13b | 13c | 14a | 14b | 14c | 15 | 16a | 16b | 16c | 17 | 18 | 19 | 20 | 21 | 22 | Total%  |
| Addington 2019 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | - | - | 1 | - | - | 1 | - | - | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 0 | 1 | 96% |
| Albertella 2012  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | -  | - | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | -  | -  | 1 | 1 | 1 | 1 | 1 | 0 | 76% |
| Auther 2012  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | - | 0 | 1 | 0 | 1 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 84% |
| Barkhuizen 2019  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 91% |
| Bassett 1996  | 1 | 1 | 0 | 1 | 1 | 1 | 1 | -  | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | -  | - | 1 | 1 | 0 | 1 | 1 | -  | 1 | 0 | -  | -  | 1 | 1 | 0 | 1 | 1 | 0 | 68% |
| Bechtold 2016  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 94% |
| Besli 2015  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | -  | - | 0 | 1 | 0 | 1 | 1 | -  | 1 | 1 | -  | -  | - | 1 | 1 | 1 | 1 | 0 | 67% |
| Bourque 2017a  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | - | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 90% |
| Bourque 2017b | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | - | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 87% |
| Brink 2020 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 97% |
| Colins 2009  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | - | 1 | 1 | 1 | 0 | 1 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 87% |
| Colins 2013 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | - | - | 1 | 1 | 0 | 1 | - | - | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 1 | 0 | 85% |
| Cruz 2011 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 0 | 1 | - | - | - | - | - | - | 1 | 1 | 0 | 1 | - | - | 1 | - | - | - | - | 1 | 1 | 0 | 1 | 0 | 81% |
| DaBreo Otero 2021 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 0 | - | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | - | - | - | 1 | 1 | 1 | 1 | - | 81% |
| Dolphin 2015  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 0 | 0 | 1 | 1 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 0 | 90% |
| Drobinin 2020 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | - | 1 | 1 | 1 | 0 | 1 | 1 | - | - | - | 1 | 1 | - | - | 1 | - | - | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 92% |
| Evans 1987  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | -  | - | 0 | -  | -  | 0 | -  | -  | 1 | 1 | -  | -  | 1 | 0 | 0 | 1 | 0 | 0 | 52% |
| Fonseca-Pedrero 2020 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | - | - | 1 | 1 | 0 | 1 | 0 | - | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 86% |
| Forrester 2012 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 0 | 1 | 1 | 1 | - | 0 | - | - | 1 | - | - | 1 | - | - | 1 | 1 | - | - | - | 1 | 1 | 1 | 1 | 1 | 87% |
| Friedman 1987  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | -  | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | -  | - | 0 | -  | -  | 1 | 1 | 1 | 1 | 0 | -  | -  | 1 | 0 | 1 | 1 | 0 | 0 | 70% |
| Garland 2010  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | - | 1 | 1 | 0 | 1 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 0 | 80% |
| Goulter 2019 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | - | - | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 75% |
| Harley 2010  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | - | 1 | 1 | 0 | 0 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 84% |
| Hartsell 2021 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 0 | - | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 0 | 83% |
| Hides 2009  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | - | 1 | 1 | 0 | 1 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 83% |
| Jones 2017  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | - | 1 | 1 | 0 | 1 | 1 | - | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 90% |
| Jones 2018  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1  | 0 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 91% |
| Konings 2008  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | -  | 1 | 1 | -  | -  | 1 | 0 | -  | 1 | 1 | -  | -  | 1 | 1 | 1 | 0 | 1 | 0 | 85% |
| Lansing 2018 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 0 | 1 | 1 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 93% |
| Levy 2019  | 0 | 0 | 0 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | -  | - | 1 | -  | -  | 1 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 81% |
| Lindgren 2010 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | - | 1 | 0 | 0 | 1 | 1 | - | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 81% |
| Mackie 2011 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | - | 1 | 1 | 0 | 1 | - | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 93% |
| Mackie 2021 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | - | 1 | 1 | 1 | 0 | 1 | - | - | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 93% |
| McGorry 1995  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | -  | - | 0 | 1 | 0 | 1 | 1 | -  | 1 | 0 | -  | -  | 1 | 1 | 1 | 1 | 1 | 1 | 86% |
| McMahon 2021 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | - | - | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 93% |
| Miettunen 2008  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | -  | 1 | 1 | 1 | 0 | 1 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 0 | 1 | 1 | 1 | 80% |
| Mundy 1990 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | - | - | - | - | 1 | 1 | 0 | 1 | - | - | 1 | 1 | - | - | 1 | 1 | 1 | 0 | 1 | 1 | 88% |
| Opaleye 2009 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | - | - | - | - | 1 | 1 | 0 | 1 | - | - | 1 | 1 | - | - | - | 1 | 1 | 1 | 1 | 1 | 92% |
| Rimval 2020 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | - | 0 | - | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 83% |
| Schifano 1994  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | -  | - | 1 | 1 | 0 | 1 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 83% |
| Scott 2009  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | - | 0 | 0 | 0 | 1 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 80% |
| Shakoor 2015 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | -  | - | 1 | 1 | 0 | 1 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 90% |
| Shervette 1979 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | - | 0 | 1 | 0 | 1 | 0 | 0 | - | - | - | - | 0 | 0 | 0 | 1 | 1 | - | 1 | - | - | - | - | 0 | 0 | 1 | 0 | 0 | 46% |
| Shrier 2003  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | -  | 0 | 0 | 0 | 0 | 1 | 0 | -  | 1 | 1 | 0 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 70% |
| Stain 2016 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 100% |
| Stainton 2021 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | - | - | 0 | 0 | 0 | 1 | 0 | - | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 79% |
| Sunderland 2021 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | - | 0 | 0 | 0 | 1 | - | - | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 1 | 0 | 85% |
| Tekulve 2014  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | -  | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | -  | -  | 1 | 1 | 1 | 1 | 1 | 0 | 53% |
| van Gastel 2012 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | - | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 0 | 77% |
| Vaughn 2006  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 0 | 1 | 1 | 0 | 1 | -  | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 0  | 86% |
| Wang 2022 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | - | - | - | - | 1 | 1 | 0 | 1 | - | - | 1 | 1 | - | - | - | 1 | 1 | 1 | 1 | 1 | 96% |
| Watts 2021 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 0 | 1 | 1 | - | 0 | - | - | 0 | 0 | 0 | 1 | 0 | - | 1 | 1 | - | - | - | 1 | 1 | 1 | 1 | 1 | 73% |
| Whitt 2012  | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | -  | - | 0 | 0 | 0 | 1 | 0 | -  | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 76% |
| Yilmaz 2022 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 | - | - | 1 | 1 | 0 | 1 | 1 | - | 1 | 1 | - | - | - | 1 | 1 | 1 | 1 | 1 | 96% |
| Zammit 2011  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | -  | 1 | 1 | 1 | 1 | 1 | 1 | 94% |

Total % = percentage of checklist items within each observational study; Dash (-)= a non-applicable item which has been omitted from the total percentage count

S3. Table Moderator analyses for meta-analysis 1a: Rates of psychotic-like experiences in adolescents with substance use

|  |  |  |  |
| --- | --- | --- | --- |
| Subgroup analyses | Studies | Total N | Event rate (95%CIs) |
| Study design |  |  |  |
| Cross-sectional  | 9 |  1365 | 0.40 (0.29 to 0.53) |
| Chart review  | 4 |  1453 | 0.53 (0.19 to 0.84) |
| Cohort | 2 |  214 | 0.35 (0.08 to 0.77) |
| Substance measure |  |  |  |
| Interview  | 10 |  1236 | 0.38 (0.27 to 0.51) |
| Chart review | 3 |  1437 | 0.62 (0.20 to 0.92) |
| Self-report | 3 |  377 | 0.35 (0.16 to 0.60) |
| PLE measure |  |  |  |
| Interview  | 7 |  716 | 0.43 (0.24 to 0.64) |
| Self-report | 5 |  881 | 0.33 (0.24 to 0.43) |
| Chart review | 4 |  1453 | 0.53 (0.19 to 0.84) |
| Intoxication effects |  |  |  |
| Intoxicated  | 9 |  1956 | 0.49 (0.33 to 0.65) |
| Non-intoxicated | 7 |  1094 | 0.33 (0.22 to 0.46) |
| Substance type |  |  |  |
| Cannabis - lifetime use  | 6 |  899 | 0.32 (0.24 to 0.42) |
| Inhalants - current use | 2 |  310 | 0.52 (0.05 to 0.96) |
| PLE type |  |  |  |
| Hallucinations (any) | 11 |  948 | 0.49 (0.35 to 0.64) |
| Visual hallucinations | 2 |  310 | 0.62 (0.03 to 0.99) |
| Paranoia/delusions | 2 |  201 | 0.77 (0.22 to 0.98) |
| Meta-regressions | Studies | Total N | Coefficient (95%CIs) |
| % male | 13 |  2825 | 0.00 (-0.03 to 0.03) |
| Mean age at assessment | 13 |  2838 | -0.84 (-1.99 to 0.32) |
| Study quality score  | 16 |  3050 | -0.03 (-0.07 to 0.01) |

All p-values for the QB (between subgroups) statistic analyses were >0.05

PLE type subgroups contain non-independent samples

S4. Table. Moderator analyses for meta-analysis 1b: Odds of psychotic-like experiences in adolescents with versus without substance use

|  |  |  |  |
| --- | --- | --- | --- |
| Subgroup analyses | Studies | Total N | OR (95%CIs) |
| Study design |  |  |  |
| Cross-sectional | 10 |  78 134 | 1.77 (1.50 to 2.09)\*\*\* |
| Cohort  | 3 |  13 136 | 2.07 (1.09 to 3.92)\* |
| Case-control | 2 |  2 825 | 2.37 (0.38 to 14.96) |
| Twin study | 2 |  13 447 | 1.69 (1.53 to 1.86)\*\*\* |
| Substance measure |  |  |  |
| Self-report | 11 |  94 067 | 1.69 (1.43 to 1.99)\*\*\* |
| Interview  | 6 |  12 525 | 1.96 (1.52 to 2.53)\*\*\* |
| PLE measure |  |  |  |
| Self-report | 11 |  70 993 | 1.77 (1.54 to 2.03)\*\*\* |
| Interview  | 6 |  14 003 | 1.81 (1.37 to 2.39)\*\*\* |
| Substance type |  |  |  |
| Cannabis - lifetime use  | 11 |  31 541 | 1.71 (1.45 to 2.01)\*\*\* |
| Cannabis - weekly use | 6 |  19 229 | 2.27 (1.31 to 3.95)\*\* |
| Tobacco - current use | 4 |  74 513 | 1.72 (1.43 to 2.06)\*\*\* |
| Alcohol - lifetime use | 2 |  70 162 | 2.30 (1.22 to 4.34)\* |
| PLE type |  |  |  |
| Hallucinations | 7 |  16 692 | 1.74 (1.54 to 1.97)\*\*\* |
| Paranoia/delusions | 7 |  17 069 | 1.92 (1.70 to 2.17)\*\*\* |
| Meta-regressions | Studies | Total N | Coefficient (95%CIs) |
| % male | 15 |  100 165 | 0.00 (-0.00 to 0.01) |
| Mean age at assessment | 11 |  93 281 |  -0.32 (-0.53 to -0.10)\*\* |
| Study quality score  | 17 |  102 769 | -0.01 (-0.03 to 0.01) |

All p-values for the QB (between subgroups) statistic analyses were >0.05

Substance and PLE type subgroups contain non-independent samples

There were insufficient studies reporting adjusted ORs to conduct subgroup analysis

 \**p*<0.05, \*\**p*<0.01, \*\*\**p*<0.001

S5. Figure. Correlation meta-analysis assessing dose-dependence between the level of any substance use and the number/severity of any PLE



S6. Table. Moderator analysis for meta-analysis 2a: Rates of substance use in adolescents with psychotic-like experiences

|  |  |  |  |
| --- | --- | --- | --- |
| Subgroup analyses | Studies | Total N | Event rate (95%CIs) |
| Study design |  |  |  |
| Cohort | 9 |  2157 | 0.15 (0.07 to 0.28) |
| Cross-sectional  | 4 |  865 | 0.18 (0.10 to 0.29) |
| Substance measure |  |  |  |
| Interview  | 7 |  701 | 0.29 (0.12 to 0.56) |
| Self-report | 8 |  2440 | 0.14 (0.09 to 0.21) |
| PLE measure\* |  |  |  |
| Interview  | 10 |  2158 | 0.26 (0.16 to 0.39) |
| Self-report | 5 |  983 | 0.11 (0.05 to 0.19) |
| Substance type\*\*\* |  |  |  |
| Cannabis - lifetime use  | 14 |  3079 | 0.19 (0.12 to 0.29) |
| Cannabis - weekly use | 2 |  1023 | 0.04 (0.00 to 0.28) |
| Alcohol | 9 |  1658 | 0.44 (0.33 to 0.56) |
| Tobacco | 7 |  1617 | 0.24 (0.11 to 0.44) |
| Amphetamines | 2 |  149 | 0.07 (0.02 to 0.21) |
| Cocaine | 3 |  265 | 0.03 (0.01 to 0.09) |
| Meta-regressions | Studies | Total N | Coefficient (95%CIs) |
| % male | 15 |  3223 | 0.01 (-0.04 to 0.06) |
| Mean age at assessment | 15 |  3223 | 0.39 (-0.50 to 1.27) |
| Study quality score  | 16 |  3446 | 0.02 (-0.12 to 0.17) |

Substance type subgroups contain non-independent samples

There were insufficient studies reporting PLE type to conduct subgroup analysis

\**p*<0.05, \*\*\**p*<0.001for QB

S7. Table. Moderator analyses for meta-analysis 2b: Odds of substance use in adolescents with versus without psychotic-like experiences

|  |  |  |  |
| --- | --- | --- | --- |
| Subgroup analyses | Studies | Total N | OR (95%CIs) |
| Study design |  |  |  |
| Cross-sectional | 8 |  22 769 | 1.76 (1.37 to 2.25)\*\*\* |
| Cohort  | 9 |  17 927 | 2.09 (1.55 to 2.82)\*\*\* |
| Substance measure |  |  |  |
| Interview  | 7 |  13 023 | 2.12 (1.77 to 2.53)\*\*\* |
| Self-report | 11 |  28 005 | 1.84 (1.38 to 2.45)\*\*\* |
| PLE measure |  |  |  |
| Interview  | 11 |  21 611 | 1.98 (1.64 to 2.39)\*\*\* |
| Self-report | 7 |  19 259 | 1.85 (1.22 to 2.80)\*\*\* |
| Substance type |  |  |  |
| Cannabis - lifetime use  | 14 |  27 746 | 1.99 (1.59 to 2.49)\*\*\* |
| Cannabis - weekly use | 4 |  8987 | 2.25 (1.17 to 4.32)\* |
| Alcohol | 7 |  23 245 | 1.43 (1.13 to 1.82)\*\* |
| Tobacco | 6 |  9728 | 1.95 (1.06 to 3.58)\* |
| Amphetamines | 3 |  501 | 2.28 (1.23 to 4.24)\*\* |
| Cocaine | 3 |  958 | 1.78 (0.95 to 3.36) |
| ORs |  |  |  |
| Adjusted | 4 |  15 188 | 2.09 (1.18 to 3.68)\* |
| Non-adjusted | 4 |  12 702 | 1.95 (1.66 to 2.29)\*\*\* |
| Meta-regressions | Studies | Total N | Coefficient (95%CIs) |
| % male | 17 |  38 398 | 0.01 (-0.00 to 0.02) |
| Mean age at assessment | 16 |  37 515 | 0.19 (-0.01 to 0.19) |
| Study quality score  | 18 |  41 028 | 0.01 (-0.02 to 0.04) |

All p-values for the QB (between subgroups) statistic analyses were >0.05

Substance and PLE type subgroups contain non-independent samples

There were insufficient studies reporting PLE type to conduct subgroup analysis

\**p*<0.05, \*\**p*<0.01, \*\*\**p*<0.001

S8. Figure. Correlation meta-analysis assessing dose-dependence between the number/severity of any PLE and the level of any substance use

