## **Supplementary Online Content**

Gobbi G, Atkin T, Zytynski T, et al. Association of cannabis use in adolescence and risk of depression, anxiety, and suicidality in young adulthood: a systematic review and meta-analysis. *JAMA Psychiatry*. Published online February 13, 2019. doi:10.1001/jamapsychiatry.2018.4500

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This supplementary material has been provided by the authors to give readers additional information about their work.

## eMethods 1. Search strategy used in the current systematic review and meta-analysis

Ovid MEDLINE(R), Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid OLDMEDLINE(R) 1946 to January 23, 2017

| 1  | Marijuana smoking                                                       | 4493    |
|----|-------------------------------------------------------------------------|---------|
| 2  | Marijuana abuse/                                                        | 6484    |
| 3  | (Marijuana or marihuana or cannabis).ti,ab,kf.                          | 25378   |
| 4  | Cannabis/                                                               | 8186    |
| 5  | Limit 4 to yr="1966 - 1980"                                             | 3727    |
| 6  | Exp Anxiety Disorders/                                                  | 78033   |
| 7  | Exp Mood Disorders/ or Depression/                                      | 214918  |
| 8  | Mental disorders/                                                       | 158019  |
| 9  | Health status/ or health status indicators/                             | 100748  |
| 10 | Suicidal Ideation/ or Suicide/ or Suicide, Attempted/                   | 53818   |
| 11 | (Suicide* or suicidal*).ti,ab,kf.                                       | 69480   |
| 12 | (Depression or depressive).ti,ab,kf.                                    | 344516  |
| 13 | (Mental health or mental illness* or mental disorder*).ti,ab,kf.        | 172567  |
| 14 | Mood disorder*.ti,ab,kf.                                                | 15953   |
| 15 | Anhedonia/ or dysthymic disorder/ or (anhedonia or dysthymia).ti,ab,kf. | 6466    |
| 16 | 1 or 2 or 3 or 5                                                        | 28673   |
| 17 | OR/6-15                                                                 | 812115  |
| 18 | 16 and 17                                                               | 4314    |
| 19 | Epidemiologic studies/                                                  | 8217    |
| 20 | Exp case control studies/                                               | 923119  |
| 21 | Exp cohort studies/                                                     | 1813358 |
| 22 | Case control.ti,ab,kf.                                                  | 115413  |
| 23 | (Cohort adj (study or studies)).ti,ab,kf.                               | 156043  |
| 24 | Cohort analy*.ti,ab,kf.                                                 | 7059    |
| 25 | (Follow up adj (study or studies)).ti,ab,kf.                            | 49118   |
| 26 | (Observational adj (study or studies)).ti,ab,kf.                        | 78601   |
| 27 | Longitudinal.ti,ab,kf.                                                  | 218190  |
| 28 | Retrospective.ti,ab,kf.                                                 | 413167  |
| 29 | Cross sectional.ti,ab,kf.                                               | 276211  |
| 30 | Cross-sectional studies/                                                | 268930  |
| 31 | "Incidence"/                                                            | 239988  |
| 32 | OR/19-31                                                                | 2770441 |
| 33 | 18 and 32                                                               | 1673    |

eMethods 2. Multivariate Regression analyses and Propensity Score adjustment analyses in the cohort reported by Marmorstein and Iacono (2017)

For more information regarding the study design and participant characteristics of the Minnesota Twin Family Study see Iacono and McGue<sup>1</sup> (2002) and Marmorstein and Iacono<sup>2</sup> (2011).

For all analyses, we used generalized estimating equations to appropriately adjust for the correlated nature of observations in the dataset (twins nested within families; Zeger & Liang³, 1986). For all diagnoses, categorical diagnoses were used (probable (missing one symptom) or definite vs. no disorder) and diagnoses were based on DSM-III-R criteria.

For the classical analyses (multivariate regression analyses), we used cannabis use disorder by age 17 as the independent variable, together with sex, MDD by 17, parental MDD, alcohol use disorder by 17, and nicotine dependence by 17 as control variables, to predict MDD between 17 and 24. For the propensity score analyses, we used the regression adjustment method (Beal & Kupzyk<sup>4</sup>, 2014). Specifically, we calculated a propensity score by using sex, MDD by 17, parental MDD, alcohol use disorder by 17, and nicotine dependence by 17 to predict cannabis use disorder by 17. We then entered that propensity score into a generalized estimating equation analysis together with cannabis use disorder by age 17 to predict MDD between 17 and 24. All analyses were conducted using SAS version 9.4 (SAS Institute Inc., Cary, NC, USA).

## References

- 1. Iacono WG, McGue M. Minnesota Twin Family Study. *Twin Res.* 2002;5(5):482-487.
- 2. Marmorstein, N R, Iacono, W G. Explaining associations between cannabis use disorders in adolescence and later major depression: a test of the psychosocial failure model. *Addictive Behaviors*. 2011;36(7):773-776.
- 3. Zeger SL, Liang KY. Longitudinal data analysis for discrete and continuous outcomes. *Biometrics*. 1986;42(1):121-130.
- 4. Beal SJ, Kupzyk KA. An introduction to propensity scores: what, when, and how. *The Journal of Early Adolescence*. 2014;34(1):66-92.

eTable 1. Characteristics of all included studies in the systematic review and analaysis<sup>a</sup>

| Study                                                                | Sample       | Age, y                                      |                                                | Measure                                                                                |                                                                                   | Adjustment Variables                                                                                                                                                    | Outcome                                                                                                                                                                                                                              |
|----------------------------------------------------------------------|--------------|---------------------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                      | Size,<br>No. | Cannabis<br>Assessment<br>in<br>Adolescence | Young<br>Adulthood<br>Depression<br>Assessment | Cannabis                                                                               | Depression                                                                        |                                                                                                                                                                         |                                                                                                                                                                                                                                      |
| Arria et al, <sup>30</sup><br>2016,<br>United<br>States              | 1253         | 17 to 19                                    | 27                                             | Frequency of use in the last month                                                     | GHQ-12,<br>SWLS                                                                   | Baseline general health, sex, race, ethnicity, neighborhood income, alcohol trajectory group membership, tobacco trajectory group membership, baseline alcohol quantity | Multiple regression<br>analysis indicates that<br>cannabis users were<br>associated with more<br>negative score in GHQ-<br>12                                                                                                        |
| Arseneault<br>et al, <sup>31</sup><br>2002, New<br>Zealand           | 759          | 15 and 18                                   | 26                                             | Frequency of use in the last year                                                      | Standardized interview, DSM-IV                                                    | Psychotic symptoms during childhood                                                                                                                                     | Depressive disorder, OR (95% CI): cannabis use by age 15 y: 1.02 (0.34-3.04); cannabis use by age 18 y: 1.62 (1.06- 2.49)  Depressive symptoms, β (SE): cannabis use by age 18 y: 0.25 (1.93); cannabis use by age 18 y: 1.98 (0.84) |
| Baggio et<br>al, <sup>32</sup> 2014,<br>Switzerland                  | 5084<br>Men  | 18 to 19                                    | 20 to 21                                       | Frequency of use in the last year                                                      | WHO-MDI                                                                           | Baseline depression                                                                                                                                                     | Depression is significantly higher in cannabis users: β = 0.087                                                                                                                                                                      |
| Brook et<br>al, <sup>33</sup> 1998,<br>United<br>States              | 698          | 16                                          | 22                                             | Frequency of use from none (0) to daily use (6) points                                 | DISC-I<br>matched with<br>DSM-III-R                                               | Age, sex, depression, anxiety, disruptive behavior disorder                                                                                                             | Depression, OR (95% CI): 1.13 (0.95-1.34) Anxiety, OR (95% CI): 1.16 (1.00-1.35)                                                                                                                                                     |
| Brook et<br>al, <sup>34</sup> 2002,<br>United<br>States <sup>b</sup> | 736          | 14 and 16                                   | 27                                             | Frequency of ever using (8-point rating scale ranging from never [0] to daily use [7]) | Modified version of the University of Michigan Composite International Diagnostic | Prior episodes of MDD in<br>childhood, baseline MDD<br>and SUD, age, sex,<br>parental educational<br>level, family income                                               | Depression, OR (95% CI): 1.438 (1.081-1.912)                                                                                                                                                                                         |

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|                                                                                                          |      |          |    |                                                                                                                                  | Interview and DSM-IV                                      |                                                                                                                                          |                                                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------|------|----------|----|----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Brook et<br>al, 16 2011,<br>United<br>States<br>(African<br>American)<br>and Puerto<br>Rico <sup>b</sup> | 837  | 14       | 29 | Frequency: 1, never; 2, a few times a year or less; 3, about once a month; 4, several times a month; and 5, once a week or more. | SCL-90-R                                                  | Depression at baseline                                                                                                                   | Depression, OR (95% CI): only adolescence use: 1.5 (0.9-3.2), chronic use from adolescence to young adulthood: 2.9 (1.7-5.7)  Anxiety, OR (95% CI): only adolescence use: 1.6 (0.9-2.9); chronic use from adolescence to young adulthood: 2.3 (1.3 to 4.0) |
| Caldeira et<br>al, <sup>35</sup> 2012,<br>United<br>States                                               | 973  | 17 to 19 | 25 | Frequency of use in the last month                                                                                               | BDI, BAI,<br>GHQ-12                                       | Sex, race and ethnicity,<br>SES, alcohol and<br>tobacco use                                                                              | Depression and anxiety:<br>the chronic group and<br>late increase fared the<br>worst on all 3 of the<br>psychiatric symptom<br>measures (GHQ-12,<br>BDI, and BAI)                                                                                          |
| D'Amico et<br>al, <sup>36</sup> 2016,<br>United<br>States                                                | 6509 | 12 to 17 | 17 | Frequency of use in the last month (use vs no use)                                                                               | MHI-5 of SF-<br>36                                        | Age, sex, race, depression at baseline                                                                                                   | Mental health, intercept (95% CI): cannabis group has a worst mental health outcome -0.29 (-0.47 to -0.11); P < .01                                                                                                                                        |
| Degenhardt<br>et al, <sup>37</sup><br>2010,<br>Australia                                                 | 1943 | 15 to 17 | 24 | Weekly frequency<br>of use in the past<br>6 mo                                                                                   | CIS-R in<br>adolescents<br>and GHQ-12<br>in adults        | Parental education,<br>employment status,<br>tobacco use, alcohol<br>use, baseline depression<br>and anxiety, sex                        | Depression, OR (95% CI): occasional use: 1.2 (0.81-1.6); >weekly use: 1.2 (0.77-1.8)                                                                                                                                                                       |
| Degenhardt<br>et al, <sup>38</sup><br>2013,<br>Australia <sup>b</sup>                                    | 1943 | 15 to 17 | 29 | Weekly frequency<br>of use in the<br>previous 6 mo<br>(nonuser,<br>occasional,<br>>weekly)                                       | CIS-R in<br>adolescents<br>and <i>ICD-10</i><br>with CIDI | Baseline depression and anxiety, sex, nonmetropolitan school location, low parental education, parental divorce/separation, alcohol use, | Depression, OR (95% CI): occasional use: 0.81 (0.49-1.3); >weekly: 1.1 (0.60-1.9) Anxiety, OR (95% CI): occasional use: 1.2 (0.77-1.8); >weekly: 1.4 (0.84-2.5)                                                                                            |

| Epstein et<br>al, <sup>39</sup> 2015,<br>United<br>States          | 808            | 10 to 14                           | 18, 21, 24,<br>33                  | Use in the last<br>month; groups<br>divided in<br>nonusers, late-<br>onset,<br>adolescence-<br>limited, chronic<br>users<br>(postadolescence) | Symptoms<br>based on<br>DSM-IV         | Positive family environment, positive school environment, antisocial peers, neighborhood disorganization, behavioral disinhibition, depression and anxiety at baseline | Depression: the chronic group ( $\beta$ = 0.15 and 0.16) and adolescent-limited users ( $\beta$ = 0.16 and 0.4) had significant increase of depression symptoms compared with nonuser ( $\beta$ = 0.23 and -0.20) or late onset, at age 18 and 24 y, respectively. NS at age 33 y.                                            |
|--------------------------------------------------------------------|----------------|------------------------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Fergusson<br>and<br>Horwood, <sup>40</sup><br>1997, New<br>Zealand | 935            | 15 to 16                           | 18                                 | Frequency of use in the last year                                                                                                             | CIDI and<br>DSM-IV<br>criteria         | Maternal age, ethnicity, age, family size, family function, conduct problem, IQ, self-esteem, baseline mood and anxiety disorder, alcohol use, smoking                 | The frequency of major depression at age 16 to 18 y is higher (23.2%-28.7%) in adolescents who smoke cannabis at age 15 to 16 y, compared with nonusers (18.6%)                                                                                                                                                               |
| Fergusson<br>et al, <sup>41</sup><br>1996, New<br>Zealand          | 927            | 14 to 16                           | 16                                 | Use vs no use                                                                                                                                 | DISC and<br>DIS for <i>DSM-</i><br>III | Family functioning,<br>delinquent or drug using<br>peers, alcohol use, sex,<br>depression/anxiety or<br>suicide at baseline                                            | Depression, OR (95% CI): 1.4 (0.7-2.7)  Anxiety, OR (95% CI): 1.2 (0.5-2.8)  Suicide ideation, OR (95% CI): 1.4 (0.7-2.8)                                                                                                                                                                                                     |
| Fergusson<br>et al, <sup>42</sup><br>2002, New<br>Zealand          | 953 to<br>1025 | 14 to 15, 17<br>to 18, 20 to<br>21 | 14 to 15, 17<br>to 18, 20 to<br>21 | Frequency of use in the last year: less than monthly, at least monthly, at least weekly.                                                      | CIDI and DSM-IV criteria               | Adverse life events, deviant peer affiliations, age of leaving school and home, alcohol use, baseline depression                                                       | RR for depression within the same group of age reported  Depression for age 14 to 15 y, 17 to 18 y, 20 to 21 y, RR (95% CI): 1.7 (1.0-2.7); 1.7 (1.0-2.7); 1.7 (1.0-2.7), respectively  Suicidal ideation for age 14 to 15 y, 17 to 18 y, 20 to 21 y, RR (95% CI): 7.3 (3.0-17.9); 3.6 (2.1-6.1); 1.8 (0.9-3.4), respectively |

| Fleming et al, 43 2008, United                                                        | 951  | 13       | 16       | Frequency of use in the last year and last month                                                                                                                                                                                                                                                                                                                                                   | SPQ and DSM-IV criteria       | Low-income status,<br>antisocial behavior,<br>social competency,                                                                                                                                                                          | Suicidal attempt for age 14 to 15 y, 17 to 18 y, 20 to 21 y, RR (95% CI): 13.1 (3.5-48.9); 3.3 (1.5-7.2); 0.8 (0.3-2.5), respectively  Depressive symptoms significantly associated with cannabis use in |
|---------------------------------------------------------------------------------------|------|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| States                                                                                |      |          |          |                                                                                                                                                                                                                                                                                                                                                                                                    |                               | academic performance in seventh grade                                                                                                                                                                                                     | girls (β [SE],: 0.467<br>[0.088] and boys (β<br>[SE], 0.169 [0.078])                                                                                                                                     |
| Gage et<br>al, <sup>44</sup> 2015,<br>United<br>Kingdom <sup>b</sup>                  | 1791 | 16       | 18       | Frequency of use:<br>0, 1 to 20, 21 to<br>60, >60 times a<br>year                                                                                                                                                                                                                                                                                                                                  | CIS-R and ICD-10              | Family history of<br>depression, maternal<br>education, urban living,<br>IQ, childhood mental<br>conditions (borderline<br>personality, victimization,<br>peer problems, conduct<br>disorder, alcohol and<br>other illicit drug use), sex | Depression, OR (95% CI): 1.30 (0.98-1.72) Anxiety, OR (95% CI): 0.96 (0.75-1.24)                                                                                                                         |
| Georgiades<br>and Boyle, <sup>45</sup><br>2007,<br>Canada <sup>b</sup>                | 1282 | 12 to 16 | 26 to 30 | No use vs use in the past 6 mo                                                                                                                                                                                                                                                                                                                                                                     | CIDI-short<br>form            | Age, sex, baseline<br>depression, SES, single-<br>parent home, family<br>function, grade failure,                                                                                                                                         | Depression, OR (95% CI): adolescence cannabis use: 1.48 (0.65-3.40); continue cannabis use from adolescence to adulthood: 4.45 (2.05-9.66)                                                               |
| Marmorstein<br>and<br>lacono, <sup>46</sup><br>2011,<br>United<br>States <sup>b</sup> | 1252 | 17       | 24       | Cannabis use disorder vs infrequent cannabis use (>once per year but <once month)<="" per="" td=""><td>SCID and<br/>DSM-III-R</td><td>Depression at baseline,<br/>sex, psychosocial failure,<br/>conduct disorder,<br/>parental MDD, alcohol<br/>and nicotine use</td><td>Depression, OR (95% CI): cannabis use disorder: 2.62 (1.22-5.65); infrequent marijuana use: 0.52 (0.19-1.40)</td></once> | SCID and<br>DSM-III-R         | Depression at baseline,<br>sex, psychosocial failure,<br>conduct disorder,<br>parental MDD, alcohol<br>and nicotine use                                                                                                                   | Depression, OR (95% CI): cannabis use disorder: 2.62 (1.22-5.65); infrequent marijuana use: 0.52 (0.19-1.40)                                                                                             |
| McGee et<br>al, <sup>47</sup> 2005,<br>New<br>Zealand <sup>b</sup>                    | 764  | 15       | 21       | Use vs no use                                                                                                                                                                                                                                                                                                                                                                                      | Standardized interview DSM-IV | Depression, sex,<br>childhood disadvantage,<br>impulsivity, alcohol use<br>at school, daily smoking                                                                                                                                       | Suicide ideation, OR (95% CI): 1.10 (0.58-2.07)                                                                                                                                                          |

| Meier et<br>al, <sup>48</sup> 2015,<br>United<br>States   | 319            | 14 to 15   | 17 to 18 | Frequency of use in the last year: 0, 1 to 2, 3 to 5, 6 to 9, 10 to 19, 20 to 39, ≥40 times                  | CDI at baseline, youth self-report at follow-up to assess internalizing symptoms (ie, depression) | Sex, baseline GPA and internalizing/externalizing symptoms, other substance use                                                                                                        | Depression, β (SE):<br>0.04 (-0.09 to 0.18)<br>(NS)                                                                                                                                                                       |
|-----------------------------------------------------------|----------------|------------|----------|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nault-<br>Briere, <sup>49</sup><br>2011,<br>Canada        | 3608           | 13 to 14   | 17       | Frequency of use in the last year (nonusers, users, and frequent users)                                      | CES-D                                                                                             | Depressive symptoms at baseline (grade 7), the use of other substances in grade 8 (alcohol use, use of hard drugs) and background individual and contextual confounders in grade 7     | Depression, β (SE): 1.2 (0.2-2.2) (significant); depression at age 13 y does not predict for cannabis use at age 17 y, only if other factors are associated (deviant and substance use peer and decreased school bonding) |
| Newcomb et<br>al, <sup>50</sup> 1993,<br>United<br>States | 487            | 12 to 16   | 25.5     | Frequency of use in the past 6 mo                                                                            | CES-D                                                                                             | Social support during adolescence, social conformity, emotional distress (depression) during adolescence                                                                               | Depression, β: 0.17, <i>P</i> < .01                                                                                                                                                                                       |
| Pahl et al, <sup>51</sup><br>2011,<br>United<br>States    | 474<br>females | 14         | 32.5     | Frequency of use in the last year, from 0 (never) to 4 (≥once a week) using DSM-IV for cannabis use disorder | HSCL                                                                                              | Baseline depression and anger/hostility, age, race/ethnicity, household income and education, tolerance of deviance/risk taking, level of conflict in the mother-daughter relationship | Depression: increasers $(n = 63)$ compared with nonusers $(n = 294)$ displayed higher levels of depression, $\beta$ (SE): 1.31 (0.60), $P < .05$                                                                          |
| Patton et al, <sup>15</sup> 2002, Australia               | 1601           | 14         | 21       | Weekly frequency<br>of use in the last 6<br>or 12 mo                                                         | CIS-R                                                                                             | Depression and anxiety<br>at baseline, alcohol use,<br>antisocial behavior,<br>parental separation,<br>parental education                                                              | Depression, OR (95% CI): <weekly (0.94-2.0);="" 1.4="" use:="">weekly female: 1.9 (1.1-3.3); &gt;weekly male: 0.47 (0.17-1.3)</weekly>                                                                                    |
|                                                           | 2033           | <16 and 21 | 27       | Frequency of use in the last year: no                                                                        | Kandel and Davies 6-item                                                                          | Age, sex, parental educational level,                                                                                                                                                  | No links between cannabis before age 16                                                                                                                                                                                   |

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| Pedersen, <sup>52</sup><br>2008,<br>Norway                             |      |          |          | use, 1-10, ≥11 times                                                | measure of<br>depressed<br>mood,<br>derived from<br>SCL-90 | parents unemployed, parental divorce, parental smoking and alcohol problems, parental support and monitoring, early pubertal maturation, school marks (age 16 y), conduct problems and daily smoking, alcohol problems, depression (age 16 and 21 y), impulsivity (age 21 y), education, employment | y and depression at age 21 y (small No. of individuals consuming cannabis at age 16 y); OR not reported in the group consuming cannabis at age 21 y  Depression, OR (95% CI): cannabis use 1-10 times in the past year (age 21 y): 1.4 (0.8-2.1); cannabis use ≥11 times in the past year (age 21 y): 0.9 (0.4-2.5)  Suicide ideation, OR (95% CI): cannabis use 1-10 times in the past year (age 21 y): 2.4 (1.3-4.3); cannabis use ≥11 times in the past year (age 21 y): 2.7 (2.8-6.4)  Suicide attempt, OR (95% CI): cannabis use 1-10 times in the past year (age 21 y): 0.7 (0.4-1.5) ;cannabis use 1-10 times in the past year (age 21 y): 0.7 (0.4-1.5) ;cannabis use ≥11 times in the past year (age 21 y): 2.9 (1.3-6.1) |
|------------------------------------------------------------------------|------|----------|----------|---------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Repetto et al, <sup>53</sup> 2008,<br>United<br>States                 | 623  | 15 to 19 | 21 to 25 | Frequency of use in the last month, from 0 (never) to 7 (>40 times) | Six items<br>from the Brief<br>Symptom<br>Inventory        | Age, sex, baseline<br>depression, SES, GPA,<br>alcohol, cigarette<br>smoking                                                                                                                                                                                                                        | Depression: marijuana use was significantly correlated with depressive symptoms, $\beta = 0.13$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Roberts et<br>al, <sup>54</sup> 2010,<br>United<br>States <sup>b</sup> | 3134 | 11 to 17 | 12 to 18 | Frequency of use in the last year (none or >6 times)                | DISC-IV                                                    | Age, sex, family income, prior suicide attempts by youth and caregivers, prior psychiatric disorders                                                                                                                                                                                                | Suicide attempt, OR<br>(95% CI): 4.81 (1.82-<br>12.66)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| Scholes-<br>Balog et<br>al, <sup>55</sup> 2016,<br>Australia                         | 852  | 12 to 19 | 21       | Frequency of use in the last year                                            | K-10                                                                                                                                | Sex, parent education,<br>alcohol, cigarette, other<br>illicit drugs, antisocial<br>behavior, GPA                              | Depression,<br>frequencies (SE): late-<br>onset occasional user<br>during adolescence:<br>19.12 (0.56); early<br>onset users: 19.80<br>(1.01); non-users: 18.23<br>(0.39) (NS)                                                                                                                                                                                |
|--------------------------------------------------------------------------------------|------|----------|----------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Silins et al, <sup>10</sup><br>2014,<br>Australia<br>and New<br>Zealand <sup>b</sup> | 3765 | <17      | 25       | Frequency of use:<br><monthly,<br>≥monthly;<br/>≥weekly; daily</monthly,<br> | Different scales (CID, CIDI, Depression-Anxiety Stress Scales) reconverted in dichotomous measure; suicide reported by attempts BSI | Age, sex, baseline depression, alcohol use, smoking                                                                            | Depression, OR (95% CI): less than monthly use: 1.01 (0.85-1.19), monthly or more: 1.01 (0.72-1.42), ≥weekly: 1.02 (0.61-1.69), daily use: 1.02 (0.52-2.010)  Suicide attempt, OR (CI): <monthly (1.19-2.19),="" (1.43-4.79),="" (1.71-10.47),="" (2.04-22.90)<="" 1.62="" 2.61="" 4.23="" 6.83="" daily="" td="" use:="" ≥monthly:="" ≥weekly:=""></monthly> |
| van Gastel<br>et al, <sup>56</sup><br>2014, the<br>Netherlands                       | 705  | 18 to 27 | 25 to 27 | No use vs use<br>detected as a<br>money spent per<br>wk in cannabis          | CAPE,<br>depressive<br>subscale                                                                                                     | Age, sex, smoking, other illicit drug use, education, parents mental disorder, baseline depression                             | Depression: a decrease in cannabis use was not predictive of a lower depressive score at follow-up: $\beta = -0.05$ (NS); an increase in cannabis also was not significantly associated with depressive score at follow-up: $\beta = 0.02$ (NS)                                                                                                               |
| Weeks and<br>Colman, <sup>57</sup><br>2017,<br>Canada <sup>b</sup>                   | 6788 | 14 to 15 | 16 to 17 | Frequency of use in the last year                                            | CBCL, CES-<br>D, <i>DSM-III</i>                                                                                                     | Depression at baseline,<br>SES, family dysfunction,<br>stressful life event,<br>chronic disease in child,<br>behavior problems | Suicide ideation, OR<br>(95% CI): 1.74 (1.16-<br>2.6)<br>Suicide attempt, OR<br>(95% CI): 1.87 (1.09-<br>3.22)                                                                                                                                                                                                                                                |
| Wilcox and Anthony, <sup>58</sup>                                                    | 1695 | 9 to 15  | 21       | Early users (younger than 16                                                 | Questionnaire and                                                                                                                   | Race, MDD at baseline, alcohol, tobacco and                                                                                    | Suicide ideation, RR (95% CI): 1.7 (0.9-2.9);                                                                                                                                                                                                                                                                                                                 |

| 2004,<br>United<br>States                                         |            |              |      | y) vs later users<br>(older than 16 y)     | standardized<br>interview<br>assessment | other illicit drugs use,<br>aggression, parental<br>psychiatric disturbance,<br>deviant peers                                                                          | females: 2.9 (1.4-6.1);<br>males: 1.1 (0.4-2.7)<br>Suicide attempt, RR<br>(95% CI): 1.8 (1.0-3.3);<br>females: 2.1 (0.9-4.7);<br>males: 2.3 (0.7-7.5)                                                                                                                                                                                              |
|-------------------------------------------------------------------|------------|--------------|------|--------------------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wilkinson et al, <sup>59</sup> 2016,<br>United<br>States          | 12 017     | 15 to 22     | 28   | Frequency of use in the last month         | CES-D                                   | Age, education (parents and participant), race, depression at baseline                                                                                                 | Depression: males, β (SE): 0.01 (0.01), NS; females, β (SE): 0.02 (0.01), NS                                                                                                                                                                                                                                                                       |
| Windle and<br>Wiesner, <sup>60</sup><br>2004,<br>United<br>States | 1205       | 15.5 to 23.5 | 23.5 | Frequency of use in the past 6 mo          | CES-D                                   | Alcohol use, friends'<br>alcohol and drug use,<br>delinquency, GPA,<br>depressive symptoms,<br>stressful life event,<br>perceived family support                       | Increased depression<br>prevalence in cannabis<br>increased group (30%)<br>compared with<br>nonusers (20%), NS                                                                                                                                                                                                                                     |
| Womack et<br>al, <sup>61</sup> 2016,<br>United<br>States          | 264<br>Men | 17           | 22   | Alcohol and drug consumption questionnaire | BDI-2                                   | Depression at baseline, education, SES, race, primary caregiver depressive symptoms, youth antisocial behavior, tobacco and alcohol use, youth IQ, adult court records | Depression at age 20 y and cannabis use at age 17 y, β (SE): 0.200 (0.140); cannabis use and depressive symptoms were concurrently significantly correlated; cannabis use predicted increases in later depressive symptoms but only among the mild-depression subsample; depressive symptoms predicted only slight increases in later cannabis use |

Abbreviations: BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; BSI, Beck Self-harm Inventory; CAPE, Community Assessment of Psychic Experiences; CDI, Children's Depression Inventory; CES-D, Center for Epidemiological Studies—Depression Questionnaire; CBCL, Child Behavior Checklist; CID, Clinical Interview for Depression; CIDI, Composite International Diagnostic Interview; CIS-R, Clinical Interview Schedule-Revised; DIS, Diagnostic Interview Schedule; DISC, Diagnostic Interview Schedule for Children; DSM, Diagnostic and Statistical Manual of Mental Disorders; GHQ-12, General Health Questionnaire-12; GPA, grade point average; HSCL, Hopkins Symptom Check List; ICD-10, International Statistical Classification of Diseases and Related Health Problems, Tenth Revision; K10, Kessler Psychological Distress Scale; MDD, major depressive disorder; MHI-5, 5-item Mental Health Inventory; NS, not significant; OR, odds ratio; RR, relative risk; SCID, Structured Clinical Interview for DSM; SCL-90, Symptom Checklist-90; SES, socioeconomic status; SF-36; 36-item Short-Form Health Survey Questionnaire; SPQ, Seattle

Personality Questionnaire; SUD, substance use disorder; SWLS, Satisfaction with Life Scale; WHO-MDI, World Health Organization Major Depressive Inventory.

<sup>a</sup>Selected Characteristics of the longitudinal prospective studies included in the systematic review and meta-analysis evaluating cannabis consumption in adolescence and evaluation of depression in young adulthood.

<sup>b</sup>Only studies with adjusted OR were considered for meta-analysis (n = 11).

eTable 2. Summary of full-articles reviewed, included or excluded in this systematic review and meta-analysis

| Bibliography                                                                                                                                                                                                                                                                                       | Should the article go on data extraction? | Reason for exclusion                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Agosti, Vito,Nunes, Edward,Levin, Frances</b> (2002). Rates of psychiatric comorbidity among U.S. residents with lifetime cannabis dependence <i>The American Journal of Drug and Alcohol Abuse</i> , 28(4), 643-652                                                                            | No                                        | No specific adolescent data                                                                                    |
| <b>Albertella, L., Norberg, M. M.</b> (2012). Mental health symptoms and their relationship to cannabis use in adolescents attending residential treatment <i>Journal of Psychoactive Drugs</i> , 44(5), 381-9                                                                                     | No                                        | Participants had depression at baseline                                                                        |
| Ali, Ola H. (2015). Association of Cannabis Use with Depressive Symptoms and Cardiovascular Diseases: A Cross Sectional Analysis #journal#, 10144860(#issue#), 63                                                                                                                                  | No                                        | Cross-sectional study                                                                                          |
| Allen, Jadie, Holder, Mark D. (2014). Marijuana use and well-being in university students <i>Journal of Happiness Studies</i> , 15(2), 301-321                                                                                                                                                     | No                                        | Retrospective study                                                                                            |
| Andrade, Tania Moraes Ramos, de Lima Argimon, Irani Iracema (2008). Depressive symptoms in young cannabis users <i>Psicologia em Estudo</i> , 13(3), 567-573                                                                                                                                       | No                                        | Systematic review                                                                                              |
| Andreasson, Sven (1990). Misuse of alcohol and cannabis among young men: A longitudinal study of health effects #journal#, C150076(#issue#), 152                                                                                                                                                   | No                                        | Depression outcomes are not available;<br>mostly schizophrenia researcher; also,<br>unable to access full text |
| <b>Anonymous,</b> (2016). [US study. Cannabis promotes addictions but not depressions] <i>MMW Fortschritte der Medizin</i> , 158(5), 8                                                                                                                                                             | No                                        | No abstract/ full text available, article in German                                                            |
| <b>Arendt, M.</b> (2004). Review: current evidence does not show a strong causal relation between the use of cannabis in young people and psychosocial harm <i>Evidence Based Mental Health</i> , 7(4), 119-119                                                                                    | No                                        | Review study                                                                                                   |
| Asarnow, J. R., Zeledon, L. R., D'Amico, E., LaBorde, A., Anderson, M., Avina, C., Arslanian, T., Do, M. C., Harwood, J., Shoptaw, S. (2014).  Depression and Health Risk Behaviors: Towards Optimizing Primary Care Service Strategies for Addressing Risk <i>Primary Health Care</i> , 4(1), 152 | No                                        | Retrospective study                                                                                            |
| Auslander, W. F., Thompson, R. G., Jr., Gerke, D. R. (2014). The Moderating Effect of Marijuana Use on the Relationship between Delinquent Behavior and HIV Risk among Adolescents in Foster Care <i>Journal of Hiv/Aids &amp; Social Services</i> , 13(2), 179-197                                | No                                        | Cross sectional study                                                                                          |

| Baggio, S.,Iglesias, K.,Deline, S.,Studer, J.,Henchoz, Y.,Mohler-Kuo, M., Gmel, G. (2015). Not in Education, Employment, or Training status among young Swiss men. Longitudinal associations with mental health and substance use <i>Journal of Adolescent Health</i> , 56(2), 238-43                          | No | Not related                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------------------------------------------------------------------------------------------------------|
| Baggio, S., Studer, J., Mohler-Kuo, M., Daeppen, J. B., Gmel, G. (2014).  Non-medical prescription drug and illicit street drug use among young Swiss men and associated mental health issues <i>International Journal of Adolescent Medicine &amp; Health</i> , 26(4), 525-30                                 | No | Cross sectional study, no adolescent information                                                                               |
| Bannink, R.,Broeren, S.,Heydelberg, J.,van't Klooster, E.,Raat, H. (2015). Depressive symptoms and clustering of risk behaviours among adolescents and young adults attending vocational education: a cross-sectional study <i>BMC Public Health</i> , 15(#issue#), 396                                        | No | Cross-sectional study                                                                                                          |
| <b>Beaubrun, N. H.,Knight, F.</b> (1973). Psychiatric assessment of 30 chronic users of cannabis and 30 matched controls <i>American journal of psychiatry</i> , 130(3), 309-311                                                                                                                               | No | No adolescent information                                                                                                      |
| <b>Beautrais, A. L., Joyce, P. R., Mulder, R. T.</b> (1999). Cannabis abuse and serious suicide attempts <i>Addiction</i> , 94(8), 1155-64                                                                                                                                                                     | No | Adolescence cannabis use information is missing                                                                                |
| Bechtold, J.,Simpson, T.,White, H. R.,Pardini, D. (2015). Chronic adolescent marijuana use as a risk factor for physical and mental health problems in young adult men.[Erratum appears in Psychol Addict Behav. 2015 Dec;29(4):ix-x; PMID: 26727010] <i>Psychology of Addictive Behaviors</i> , 29(3), 552-63 | No | One category of mood disorder (i.e., major depressive episode, dysthymic disorder, manic episode, hypomania, bipolar disorder) |
| Beck, K. H., Caldeira, K. M., Vincent, K. B., O'Grady, K. E., Wish, E. D., Arria, A. M. (2009). The social context of cannabis use: relationship to cannabis use disorders and depressive symptoms among college students <i>Addictive Behaviors</i> , 34(9), 764-8                                            | No | Depression is not the primary outcome                                                                                          |
| <b>Benda, Brent B., Corwyn, Robert Flynn</b> (1998). Adolescent deviant behavior: Multiple contingency table analyses of overlap between behaviors <i>Journal of Social Service Research</i> , 24(1-2), 29-59                                                                                                  | No | No depressive outcomes                                                                                                         |
| <b>Benner, A. D., Wang, Y.</b> (2015). Adolescent substance use: The role of demographic marginalization and socioemotional distress <i>Developmental Psychology</i> , 51(8), 1086-97                                                                                                                          | No | Depression is not the primary outcome                                                                                          |
| Blanco, C., Hasin, D. S., Wall, M. M., Florez-Salamanca, L., Hoertel, N., Wang, S., Kerridge, B. T., Olfson, M. (2016). Cannabis Use and Risk of Psychiatric Disorders: Prospective Evidence From a US National Longitudinal Study JAMA Psychiatry, 73(4), 388-95                                              | No | We don't have the age                                                                                                          |

| Bogart, Laura M., Collins, Rebecca L., Ellickson, Phyllis L., Klein, David J. (2007). Are adolescent substance users less satisfied with life as young adults and if so, why? Social Indicators Research, 81(1), 149-169                                                                                              | No | Depression is not the primary outcome of this study                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------|
| Bonn-Miller, Marcel O., Zvolensky, Michael J., Leen-Feldner, Ellen W., Feldner, Matthew T., Yartz, Andrew R. (2005). Marijuana Use Among Daily Tobacco Smokers: Relationship to Anxiety-Related Factors Journal of Psychopathology and Behavioral Assessment, 27(4), 279-289                                          | No | Not longitudinal                                                                |
| Borges, Guilherme, Bagge, Courtney L., Orozco, Ricardo (2016). A literature review and meta-analyses of cannabis use and suicidality <i>Journal of Affective Disorders</i> , 195(#issue#), 63-74                                                                                                                      | No | Review and systematic meta-analysis on suicidality and cannabis in adolescents. |
| <b>Bovasso, G. B.</b> (2001). Cannabis abuse as a risk factor for depressive symptoms <i>American Journal of Psychiatry</i> , 158(12), 2033-7                                                                                                                                                                         | No | No adolescent information                                                       |
| Bowes, L., Chollet, A., Fombonne, E., Galera, C., Melchior, M. (2013). Lifecourse SEP and tobacco and cannabis use <i>European Journal of Public Health</i> , 23(2), 322-7                                                                                                                                            | No | No depressive symptom outcomes                                                  |
| <b>Boyle, M. H.,Offord, D. R.</b> (1991). Psychiatric disorder and substance use in adolescence <i>Canadian Journal of Psychiatry - Revue Canadienne de Psychiatrie</i> , 36(10), 699-705                                                                                                                             | No | Cross-sectional study                                                           |
| Boyle, M. H.,Offord, D. R.,Racine, Y. A.,Szatmari, P.,Fleming, J. E.,Links, P. S. (1992). Predicting substance use in late adolescence: results from the Ontario Child Health Study follow-up <i>American Journal of Psychiatry</i> , 149(6), 761-7                                                                   | No | Depression and anxiety feelings combined under emotional issues                 |
| Boys, A.,Farrell, M.,Taylor, C.,Marsden, J.,Goodman, R.,Brugha, T., Bebbington, P.,Jenkins, R.,Meltzer, H. (2003). Psychiatric morbidity and substance use in young people aged 13-15 years: Results from the Child and Adolescent Survey of Mental Health <i>The British Journal of Psychiatry</i> , 182(6), 509-517 | No | No young adulthood outcomes                                                     |
| <b>Brand, Michael W.</b> (1993). A structural equation model of family-life variables in the etiology and progression of substance abuse and the development of problem behaviors among public school adolescents in Abilene, Texas #journal#, 9328478(#issue#), 212                                                  | No | Cross sectional study                                                           |
| Brook, J. S., Lee, J. Y., Rubenstone, E., Brook, D. W., Finch, S. J. (2014). Triple comorbid trajectories of tobacco, alcohol, and marijuana use as predictors of antisocial personality disorder and generalized anxiety disorder among urban adults <i>American Journal of Public Health</i> , 104(8), 1413-20      | No | Does not assess depression                                                      |
| Brook, J. S., Zhang, C., Rubenstone, E., Primack, B. A., Brook, D. W. (2016). Comorbid trajectories of substance use as predictors of Antisocial                                                                                                                                                                      | No | Looks at comorbid cigarette, alcohol, and marijuana                             |

| Personality Disorder, Major Depressive Episode, and Generalized Anxiety Disorder Addictive Behaviors, 62(#issue#), 114-21                                                                                                                                              |    |                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------|
| <b>Brook, Judith S.,Rosen, Zohn,Brook, David W.</b> (2001). The effect of early marijuana use on later anxiety and depressive symptoms <i>NYS Psychologist</i> , 13(1), 35-40                                                                                          | No | No full text available                          |
| Buckner, Julia D., Ecker, Anthony H., Cohen, Alex S. (2010). Mental health problems and interest in marijuana treatment among marijuana-using college students <i>Addictive Behaviors</i> , 35(9), 826-833                                                             | No | Not longitudinal, no adolescent information     |
| Buckner, Julia D., Joiner, Thomas E., Jr., Schmidt, Norman B., Zvolensky, Michael J. (2012). Daily marijuana use and suicidality: The unique impact of social anxiety <i>Addictive Behaviors</i> , 37(4), 387-392                                                      | No | No adolescent outcomes                          |
| Cairns, K. E., Yap, M. B., Pilkington, P. D., Jorm, A. F. (2014). Risk and protective factors for depression that adolescents can modify: a systematic review and meta-analysis of longitudinal studies <i>Journal of Affective Disorders</i> , 169(#issue#), 61-75    | No | Review study                                    |
| Campbell, C. I., Sterling, S., Chi, F. W., Kline-Simon, A. H. (2016). Marijuana use and service utilization among adolescents 7 years post substance use treatment <i>Drug &amp; Alcohol Dependence</i> , 168(#issue#), 1-7                                            | No | Participants had depression/anxiety at baseline |
| Caroti, E., Fonzi, L., Marconi, D., Bersani, G. (2007). Cannabis and depression. [Italian] <i>Rivista di Psichiatria</i> , 42(1), 8-16                                                                                                                                 | No | Review study                                    |
| Caroti, E., Marconi, D., Bersani, G., Pancheri, P. (2007). Cannabis use and symptomatological profile in depressive patients. [Italian] <i>Italian Journal of Psychopathology</i> , 13(3), 394-397                                                                     | No | No adolescent information                       |
| Caspers, K. M., Yucuis, R., McKirgan, L. M., Spinks, R., Arndt, S. (2009). Lifetime substance misuse and 5-year incidence rates of emergent health problems among middle-aged adults <i>Journal of Addictive Diseases</i> , 28(4), 320-31                              | No | No adolescent or young adult information        |
| <b>Chabrol</b> , <b>H.</b> , <b>Mabila</b> , <b>J. D.</b> , <b>Chauchard</b> , <b>E.</b> (2008). Influence of cannabis use on suicidal ideations among 491 high-school students. [French] <i>Encephale</i> , 34(3), 270-273                                            | No | Not longitudinal                                |
| Chabrol, Henri, Chauchard, Emeline, Girabet, Jennifer (2008). Cannabis use and suicidal behaviours in high-school students <i>Addictive Behaviors</i> , 33(1), 152-155                                                                                                 | No | No longitudinal                                 |
| Chabrol, Henri, Duconge, Emmanuelle, Casas, Carine, Roura, Charlotte, Carey, Kate B. (2005). Relations between cannabis use and dependence, motives for cannabis use and anxious, depressive and borderline symptomatology <i>Addictive Behaviors</i> , 30(4), 829-840 | No | Not longitudinal                                |

| <b>Chabrol</b> , <b>Henri</b> , <b>Melioli</b> , <b>Tiffany</b> , <b>Goutaudier</b> , <b>Nelly</b> (2014). Cannabis use and suicidal ideations in high-school students <i>Addictive Behaviors</i> , 39(12), 1766-1768                                                                                                              | No | Not longitudinal                                                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------------------------------------------------------------------------------------------------------------|
| Chadwick, B., Miller, M. L., Hurd, Y. L. (2013). Cannabis Use during Adolescent Development: Susceptibility to Psychiatric Illness Frontiers in psychiatry Frontiers Research Foundation, 4(#issue#), 129                                                                                                                          | No | Review study                                                                                                                         |
| Chaudhury, S., Sudarsanan, S., Salujha, S. K., Srivastava, K. (2005). Cannabis use in psychiatric patients <i>Medical Journal Armed Forces India</i> , 61(2), 117-120                                                                                                                                                              | No | No adolescent information                                                                                                            |
| Chen, C. Y., Wagner, F. A., Anthony, J. C. (2002). Marijuana use and the risk of Major Depressive Episode. Epidemiological evidence from the United States National Comorbidity Survey Social Psychiatry and Psychiatric Epidemiology, 37(5), 199-206                                                                              | No | Not longitudinal                                                                                                                     |
| Cheung, Joyce T., Mann, Robert E., Ialomiteanu, Anca, Stoduto, Gina, Chan, Vincy, Ala-Leppilampi, Kari, Rehm, Jurgen (2010). Anxiety and mood disorders and cannabis use <i>The American Journal of Drug and Alcohol Abuse</i> , 36(2), 118-122                                                                                    | No | No adolescent information                                                                                                            |
| Choi, Namkee G., DiNitto, Diana M., Marti, C., Choi, Bryan Y. (2016). Relationship between marijuana and other illicit drug use and depression/suicidal thoughts among late middle-aged and older adults <i>International Psychogeriatrics</i> , 28(4), 577-589                                                                    | No | No adolescent information                                                                                                            |
| Clarke, M. C., Coughlan, H., Harley, M., Connor, D., Power, E., Lynch, F., & Cannon, M. (2014). The impact of adolescent cannabis use, mood disorder and lack of education on attempted suicide in young adulthood. <i>World psychiatry</i> , 13(3), 322-323.                                                                      | No | No longitudinal prospective cohort. Only adolescents at risk were selected and underwent specific psychiatric interviews and scales. |
| Clough, Alan R.,d'Abbs, Peter, Cairney, Sheree, Gray, Dennis, Maruff, Paul, Parker, Robert, O'Reilly, Bridie (2005). Adverse mental health effects of cannabis use in two indigenous communities in Arnhem Land, Northern Territory, Australia: Exploratory study Australian and New Zealand Journal of Psychiatry, 39(7), 612-620 | No | Not longitudinal                                                                                                                     |
| Coffey, C., Patton, G. C. (2016). Cannabis Use in Adolescence and Young Adulthood: A Review of Findings from the Victorian Adolescent Health Cohort Study Canadian Journal of Psychiatry - Revue Canadienne de Psychiatrie, 61(6), 318-27                                                                                          | No | They used the same cohort and report the same OR as Degenhardt et al., 2013                                                          |
| <b>Copeland, J.,Rooke, S.,Swift, W.</b> (2013). Changes in cannabis use among young people: impact on mental health <i>Current Opinion in Psychiatry</i> , 26(4), 325-9                                                                                                                                                            | No | Review study                                                                                                                         |

| Cornelius, Jack R., Clark, Duncan B. (2008). Depressive disorders and adolescent substance use disorders Adolescent substance abuse:  Psychiatric comorbidity and high-risk behaviors, #volume#(#issue#), 221-242                                                                                                                                            | No | Review study                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------------------------------------------------------|
| Cougle, J. R., Hakes, J. K., Macatee, R. J., Chavarria, J., Zvolensky, M. J. (2015). Quality of life and risk of psychiatric disorders among regular users of alcohol, nicotine, and cannabis: An analysis of the National Epidemiological Survey on Alcohol and Related Conditions (NESARC) <i>Journal of Psychiatric Research</i> , 66-67(#issue#), 135-41 | No | Dysthymia and major depressive episode diagnoses were grouped together                                                             |
| Crane, N. A., Langenecker, S. A., Mermelstein, R. J. (2015). Gender differences in the associations among marijuana use, cigarette use, and symptoms of depression during adolescence and young adulthood <i>Addictive Behaviors</i> , 49(#issue#), 33-9                                                                                                     | No | Frequency of cannabis use was considered as dependent variable (outcome), i.e. They looked at effect of depression on cannabis use |
| Cuenca-Royo, A. M., Torrens, M., Sanchez-Niubo, A., Suelves, J. M., Domingo-Salvany, A. (2013). Psychiatric morbidity among young-adults cannabis users <i>Adicciones</i> , 25(1), 45-53                                                                                                                                                                     | No | Cross-sectional study                                                                                                              |
| Dakwar, Elias, Nunes, Edward V., Bisaga, Adam, Carpenter, Kenneth C., Mariani, John P., Sullivan, Maria A., Raby, Wilfrid N., Levin, Frances R. (2011). A comparison of independent depression and substance-induced depression in cannabis-, cocaine-, and opioid-dependent treatment seekers <i>The American Journal on Addictions</i> , 20(5), 441-446    | No | Age of onset is listed but no analysis of our research question                                                                    |
| Danielsson, A. K., Falkstedt, D., Hemmingsson, T., Allebeck, P., Agardh, E. (2015). Cannabis use among Swedish men in adolescence and the risk of adverse life course outcomes: results from a 20 year-follow-up study <i>Addiction</i> , 110(11), 1794-802                                                                                                  | No | No depression outcomes analyzed                                                                                                    |
| Danielsson, A. K., Lundin, A., Agardh, E., Allebeck, P., Forsell, Y. (2016). Cannabis use, depression and anxiety: A 3-year prospective population-based study <i>Journal of Affective Disorders</i> , 193(#issue#), 103-8                                                                                                                                   | No | No adolescent or young adult information                                                                                           |
| <b>Danielsson, A. K., Lundin, A., Allebeck, P., Agardh, E.</b> (2016). Cannabis use and psychological distress: An 8-year prospective population-based study among Swedish men and women <i>Addictive Behaviors</i> , 59(#issue#), 18-23                                                                                                                     | No | No adolescence data                                                                                                                |
| De Genna, N. M., Cornelius, M. D., Goldschmidt, L., Day, N. L. (2015).<br>Maternal age and trajectories of cannabis use <i>Drug &amp; Alcohol Dependence</i> , 156(#issue#), 199-206                                                                                                                                                                         | No | Age range 13-42 combined in one group                                                                                              |
| de Graaf, R.,Radovanovic, M.,van Laar, M.,Fairman, B.,Degenhardt, L.,<br>Aguilar-Gaxiola, S.,Bruffaerts, R.,de Girolamo, G.,Fayyad, J.,Gureje, O.,<br>Haro, J. M.,Huang, Y.,Kostychenko, S.,Lepine, J. P.,Matschinger, H.,<br>Mora, M. E.,Neumark, Y.,Ormel, J.,Posada-Villa, J.,Stein, D. J.,                                                               | No | Cross-sectional study                                                                                                              |

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| <b>Tachimori, H.,Wells, J. E.,Anthony, J. C.</b> (2010). Early cannabis use and estimated risk of later onset of depression spells: Epidemiologic evidence from the population-based World Health Organization World Mental Health Survey Initiative <i>American Journal of Epidemiology</i> , 172(2), 149-59                                                      |    |                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>De Moja, C. A.</b> (1992). Longitudinal survey of anxiety and depression in drug users and addicts <i>Psychological Reports</i> , 70(3 Pt 1), 738                                                                                                                                                                                                               | No | No adolescent information                                                                                                                                             |
| <b>Degenhardt, L.,Hall, W.,Lynskey, M.</b> (2001). Alcohol, cannabis and tobacco use among Australians: a comparison of their associations with other drug use and use disorders, affective and anxiety disorders, and psychosis <i>Addiction</i> , 96(11), 1603-14                                                                                                | No | No adolescent information                                                                                                                                             |
| <b>Degenhardt, L.,Hall, W.,Lynskey, M.</b> (2001). The relationship between cannabis use, depression and anxiety among Australian adults: Findings from the National Survey of Mental Health and Well-Being Social Psychiatry and Psychiatric Epidemiology, 36(5), 219-227                                                                                         | No | Not longitudinal; no adolescent information                                                                                                                           |
| <b>Degenhardt</b> , <b>L.,Hall</b> , <b>W.,Lynskey</b> , <b>M.</b> (2003). Exploring the association between cannabis use and depression <i>Addiction</i> , 98(11), 1493-504                                                                                                                                                                                       | No | Review study                                                                                                                                                          |
| Degenhardt, L.,Tennant, C.,Gilmour, S.,Schofield, D.,Nash, L.,Hall, W., McKay, D. (2007). The temporal dynamics of relationships between cannabis, psychosis and depression among young adults with psychotic disorders: findings from a 10-month prospective study <i>Psychological Medicine</i> , 37(7), 927-34                                                  | No | Studied patients with schizophrenia or psychotic disorder at baseline. No adolescent information.                                                                     |
| Degenhardt, Louisa, Hall, Wayne, Lynskey, Michael, Coffey, Carolyn, Patton, George (2004). The association between cannabis use and depression: A review of the evidence <i>Marijuana and madness: Psychiatry and neurobiology</i> , #volume#(#issue#), 54-74                                                                                                      | No | Review study                                                                                                                                                          |
| Delforterie, M.,Lynskey, M.,Huizink, A.,Creemers, H.,Grant, J.,Few, L., Glowinski, A.,Statham, D.,Trull, T.,Bucholz, K.,Madden, P.,Martin, N., Heath, A.,Agrawal, A. (2015). The relationship between cannabis involvement and suicidal thoughts and behaviors <i>Drug and Alcohol Dependence</i> , 150(#issue#), 98-104                                           | No | Not longitudinal                                                                                                                                                      |
| Dembo, R.,Williams, L.,La Voie, L.,Getreu, A.,Berry, E.,Genung, L., Schmeidler, J.,Wish, E. D.,Kern, J. (1990). A longitudinal study of the relationships among alcohol use, marijuana/hashish use, cocaine use, and emotional/psychological functioning problems in a cohort of high-risk youths <i>International Journal of the Addictions</i> , 25(11), 1341-82 | No | The psychiatric outcome was listed as "emotional/psychological functioning" which could include a lot of things E.g. Psychosis, anxiety, depression, antisocial, etc. |
| <b>Dembo, R.,Williams, L.,Schmeidler, J.,Wothke, W.</b> (1993). A longitudinal study of the predictors of the adverse effects of alcohol and marijuana/hashish use among a cohort of high risk youths <i>International Journal of the Addictions</i> , 28(11), 1045-83                                                                                             | No | Depression is not the primary outcome of this study                                                                                                                   |

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| <b>Denson, T. F., Earleywine, M.</b> (2006). Decreased depression in marijuana users <i>Addictive Behaviors</i> , 31(4), 738-742                                                                                                                                      | No | No adolescent information; cross-<br>sectional study                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------|
| <b>Dervaux</b> , <b>A.,Krebs</b> , <b>M. O.,Laqueille</b> , <b>X.</b> (2015). [Cannabis-induced cognitive and psychiatric disorders] <i>Bulletin de l Academie Nationale de Medecine</i> , 198(3), 559-74; discussion 575-7                                           | No | Review on psychosis                                                                |
| Diamond, G., Panichelli-Mindel, S. M., Shera, D., Dennis, M., Tims, F., Ungemack, J. (2006). Psychiatric syndromes in adolescents with marijuana abuse and dependency in outpatient treatment <i>Journal of Child &amp; Adolescent Substance Abuse</i> , 15(4), 37-54 | No | Cross-sectional study, not relevant                                                |
| <b>Dorard, G.,Berthoz, S.,Phan, O.,Corcos, M.,Bungener, C.</b> (2008). Affect dysregulation in cannabis abusers: a study in adolescents and young adults <i>European Child &amp; Adolescent Psychiatry</i> , 17(5), 274-82                                            | No | Cross-sectional study                                                              |
| du Roscoat, E.,Legleye, S.,Guignard, R.,Husky, M.,Beck, F. (2016). Risk factors for suicide attempts and hospitalizations in a sample of 39,542 French adolescents <i>Journal of Affective Disorders</i> , 190(#issue#), 517-21                                       | No | Cross-sectional study                                                              |
| <b>Duddle, M.</b> (1973). Drug taking amongst emotionally disturbed university students <i>British Journal of Addiction</i> , 68(2), 166-169                                                                                                                          | No | No adolescent information                                                          |
| Durdle, Heather, Lundahl, Leslie H., Johanson, Chris-Ellyn, Tancer, Manuel (2008). Major depression: The relative contribution of gender, MDMA, and cannabis use <i>Depression and Anxiety</i> , 25(3), 241-247                                                       | No | Users were MDMA users                                                              |
| <b>EI-Mallakh</b> , <b>Rif S.,Brown</b> , <b>Carl</b> (2007). The effect of extreme marijuana use on the long-term course of bipolar I illness: A single case study <i>Journal of Psychoactive Drugs</i> , 39(2), 201-202                                             | No | Case study                                                                         |
| Elgin, Jenna E. (2014). Examining the Relationships Between Suicidal Ideation, Substance Use, Depressive Symptoms, and Educational Factors in Emerging Adulthood #journal#, 3631748(#issue#), 114                                                                     | No | Cannabis use was not measured in adolescence                                       |
| Elkington, K. S., Cruz, J. E., Warne, P., Santamaria, E. K., Dolezal, C., Mellins, C. A. (2016). Marijuana Use and Psychiatric Disorders in Perinatally HIV-Exposed Youth: Does HIV Matter? <i>Journal of Pediatric Psychology</i> , 41(3), 277-86                    | No | All subjects in study were exposed to a risk factor (mom had HIV during pregnancy) |
| <b>Everett Jones, S.,Lollar, D. J.</b> (2008). Relationship between physical disabilities or long-term health problems and health risk behaviors or conditions among US high school students <i>Journal of School Health</i> , 78(5), 252-7; quiz 298-9               | No | Only assessed current cannabis use                                                 |
| <b>Fairman, B. J., Anthony, J. C.</b> (2012). Are early-onset cannabis smokers at an increased risk of depression spells? <i>Journal of Affective Disorders</i> , 138(1-2), 54-62                                                                                     | No | Retrospective study                                                                |

| Farmer, R. F., Kosty, D. B., Seeley, J. R., Duncan, S. C., Lynskey, M. T., Rohde, P., Klein, D. N., Lewinsohn, P. M. (2015). Natural course of cannabis use disorders <i>Psychological Medicine</i> , 45(1), 63-72                                                                                                                     | No | Not about depression                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------------------------------------------------------------------------|
| Farmer, Richard F.,Kosty, Derek B.,Seeley, John R.,Gau, Jeff M., Duncan, Susan C.,Walker, Denise D.,Lewinsohn, Peter M. (2016). Association of comorbid psychopathology with the duration of cannabis use disorders <i>Psychology of Addictive Behaviors</i> , 30(1), 82-92                                                            | No | Does not really analyze depression                                                               |
| Federman, E. B., Costello, E. J., Angold, A., Farmer, E. M., Erkanli, A. (1997). Development of substance use and psychiatric comorbidity in an epidemiologic study of white and American Indian young adolescents the Great Smoky Mountains Study <i>Drug &amp; Alcohol Dependence</i> , 44(2-3), 69-78                               | No | Use of marijuana and/or other illicit drugs<br>Cannabis and other illicit drugs were<br>combined |
| <b>Feingold, D., Weiser, M., Rehm, J., Lev-Ran, S.</b> (2015). The association between cannabis use and mood disorders: A longitudinal study <i>Journal of Affective Disorders</i> , 172(#issue#), 211-8                                                                                                                               | No | No adolescence data                                                                              |
| <b>Feingold, D., Weiser, M., Rehm, J., Lev-Ran, S.</b> (2016). The association between cannabis use and anxiety disorders: Results from a population-based representative sample <i>European Neuropsychopharmacology</i> , 26(3), 493-505                                                                                              | No | Depression is not the primary outcome of this study                                              |
| <b>Fergusson, D. M.,Boden, J. M.</b> (2008). Cannabis use and later life outcomes <i>Addiction</i> , 103(6), 969-76; discussion 977-8                                                                                                                                                                                                  | No | Depression is not the primary outcome of study                                                   |
| Fergusson, David, Boden, Joseph, Horwood, L., Fergusson, David M., Boden, Joseph M., Horwood, L. John (2015). Psychosocial sequelae of cannabis use and implications for policy: findings from the Christchurch Health and Development Study Social Psychiatry & Psychiatric Epidemiology, 50(9), 1317-1326                            | No | Not related                                                                                      |
| Fidalgo, T. M., Sanchez, Z. M., Caetano, S. C., Maia, L. O., Carlini, E. A., Martins, S. S. (2016). The association of psychiatric symptomatology with patterns of alcohol, tobacco, and marijuana use among Brazilian high school students <i>American Journal on Addictions</i> , 25(5), 416-25                                      | No | Cross-sectional study                                                                            |
| Fischer, Benedikt, Dawe, Meghan, McGuire, Fraser, Shuper, Paul A., Jones, Wayne, Rudzinski, Katherine, Rehm, Jurgen (2012). Characteristics and predictors of health problems from use among high-frequency cannabis users in a Canadian university student population <i>Drugs: Education, Prevention &amp; Policy</i> , 19(1), 49-58 | No | Not longitudinal                                                                                 |
| Foster, K. T.,Li, N.,McClure, E. A.,Sonne, S. C.,Gray, K. M. (2016). Gender Differences in Internalizing Symptoms and Suicide Risk Among Men and Women Seeking Treatment for Cannabis Use Disorder from Late Adolescence to Middle Adulthood <i>Journal of Substance Abuse Treatment</i> , 66(#issue#), 16-22                          | No | Cross-sectional study                                                                            |

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| Freeman, T. P., Morgan, C. J. A., Schafer, G., Curran, H. V. (2009). Acute and chronic effects of naturalistically smoked cannabis on depression and anxiety <i>European Neuropsychopharmacology</i> , 19(#issue#), S376                                                                                   | No | No adolescent information                                                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Freeman, Tom P., Mokrysz, Claire, Curran, H. (2014). Rethinking dose-<br>response effects of cannabis use in adolescence <i>The Lancet Psychiatry</i> ,<br>1(6), 416                                                                                                                                       | No | Correspondence                                                                                                                                  |
| Friedman, A. S., Terras, A., Zhu, W., McCallum, J. (2004). Depression, negative self-image, and suicidal attempts as effects of substance use and substance dependence <i>Journal of Addictive Diseases</i> , 23(4), 55-71                                                                                 | No | No information from adolescence.                                                                                                                |
| Gage, S.,Hickman, M.,Heron, J.,Munafo, M.,Zammit, S. (2012). Cannabis use and psychotic experiences in UK teenagers - A longitudinal study European Neuropsychopharmacology, 22(#issue#), S315                                                                                                             | No | No depression information                                                                                                                       |
| <b>Gage, Suzanne H.</b> (2014). Investigating associations of cannabis and cigarette use with mental health outcomes #journal#, 10136547(#issue#), #Pages#                                                                                                                                                 | No | Thesis, full text not found. However, the article published in 2015 related to this thesis is included in our meta analysis (Gage et al, 2015). |
| <b>Gilder, David A., Ehlers, Cindy L.</b> (2012). Depression symptoms associated with cannabis dependence in an adolescent American Indian community sample <i>The American Journal on Addictions</i> , 21(6), 536-543                                                                                     | No | Not longitudinal                                                                                                                                |
| Gilder, David A., Lau, Philip, Dixon, Michelle, Corey, Linda, Phillips, Evelyn, Ehlers, Cindy L. (2006). Co-morbidity of select anxiety, affective, and psychotic disorders with cannabis dependence in Southwest California Indians Journal of Addictive Diseases, 25(4), 67-79                           | No | Not adolescent data                                                                                                                             |
| Goldschmidt, L.,Richardson, G. A.,Cornelius, M. D.,Day, N. L. (2004).  Prenatal marijuana and alcohol exposure and academic achievement at age 10 Neurotoxicology & Teratology, 26(4), 521-32                                                                                                              | No | Prenatal marijuana exposure                                                                                                                     |
| Gonzalez-Ortega, I., Alberich, S., Echeburua, E., Aizpuru, F., Millan, E., Vieta, E., Matute, C., Gonzalez-Pinto, A. (2015). Subclinical depressive symptoms and continued cannabis use: predictors of negative outcomes in first episode psychosis <i>PLoS ONE</i> [Electronic Resource], 10(4), e0123707 | No | Not related                                                                                                                                     |
| <b>Grant, B. F.</b> (1995). Comorbidity between DSM-IV drug use disorders and major depression: results of a national survey of adults <i>Journal of Substance Abuse</i> , 7(4), 481-97                                                                                                                    | No | Retrospective study, not longitudinal                                                                                                           |
| <b>Grant, Sean, Pedersen, Eric R., Neighbors, Clayton</b> (2016). Associations of posttraumatic stress disorder symptoms with marijuana and synthetic cannabis use among young adult U.S. veterans: A pilot investigation <i>Journal of Studies on Alcohol and Drugs</i> , 77(3), 509-514                  | No | Not depression, PTSD; not longitudinal                                                                                                          |

| Gray, K. A., Day, N. L., Leech, S., Richardson, G. A. (2005). Prenatal marijuana exposure: effect on child depressive symptoms at ten years of age <i>Neurotoxicology &amp; Teratology</i> , 27(3), 439-48                                                                     | No | Looks at prenatal marijuana exposure                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------------------------------------------------------------------------|
| <b>Grebot, Elisabeth, Dardard, Julien, Briet, Gaetan</b> (2016). Early maladaptive schemas, addictive beliefs and defensive styles among student cannabis users <i>Annales Medico-Psychologiques</i> , 174(2), 93-99                                                           | No | No adolescent information                                                                        |
| Green, Brian E.,Ritter, Christian (2000). Marijuana use and depression<br>Journal of Health and Social Behavior, 41(1), 40-49                                                                                                                                                  | No | No adolescents information                                                                       |
| <b>Green, K. M.,Zebrak, K. A.,Fothergill, K. E.,Robertson, J. A.,Ensminger, M. E.</b> (2012). Childhood and adolescent risk factors for comorbid depression and substance use disorders in adulthood <i>Addictive Behaviors</i> , 37(11), 1240-7                               | No | They had only retrospective reports on the onset of substance use (adolescence data on cannabis) |
| Green, K. M., Zebrak, K. A., Robertson, J. A., Fothergill, K. E., Ensminger, M. E. (2012). Interrelationship of substance use and psychological distress over the life course among a cohort of urban African Americans <i>Drug and Alcohol Dependence</i> , 123(1-3), 239-248 | No | No explicit cannabis information                                                                 |
| <b>Grella, Christine E.,Rodriguez, Luz,Kim, Tina</b> (2014). Patterns of medical marijuana use among individuals sampled from medical marijuana dispensaries in Los Angeles <i>Journal of Psychoactive Drugs</i> , 46(4), 263-272                                              | No | No adolescent data, not longitudinal                                                             |
| <b>Gruber, A. J.,Pope, H. G., Jr.,Oliva, P.</b> (1997). Very long-term users of marijuana in the United States: a pilot study <i>Substance Use &amp; Misuse</i> , 32(3), 249-64                                                                                                | No | No adolescent information                                                                        |
| Gruber, A. J., Pope, H. G., Hudson, J. I., Yurgelun-Todd, D. (2003). Attributes of long-term heavy cannabis users: a case-control study Psychological Medicine, 33(8), 1415-22                                                                                                 | No | No information about use during adolescence                                                      |
| <b>Grunberg, V. A., Cordova, K. A., Bidwell, L. C., Ito, T. A.</b> (2015). Can marijuana make it better? Prospective effects of marijuana and temperament on risk for anxiety and depression <i>Psychology of Addictive Behaviors</i> , 29(3), 590-602                         | No | Cannabis use was not measured during adolescence                                                 |
| Hale, Kimberly R. (2013). Predictive factors of suicidal ideation and suicide planning among U.S. high school students: Logistic regression analyses of 2011 YRBS data #journal#, 3616057(#issue#), 125                                                                        | No | No adult outcomes                                                                                |
| Halikas, J. A., Goodwin, D. W., Guze, S. B. (1972). Marihuana use and psychiatric illness <i>Archives of General Psychiatry</i> , 27(2), 162-165                                                                                                                               | No | No adolescent information                                                                        |
| Hall, W. (1997). "Long-term cannabis use and mental health": Reply <i>The British Journal of Psychiatry</i> , 171(#issue#), 584-585                                                                                                                                            | No | Commentary                                                                                       |
| Hallfors, D. D., Waller, M. W., Ford, C. A., Halpern, C. T., Brodish, P. H., Iritani, B. (2004). Adolescent depression and suicide risk: association with                                                                                                                      | No | Cross-sectional study                                                                            |

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| sex and drug behavior American Journal of Preventive Medicine, 27(3), 224-31                                                                                                                                                                                                                                          |    |                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------------------------------------------------------------------|
| Harder, V. S., Morral, A. R., Arkes, J. (2006). Marijuana use and depression among adults: Testing for causal associations <i>Addiction</i> , 101(10), 1463-72                                                                                                                                                        | No | Participants were adults at baseline, older than 25                 |
| Harder, V. S., Stuart, E. A., Anthony, J. C. (2008). Adolescent cannabis problems and young adult depression: male-female stratified propensity score analyses <i>American Journal of Epidemiology</i> , 168(6), 592-601                                                                                              | No | Retrospective                                                       |
| Hayatbakhsh, M. R., Najman, J. M., Jamrozik, K., Mamun, A. A., Alati, R., Bor, W. (2007). Cannabis and anxiety and depression in young adults: a large prospective study <i>Journal of the American Academy of Child &amp; Adolescent Psychiatry</i> , 46(3), 408-17                                                  | No | Consumption of cannabis was retrospectively assessed at the 21-year |
| Henchoz, Y., Ngoran, A. A., Baggio, S., Deline, S., Studer, J., Gmel, G. (2016). Associations of age at cannabis first use and later substance abuse with mental health and depression in young men <i>Journal of Substance Use</i> , 21(1), 85-91                                                                    | No | Cannabis use information was collected retrospectively              |
| Hines, L. A., Morley, K. I., Strang, J., Agrawal, A., Nelson, E. C., Statham, D., Martin, N. G., Lynskey, M. T. (2016). Onset of opportunity to use cannabis and progression from opportunity to dependence: Are influences consistent across transitions? <i>Drug &amp; Alcohol Dependence</i> , 160(#issue#), 57-64 | No | Looks at effect of depression on cannabis dependence                |
| <b>Hooshmand, S.,Willoughby, T.,Good, M.</b> (2012). Does the direction of effects in the association between depressive symptoms and health-risk behaviors differ by behavior? A longitudinal study across the high school years <i>Journal of Adolescent Health</i> , 50(2), 140-7                                  | No | Looked at effect of depression on cannabis use                      |
| Horwood, L. J., Fergusson, D. M., Coffey, C., Patton, G. C., Tait, R., Smart, D., Letcher, P., Silins, E., Hutchinson, D. M. (2012). Cannabis and depression: an integrative data analysis of four Australasian cohorts <i>Drug &amp; Alcohol Dependence</i> , 126(3), 369-78                                         | No | Not adjusted for baseline depression                                |
| Huang, D. Y., Lanza, H. I., Murphy, D. A., Hser, Y. I. (2012). Parallel Development of Risk Behaviors in Adolescence: Potential Pathways to Cooccurrence International Journal of Behavioral Development, 36(4), 247-257                                                                                              | No | No adjustment for depression at baseline                            |
| Huas, Caroline, Hassler, Christine, Choquet, Marie (2008). Has occasional cannabis use among adolescents also to be considered as a risk marker?<br>European Journal of Public Health, 18(6), 626-629                                                                                                                 | No | Only looked at current consumption of cannabis                      |
| <b>lede, M. A., Nunn, K., Milne, B., Fitzgerald, D. A.</b> (2016). The consequences of chronic cannabis smoking in vulnerable adolescents <i>Paediatric Respiratory Reviews.</i> , #volume#(#issue#), #Pages#                                                                                                         | No | Review study                                                        |

| Katz, Gregory, Durst, Rimona, Shufman, Emi, Bar-Hamburger, Rachel, Grunhaus, Leon (2010). Cannabis abuse and severity of psychotic and affective disorders in Israeli psychiatric inpatients <i>Comprehensive Psychiatry</i> , 51(1), 37-41                                                                           | No | Participants had psychotic or affective disorder at baseline |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------------------------------------|
| <b>Kedzior, Karina Karolina, Martin-Iverson, Mathew</b> (2010). Association between severity of cannabis dependence and depression <i>Psychology</i> , 1(4), 233-237                                                                                                                                                  | No | No adolescent information                                    |
| Keith, Diana R.,Hart, Carl L.,McNeil, Michael P.,Silver, Rae,Goodwin, Renee D. (2015). Frequent marijuana use, binge drinking and mental health problems among undergraduates <i>The American Journal on Addictions</i> , 24(6), 499-506                                                                              | No | Not longitudinal study                                       |
| Kim, S. W.,Dodd, S.,Berk, L.,Kulkarni, J.,de Castella, A.,Fitzgerald, P. B., Kim, J. M.,Yoon, J. S.,Berk, M. (2015). Impact of Cannabis Use on Long-Term Remission in Bipolar I and Schizoaffective Disorder <i>Psychiatry Investigation</i> , 12(3), 349-55                                                          | No | No adolescent information                                    |
| Kolansky, Harold, Moore, William T. (1971). Effects of marihuana on adolescents and young adults <i>JAMA: Journal of the American Medical Association</i> , 216(3), 486-492                                                                                                                                           | No | Case-report study                                            |
| Kouri, Elena, Pope, Harrison G., Yurgelun-Todd, Deborah, Gruber, Staci (1995). Attributes of heavy vs. occasional marijuana smokers in a college population <i>Biological Psychiatry</i> , 38(7), 475-481                                                                                                             | No | Cross-sectional study                                        |
| <b>Kuo, Wen-Hung</b> (2003). "Cannibis abuse as a risk factor for depressive symptoms": Comment <i>The American Journal of Psychiatry</i> , 160(1), 191                                                                                                                                                               | No | Commentary                                                   |
| Kupfer, David J., Detre, Thomas, Koral, Jacqueline, Fajans, Peter (1973).  A comment on the "amotivational syndrome" in marijuana smokers <i>The American Journal of Psychiatry</i> , 130(12), 1319-1322                                                                                                              | No | Commentary                                                   |
| Kvitland, L. R., Melle, I., Aminoff, S. R., Lagerberg, T. V., Andreassen, O. A., Ringen, P. A. (2016). Cannabis use in first-treatment bipolar I disorder: relations to clinical characteristics <i>Early intervention in psychiatry</i> , 10(1), 36-44                                                               | No | Cross sectional study on bipolar patients                    |
| La Roche, Michele (2011). Relations des facteurs de risque et de protection avec les symptômes dépressifs et l'usage de substances chez les jeunes de l'Ontario #journal#, NR79735(#issue#), 295                                                                                                                      | No | Cross-sectional study                                        |
| Lagerberg, T. V.,Icick, R.,Andreassen, O. A.,Ringen, P. A.,Etain, B.,Aas, M.,Henry, C.,Bjella, T. D.,Melle, I.,Bellivier, F. (2016). Cannabis use disorder is associated with greater illness severity in tobacco smoking patients with bipolar disorder <i>Journal of Affective Disorders</i> , 190(#issue#), 286-93 | No | No adolescent information                                    |

| Lagerberg, Trine Vik,Kvitland, Levi Rostad,Aminoff, Sofie R.,Aas,<br>Monica,Ringen, Petter Andreas,Andreassen, Ole Andreas,Melle, Ingrid                                                                                                                                                                                                               | No | Bipolar and not depression                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|--------------------------------------------------------|
| (2014). Indications of a dose-response relationship between cannabis use and age at onset in bipolar disorder <i>Psychiatry Research</i> , 215(1), 101-104                                                                                                                                                                                             |    |                                                        |
| Lamers, C., Bechara, A., Rizzo, M., Ramaekers, J. (2006). Cognitive function and mood in MDMA/THC users, THC users and non-drug using controls <i>Journal of Psychopharmacology</i> , 20(2), 302-311                                                                                                                                                   | No | Focused on MDMA and not cannabis - no longitudinal     |
| Lee, K. S., Clough, A. R., Jaragba, M. J., Conigrave, K. M., Patton, G. C. (2008). Heavy cannabis use and depressive symptoms in three Aboriginal communities in Arnhem Land, Northern Territory <i>Medical Journal of Australia</i> , 188(10), 605-8                                                                                                  | No | No adolescent information, cross-<br>sectional study   |
| Lev-Ran, S.,Le Foll, B.,McKenzie, K.,George, T. P.,Rehm, J. (2013). Bipolar disorder and co-occurring cannabis use disorders: characteristics, co-morbidities and clinical correlates <i>Psychiatry Research</i> , 209(3), 459-65                                                                                                                      | No | No adolescent or young adult information               |
| Lev-Ran, S.,Roerecke, M.,Le Foll, B.,George, T. P.,McKenzie, K.,Rehm, J. (2014). The association between cannabis use and depression: a systematic review and meta-analysis of longitudinal studies <i>Psychological Medicine</i> , 44(4), 797-810                                                                                                     | No | Review and metanalysis, Pooled different ages together |
| Lev-Ran, Shaul,Le Foll, Bernard,McKenzie, Kwame,George, Tony P., Rehm, Jürgen (2013). Cannabis use and cannabis use disorders among individuals with mental illness <i>Comprehensive Psychiatry</i> , 54(6), 589-598                                                                                                                                   | No | No adolescent information                              |
| <b>Lisdahl, Krista M.,Price, Jenessa S.</b> (2012). Increased marijuana use and gender predict poorer cognitive functioning in adolescents and emerging adults <i>Journal of the International Neuropsychological Society</i> , 18(4), 678-688                                                                                                         | No | Primary outcome of this study is not depression.       |
| Looby, Alison, Earleywine, Mitch (2007). Negative consequences associated with dependence in daily cannabis users Substance Abuse Treatment, Prevention, and Policy Vol 2 2007, ArtID 3, 2(#issue#), #Pages#                                                                                                                                           | No | No information about adolescent depression             |
| Lynskey, M. T., Glowinski, A. L., Todorov, A. A., Bucholz, K. K., Madden, P. A., Nelson, E. C., Statham, D. J., Martin, N. G., Heath, A. C. (2004). Major depressive disorder, suicidal ideation, and suicide attempt in twins discordant for cannabis dependence and early-onset cannabis use <i>Archives of General Psychiatry</i> , 61(10), 1026-32 | No | Cross-sectional, retrospective study                   |
| Macleod, J.,Oakes, R.,Copello, A.,Crome, I.,Egger, M.,Hickman, M., Oppenkowski, T.,Stokes-Lampard, H.,Davey Smith, G. (2004). Psychological and social sequelae of cannabis and other illicit drug use by young people: a systematic review of longitudinal, general population studies <i>Lancet</i> , 363(9421), 1579-88                             | No | Systematic review                                      |

| Magklara, K.,Bellos, S.,Niakas, D.,Stylianidis, S.,Kolaitis, G.,Mavreas, V.,Skapinakis, P. (2015). Depression in late adolescence: a cross-sectional study in senior high schools in Greece <i>BMC Psychiatry</i> , 15(#issue#), 199                                                              | No | Cross-sectional study                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------------------------------------------------------------------------------------|
| Maharajh, Hari D., Konings, Monique (2005). Suicidal behaviour and cannabis-related disorders among adolescents Suicidal behavior in adolescence: An international perspective, #volume#(#issue#), 119-129                                                                                        | No | Review study                                                                          |
| Manrique-Garcia, E., Zammit, S., Dalman, C., Hemmingsson, T., Allebeck, P. (2012). Cannabis use and depression: a longitudinal study of a national cohort of Swedish conscripts <i>BMC Psychiatry</i> , 12(#issue#), 112                                                                          | No | Outcome was assessed during 32 years follow up and is not limited to young adulthood. |
| Marcon, Samira Reschetti, Xavier, Jéssica Saraiva, Barcelon, Ariane Aguillar, Espinosa, Mariano Martinez, Barbosa, Dulce Aparecida (2014). Correlation between depressive symptoms and quality of life in users of psychoactive substances Revista da Escola de Enfermagem da USP, 48(4), 663-669 | No | Cross sectional study, no adolescent information                                      |
| Marie, D., Fergusson, D. M., Boden, J. M. (2008). Links between ethnic identification, cannabis use and dependence, and life outcomes in a New Zealand birth cohort <i>Australian &amp; New Zealand Journal of Psychiatry</i> , 42(9), 780-8                                                      | No | Pooled mental health category                                                         |
| McGee, R.,Williams, S.,Poulton, R.,Moffitt, T. (2000). A longitudinal study of cannabis use and mental health from adolescence to early adulthood <i>Addiction</i> , 95(4), 491-503                                                                                                               | No | One category of mental disorders including depression                                 |
| Medina, Krista Lisdahl, Nagel, Bonnie J., Park, Ann, McQueeny, Tim, Tapert, Susan F. (2007). Depressive symptoms in adolescents:  Associations with white matter volume and marijuana use <i>Journal of Child Psychology and Psychiatry</i> , 48(6), 592-600                                      | No | Cross-sectional study                                                                 |
| Mersky, J. P., Topitzes, J., Reynolds, A. J. (2013). Impacts of adverse childhood experiences on health, mental health, and substance use in early adulthood: a cohort study of an urban, minority sample in the U.S <i>Child Abuse &amp; Neglect</i> , 37(11), 917-25                            | No | No adolescent or cannabis use information                                             |
| Meshesha, Lidia Z., Dennhardt, Ashley A., Murphy, James G. (2015). Polysubstance use is associated with deficits in substance-free reinforcement in college students <i>Journal of Studies on Alcohol and Drugs</i> , 76(1), 106-116                                                              | No | Not longitudinal                                                                      |
| Moitra, E., Anderson, B. J., Stein, M. D. (2016). Reductions in Cannabis Use Are Associated with Mood Improvement in Female Emerging Adults Depression & Anxiety, 33(4), 332-8                                                                                                                    | No | Participants have a diagnosis of depression                                           |
| Mokrysz, C.,Gage, S.,Landy, R.,Munafo, M. R.,Roiser, J. P.,Curran, H. V. (2014). Neuropsychological and educational outcomes related to adolescent                                                                                                                                                | No | No depression information                                                             |

| cannabis use, a prospective cohort study <i>European</i>                                                                                                                                                                                                                                                                          |    |                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----------------------------------------------------|
| Neuropsychopharmacology, 24(#issue#), S695-S696                                                                                                                                                                                                                                                                                   |    |                                                    |
| Monshouwer, Karin, Van Dorsselaer, Saskia, Verdurmen, Jacqueline, Ter Bogt, Tom, De Graaf, Ron, Vollebergh, Wilma (2006). Cannabis use and mental health in secondary school children: Findings from a Dutch survey The British Journal of Psychiatry, 188(2), 148-153                                                            | No | Not longitudinal                                   |
| Moore, Ashlee A., Neale, Michael C., Silberg, Judy L., Verhulst, Brad (2016). Substance use and depression symptomatology: Measurement invariance of the Beck Depression Inventory (BDI-II) among non-users and frequent-users of alcohol, nicotine and cannabis <i>PLoS ONE Vol 11(4)</i> , 2016, ArtID e0152118, 11(4), #Pages# | No | No adolescent data, not longitudinal               |
| Moore, T. H.,Zammit, S.,Lingford-Hughes, A.,Barnes, T. R.,Jones, P. B., Burke, M.,Lewis, G. (2007). Cannabis use and risk of psychotic or affective mental health outcomes: a systematic review <i>Lancet</i> , 370(9584), 319-28                                                                                                 | No | Paper is a systematic review and meta-<br>analysis |
| <b>Musty, Richard E., Kaback, Lee</b> (1995). Relationships between motivation and depression in chronic marijuana users <i>Life Sciences</i> , 56(23-24), 2151-2158                                                                                                                                                              | No | No longitudinal data                               |
| N'Goran, A. A., Deline, S., Henchoz, Y., Baggio, S., Studer, J., Mohler-Kuo, M., Gmel, G. (2014). Association between nonmedical prescription drug use and health status among young Swiss men <i>Journal of Adolescent Health</i> , 55(4), 549-55                                                                                | No | No longitudinal data. Little cannabis information  |
| <b>Nwogwugwu, Stanley Ikechukwu</b> (2016). Psychosocial correlates of marijuana use in adolescents and and young adults #journal#, 10158864(#issue#), 207                                                                                                                                                                        | No | Not longitudinal                                   |
| Oliver-Quetglas, A., Torres, E., March, S., Socias, I. M., Esteva, M. (2013). Risk factors of depressive syndrome in young adults <i>Actas Espanolas de Psiquiatria</i> , 41(2), 84-96                                                                                                                                            | No | No adolescent outcomes                             |
| Osuch, Elizabeth, Vingilis, Evelyn, Ross, Erin, Forster, Christeen, Summerhurst, Carolyn (2013). Cannabis use, addiction risk and functional impairment in youth seeking treatment for primary mood or anxiety concerns International Journal of Adolescent Medicine and Health, 25(3), 309-314                                   | No | Not longitudinal                                   |
| Otten, R., Engels, R. C. (2013). Testing bidirectional effects between cannabis use and depressive symptoms: moderation by the serotonin transporter gene <i>Addiction Biology</i> , 18(5), 826-35                                                                                                                                | No | Not related to our purpose                         |
| Otten, R.,Barker, E. D.,Maughan, B.,Arseneault, L.,Engels, R. C. (2010). Self-control and its relation to joint developmental trajectories of cannabis use and depressive mood symptoms <i>Drug &amp; Alcohol Dependence</i> , 112(3), 201-8                                                                                      | No | Not controlled for premorbid depression.           |

| Pacek, L. R., Martins, S. S., Crum, R. M. (2013). The bidirectional relationships between alcohol, cannabis, co-occurring alcohol and cannabis use disorders with major depressive disorder: results from a national sample <i>Journal of Affective Disorders</i> , 148(2-3), 188-95                                                                                                                                                                                                                                                                              | No | No adolescent or young adulthood information                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------------------------------------------------------------------|
| Pang, R. D., Farrahi, L., Glazier, S., Sussman, S., Leventhal, A. M. (2014). Depressive symptoms, negative urgency and substance use initiation in adolescents <i>Drug &amp; Alcohol Dependence</i> , 144(#issue#), 225-30                                                                                                                                                                                                                                                                                                                                        | No | Cross-sectional study                                               |
| Passarotti, A. M., Crane, N. A., Hedeker, D., Mermelstein, R. J. (2015). Longitudinal trajectories of marijuana use from adolescence to young adulthood <i>Addictive Behaviors</i> , 45(#issue#), 301-8                                                                                                                                                                                                                                                                                                                                                           | No | Effect of depression on cannabis use                                |
| Paton, S., Kessler, R., Kandel, D. (1977). Depressive mood and adolescent illicit drug use: a longitudinal analysis <i>Journal of Genetic Psychology</i> , 131(2d Half), 267-89                                                                                                                                                                                                                                                                                                                                                                                   | No | Not longitudinal                                                    |
| Pedersen, Willy, Mastekaasa, Arne, Wichstrom, Lars (2001). Conduct problems and early cannabis initiation: A longitudinal study of gender differences <i>Addiction</i> , 96(3), 415-431                                                                                                                                                                                                                                                                                                                                                                           | No | No depressive outcomes                                              |
| Perkonigg, Axel, Lieb, Roselind, Hofler, Michael, Schuster, Peter, Sonntag, Holger, Wittchen, Hans-Ulrich (1999). Patterns of cannabis use, abuse and dependence over time: Incidence, progression and stability in a sample of 1228 adolescents <i>Addiction</i> , 94(11), 1663-1678                                                                                                                                                                                                                                                                             | No | No depression information                                           |
| Pompili, Maurizio, Lester, David, Girardi, Paolo, Tatarelli, Roberto (2007). High suicide risk after the development of cognitive and working memory deficits caused by cannabis, cocaine and ecstasy use <i>Substance Abuse</i> , 28(1), 25-30                                                                                                                                                                                                                                                                                                                   | No | Case report                                                         |
| <b>Poulin, C.,Hand, D.,Boudreau, B.,Santor, D.</b> (2005). Gender differences in the association between substance use and elevated depressive symptoms in a general adolescent population <i>Addiction</i> , 100(4), 525-35                                                                                                                                                                                                                                                                                                                                      | No | Cross-sectional study                                               |
| Price, C., Hemmingsson, T., Lewis, G., Zammit, S., Allebeck, P. (2009). Cannabis and suicide: longitudinal study <i>British Journal of Psychiatry</i> , 195(6), 492-7                                                                                                                                                                                                                                                                                                                                                                                             | No | No adolescent data/ cannabis use data was collected retrospectively |
| Purcell, R.,Jorm, A. F.,Hickie, I. B.,Yung, A. R.,Pantelis, C.,Amminger, G. P.,Glozier, N.,Killackey, E.,Phillips, L. J.,Wood, S. J.,Harrigan, S., Mackinnon, A.,Scott, E.,Hermens, D. F.,Guastella, A. J.,Kenyon, A., Mundy, L.,Nichles, A.,Scaffidi, A.,Spiliotacopoulos, D.,Taylor, L.,Tong, J. P.,Wiltink, S.,Zmicerevska, N.,McGorry, P. D. (2015). Demographic and clinical characteristics of young people seeking help at youth mental health services: baseline findings of the Transitions Study <i>Early intervention in psychiatry</i> , 9(6), 487-97 | No | Does not address research question                                  |

| Ramo, Danielle E.,Liu, Howard, Prochaska, Judith J. (2012). Tobacco and marijuana use among adolescents and young adults: A systematic review of their co-use Clinical Psychology Review, 32(2), 105-121                                                                                                                    | No | Review study                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------|
| Rasic, D., Weerasinghe, S., Asbridge, M., Langille, D. B. (2013). Longitudinal associations of cannabis and illicit drug use with depression, suicidal ideation and suicidal attempts among Nova Scotia high school students <i>Drug &amp; Alcohol Dependence</i> , 129(1-2), 49-53                                         | No | Cross-sectional study                                                                     |
| Reilly, D., Didcott, P., Swift, W., Hall, W. (1998). Long-term cannabis use: characteristics of users in an Australian rural area <i>Addiction</i> , 93(6), 837-46                                                                                                                                                          | No | Cross-sectional study, retrospective study                                                |
| Repetto, Paula Beatriz (2003). A longitudinal study of depressive symptoms among African -American adolescents: Their patterns of change and effects on school outcomes and substance use #journal#, 3079517(#issue#), 239                                                                                                  | No | Effect of depression on substance use                                                     |
| <b>Respress, Brandon Noelle</b> (2010). Social determinants of adolescent risk behaviors: An examination of depressive symptoms and sexual risk, substance use, and suicide risk behaviors <i>#journal#</i> , Ph.D.(#issue#), 178 p-178 p                                                                                   | No | Substance use and depressive symptoms were both outcomes, no causal relationship explored |
| Rey, Joseph M., Sawyer, Michael G., Raphael, Beverley, Patton, George C., Lynskey, Michael (2002). Mental health of teenagers who use cannabis: Results of an Australian survey <i>The British Journal of Psychiatry</i> , 180(3), 216-221                                                                                  | No | No adult outcomes                                                                         |
| Risal, A., Manandhar, K., Linde, M., Steiner, T. J., Holen, A. (2016). Anxiety and depression in Nepal: prevalence, comorbidity and associations <i>BMC Psychiatry</i> , 16(#issue#), 102                                                                                                                                   | No | Cross-sectional study                                                                     |
| Rubino, T.,Zamberletti, E.,Parolaro, D. (2012). Adolescent exposure to cannabis as a risk factor for psychiatric disorders <i>Journal of Psychopharmacology</i> , 26(1), 177-188                                                                                                                                            | No | Review study                                                                              |
| Saban, A., Flisher, A. J., Grimsrud, A., Morojele, N., London, L., Williams, D. R., Stein, D. J. (2014). The association between substance use and common mental disorders in young adults: results from the South African Stress and Health (SASH) Survey <i>The Pan African medical journal</i> , 17 Suppl 1(#issue#), 11 | No | Cross-sectional study                                                                     |
| Salom, C. L., Betts, K. S., Williams, G. M., Najman, J. M., Alati, R. (2016). Predictors of comorbid polysubstance use and mental health disorders in young adults-a latent class analysis <i>Addiction</i> , 111(1), 156-64                                                                                                | No | This article did not assess adolescent consumption of cannabis                            |
| Samet, Sharon (2008). Depression, panic disorder and generalized anxiety disorder in former substance abusers #journal#, 3305262(#issue#), 69                                                                                                                                                                               | No | No adolescent outcomes                                                                    |
| Sampasa-Kanyinga, H., Dupuis, L. C., Ray, R. (2015). Prevalence and correlates of suicidal ideation and attempts among children and adolescents                                                                                                                                                                             | No | Cross sectional study                                                                     |

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| International Journal of Adolescent Medicine & Health, #volume#(#issue#), 10                                                                                                                                                                                                                                                                                                                                                                                        |    |                                                                                                                   |
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| Sarkar, J., Murthy, P., Singh, S. P. (2003). Psychiatric morbidity of cannabis abuse <i>Indian Journal of Psychiatry</i> , 45(3), 182-8                                                                                                                                                                                                                                                                                                                             | No | No adolescent information                                                                                         |
| Schoeler, T., Kambeitz, J., Behlke, I., Murray, R., Bhattacharyya, S. (2016). The effects of cannabis on memory function in users with and without a psychotic disorder: Findings from a combined meta-analysis <i>Psychological Medicine</i> , 46(1), 177-188                                                                                                                                                                                                      | No | Memory function outcome                                                                                           |
| Scholes-Balog, K. E., Hemphill, S. A., Patton, G. C., Toumbourou, J. W. (2013). Cannabis use and related harms in the transition to young adulthood: a longitudinal study of Australian secondary school students <i>Journal of Adolescence</i> , 36(3), 519-27                                                                                                                                                                                                     | No | Cross-sectionally analysed                                                                                        |
| Schuler, M. S., Vasilenko, S. A., Lanza, S. T. (2015). Age-varying associations between substance use behaviors and depressive symptoms during adolescence and young adulthood <i>Drug &amp; Alcohol Dependence</i> , 157(#issue#), 75-82                                                                                                                                                                                                                           | No | Cross-sectionally analysed                                                                                        |
| Schuster, Randi Melissa, Mermelstein, Robin, Wakschlag, Laurie (2013). Gender-specific relationships between depressive symptoms, marijuana use, parental communication and risky sexual behavior in adolescence <i>Journal of Youth and Adolescence</i> , 42(8), 1194-1209                                                                                                                                                                                         | No | Not related to our question. Primary outcome is risky sexual behaviour and depression is an exposure not outcome. |
| Schwartz, S. J., Unger, J. B., Baezconde-Garbanati, L., Zamboanga, B. L., Lorenzo-Blanco, E. I., Des Rosiers, S. E., Romero, A. J., Cano, M. A., Gonzales-Backen, M. A., Cordova, D., Pina-Watson, B. M., Huang, S., Villamar, J. A., Soto, D. W., Pattarroyo, M., Szapocznik, J. (2015). Trajectories of cultural stressors and effects on mental health and substance use among Hispanic immigrant adolescents <i>Journal of Adolescent Health</i> , 56(4), 433-9 | No | Depression is not primary outcome                                                                                 |
| Schwinn, T. M., Schinke, S. P., Hopkins, J., Thom, B. (2016). Risk and protective factors associated with adolescent girls' substance use: Data from a nationwide Facebook sample <i>Substance Abuse</i> , 37(4), 564-570                                                                                                                                                                                                                                           | No | Cross-sectional study                                                                                             |
| Seil, Kacie S., Desai, Mayur M., Smith, Megan V. (2014). Sexual Orientation, Adult Connectedness, Substance Use, and Mental Health Outcomes Among Adolescents: Findings From the 2009 New York City Youth Risk Behavior Survey American Journal of Public Health, 104(10), 1950-1956                                                                                                                                                                                | No | Not longitudinal, doesn't analyze cannabis re. Depression                                                         |
| Shalit, N., Shoval, G., Shlosberg, D., Feingold, D., Lev-Ran, S. (2016). The association between cannabis use and suicidality among men and women: A population-based longitudinal study <i>Journal of Affective Disorders</i> , 205(#issue#), 216-224                                                                                                                                                                                                              | No | No adolescence data                                                                                               |

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| <b>Shi, Y.</b> (2014). At high risk and want to quit: marijuana use among adults with depression or serious psychological distress <i>Addictive Behaviors</i> , 39(4), 761-7                                                                                                                                                                                              | No | No adolescent or young adult information             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|------------------------------------------------------|
| Sipsma, H. L., Callands, T., Desrosiers, A., Magriples, U., Jones, K., Albritton, T., Kershaw, T. (2016). Exploring Trajectories and Predictors of Depressive Symptoms Among Young Couples During Their Transition to Parenthood <i>Maternal &amp; Child Health Journal</i> , 20(11), 2372-2381                                                                           | No | Retrospective study                                  |
| Solowij, Nadia, Yucel, Murat, Lorenzetti, Valentina, Lubman, Dan I. (2009). Structural brain alterations in cannabis users: Association with cognitive deficits and psychiatric symptoms <i>The handbook of neuropsychiatric biomarkers</i> , endophenotypes and genes, Vol 2: Neuroanatomical and neuroimaging endophenotypes and biomarkers, #volume#(#issue#), 215-225 | No | Review study                                         |
| <b>Spalletta, Gianfranco,Bria, Pietro,Caltagirone, Carlo</b> (2006). Differences in Temperament, Character and Psychopathology among Subjects with Different Patterns of Cannabis Use <i>Psychopathology</i> , 40(1), 29-34                                                                                                                                               | No | Cross-sectional study                                |
| Spence, N., Wells, S., George, J., Graham, K. (2014). An Examination of Marijuana Use Among a Vulnerable Population in Canada <i>Journal of Racial &amp; Ethnic Health Disparities</i> , 1(4), 247-256                                                                                                                                                                    | No | Cross-sectional study                                |
| Stefanis, C.,Liakos, A.,Boulougouris, J.,Fink, M.,Freedman, A. M. (1976). Chronic hashish use and mental disorder <i>American Journal of Psychiatry</i> , 133(2), 225-227                                                                                                                                                                                                 | No | No adolescent info or age of first use info, etc.    |
| Stefanis, N. C., Delespaul, P., Henquet, C., Bakoula, C., Stefanis, C. N., Van Os, J. (2004). Early adolescent cannabis exposure and positive and negative dimensions of psychosis <i>Addiction</i> , 99(10), 1333-41                                                                                                                                                     | No | Cross-sectional study                                |
| Stone, Andrea L., Vander Stoep, Ann, McCauley, Elizabeth (2016). Early Onset Substance Use in Adolescents With Depressive, Conduct, and Comorbid Symptoms <i>Journal of Early Adolescence</i> , 36(6), 729-753                                                                                                                                                            | No | Participants had depression at baseline              |
| Strandheim, A.,Bratberg, G. H.,Holmen, T. L.,Coombes, L.,Bentzen, N. (2011). The influence of behavioural and health problems on alcohol and drug use in late adolescence - a follow up study of 2 399 young Norwegians Child & Adolescent Psychiatry & Mental Health [Electronic Resource], 5(1), 17                                                                     | No | Outcome of this study is drug use and not depression |
| <b>Sumnall, H. R.,Cole, J. C.</b> (2005). Self-reported depressive symptomatology in community samples of polysubstance misusers who report Ecstasy use: A meta-analysis <i>Journal of Psychopharmacology</i> , 19(1), 84-92                                                                                                                                              | No | Analyzes ecstasy not cannabis                        |

| <b>Sundram, Suresh</b> (2006). Cannabis and neurodevelopment: Implications for psychiatric disorder <i>Human Psychopharmacology: Clinical and Experimental</i> , 21(4), 245-254                                                                                                                                         | No | Review study                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------|
| Swahn, M. H.,Bossarte, R. M.,Choquet, M.,Hassler, C.,Falissard, B., Chau, N. (2012). Early substance use initiation and suicide ideation and attempts among students in France and the United States <i>International Journal of Public Health</i> , 57(1), 95-105                                                      | No | Cross-sectional study                                           |
| Swain, N. R., Gibb, S. J., Horwood, L. J., Fergusson, D. M. (2012). Alcohol and cannabis abuse/dependence symptoms and life satisfaction in young adulthood <i>Drug &amp; Alcohol Review</i> , 31(3), 327-33                                                                                                            | No | Primary outcome was life satisfaction and not depression        |
| <b>Troisi, A., Pasini, A., Saracco, M., Spalletta, G.</b> (1998). Psychiatric symptoms in male cannabis users not using other illicit drugs <i>Addiction</i> , 93(4), 487-92                                                                                                                                            | No | No adolescent information                                       |
| <b>Troup, L. J.,Andrzejewski, J. A.,Braunwalder, J. T.,Torrence, R. D.</b> (2016). The relationship between cannabis use and measures of anxiety and depression in a sample of college campus cannabis users and non-users post state legalization in Colorado <i>PeerJ</i> , 2016 (12) (no pagination)(e2782), #Pages# | No | No adolescent information                                       |
| Trull, T. J., Wycoff, A. M., Lane, S. P., Carpenter, R. W., Brown, W. C. (2016). Cannabis and alcohol use, affect and impulsivity in psychiatric outpatients' daily lives <i>Addiction</i> , 111(11), 2052-2059                                                                                                         | No | No adolescent information                                       |
| van der Meer, F. J., Velthorst, E., Genetic, Risk, Outcome of Psychosis, Investigators (2015). Course of cannabis use and clinical outcome in patients with non-affective psychosis: a 3-year follow-up study <i>Psychological Medicine</i> , 45(9), 1977-88                                                            | No | Not general population                                          |
| van Gastel, W. A., MacCabe, J. H., Schubart, C. D., van Otterdijk, E., Kahn, R. S., Boks, M. P. (2014). Cannabis use is a better indicator of poor mental health in women than in men: a cross-sectional study in young adults from the general population <i>Community Mental Health Journal</i> , 50(7), 823-30       | No | More about mental health than depression, cross-sectional study |
| Van Gastel, W. A., Schubart, C. D., Kahn, R. S., Boks, M. P. M. (2010). Adolescent cannabis use and psychotic symptoms a one-year follow-up study <i>Schizophrenia Research</i> , 117 (2-3)(#issue#), 307                                                                                                               | No | No depressive symptoms information, only psychotic              |
| van Gastel, W., Tempelaar, W., Bun, C., Schubart, C., Kahn, R., Plevier, C., Boks, M. (2013). Cannabis use as an indicator of risk for mental health problems in adolescents: A population-based study at secondary schools <i>Psychological Medicine</i> , 43(9), 1849-1856                                            | No | Cross-sectional study                                           |

| van Laar, M.,van Dorsselaer, S.,Monshouwer, K.,de Graaf, R. (2007).  Does cannabis use predict the first incidence of mood and anxiety disorders in the adult population? <i>Addiction</i> , 102(8), 1251-60                                                                                                                           | No | Study of adults, no adolescent information                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| van Ours, J. C.,Williams, J.,Fergusson, D.,Horwood, L. J. (2013). Cannabis use and suicidal ideation <i>Journal of Health Economics</i> , 32(3), 524-37                                                                                                                                                                                | No | They combined the data on cannabis use from different ages into different categories of frequency of cannabis use, therefore we can not understand the effect of cannabis use in adolescence at suicide ideation during young adulthood |
| <b>Webster, L., Chaiton, M., Kirst, M.</b> (2014). The co-use of tobacco and cannabis among adolescents over a 30-year period <i>Journal of School Health</i> , 84(3), 151-9                                                                                                                                                           | No | No information about depression, anxiety, suicide                                                                                                                                                                                       |
| <b>Weller, R. A., Halikas, J. A.</b> (1985). Marijuana use and psychiatric illness: a follow-up study <i>American Journal of Psychiatry</i> , 142(7), 848-50                                                                                                                                                                           | No | No specific adolescent data                                                                                                                                                                                                             |
| Wilkinson, A. L., Halpern, C. T., Herring, A. H., Shanahan, M., Ennett, S. T., Hussey, J. M., Harris, K. M. (2016). Testing Longitudinal Relationships Between Binge Drinking, Marijuana Use, and Depressive Symptoms and Moderation by Sex <i>Journal of Adolescent Health</i> , 59(6), 681-687                                       | No | Looks at concurrent relationship                                                                                                                                                                                                        |
| Wilson, Natascha, Cadet, Jean Lud (2009). Comorbid mood, psychosis, and marijuana abuse disorders: A theoretical review <i>Journal of Addictive Diseases</i> , 28(4), 309-319                                                                                                                                                          | No | Review study                                                                                                                                                                                                                            |
| Wittchen, H. U.,Frohlich, C.,Behrendt, S.,Gunther, A.,Rehm, J., Zimmermann, P.,Lieb, R.,Perkonigg, A. (2007). Cannabis use and cannabis use disorders and their relationship to mental disorders: a 10-year prospective-longitudinal community study in adolescents <i>Drug &amp; Alcohol Dependence</i> , 88 Suppl 1(#issue#), S60-70 | No | It looks at effect of depression on cannabis use                                                                                                                                                                                        |
| Wong, S. S., Zhou, B., Goebert, D., Hishinuma, E. S. (2013). The risk of adolescent suicide across patterns of drug use: a nationally representative study of high school students in the United States from 1999 to 2009 Social Psychiatry & Psychiatric Epidemiology, 48(10), 1611-20                                                | No | Cross-sectional study                                                                                                                                                                                                                   |
| Wymbs, B. T.,McCarty, C. A.,Mason, W. A.,King, K. M.,Baer, J. S.,<br>Vander Stoep, A.,McCauley, E. (2014). Early adolescent substance use as<br>a risk factor for developing conduct disorder and depression symptoms<br>Journal of Studies on Alcohol & Drugs, 75(2), 279-89                                                          | No | Participants have depression at baseline                                                                                                                                                                                                |
| Youssef, I. M., Fahmy, M. T., Haggag, W. L., Mohamed, K. A., Baalash, A. A. (2016). Dual Diagnosis and Suicide Probability in Poly-Drug Users <i>Jcpsp</i> , <i>Journal of the College of Physicians &amp; Surgeons - Pakistan</i> , 26(2), 130-3                                                                                      | No | Not specific to cannabis use                                                                                                                                                                                                            |

| Yurasek, Ali M., Hadley, Wendy (2016). Commentary: Adolescent marijuana use and mental health amidst a changing legal climate <i>Journal of Pediatric Psychology</i> , 41(3), 287-289                                                                                                                                                                                        | No  | Review study                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------|
| Zarrouq, B.,Bendaou, B.,Elkinany, S.,Rammouz, I.,Aalouane, R., Lyoussi, B.,Khelafa, S.,Bout, A.,Berhili, N.,Hlal, H.,Nejjari, C.,El Rhazi, K. (2015). Suicidal behaviors among Moroccan school students: prevalence and association with socio-demographic characteristics and psychoactive substances use: a cross-sectional study <i>BMC Psychiatry</i> , 15(#issue#), 284 | No  | Cross-sectional study                                                 |
| <b>Zhang, X.,Wu, L. T.</b> (2014). Suicidal ideation and substance use among adolescents and young adults: a bidirectional relation? <i>Drug &amp; Alcohol Dependence</i> , 142(#issue#), 63-73                                                                                                                                                                              | No  | Baseline information about suicidality/depression is missing          |
| <b>Ziba-Tanguay</b> , <b>Kali</b> (2012). Developmental trajectories of marijuana use and psychological distress: Exploring the co-occurrence of these phenomena in early adolescence <i>#journal#</i> , NR97638(#issue#), 199                                                                                                                                               | No  | Combined depression, anxiety, irritability and cognitive difficulties |
| Arria, A. M., Caldeira, K. M., Bugbee, B. A., Vincent, K. B., O'Grady, K. E. (2016). Marijuana use trajectories during college predict health outcomes nine years post-matriculation <i>Drug &amp; Alcohol Dependence</i> , 159(#issue#), 158-65                                                                                                                             | Yes |                                                                       |
| Arseneault, L., Cannon, M., Poulton, R., Murray, R., Caspi, A., Moffitt, T. E. (2002). Cannabis use in adolescence and risk for adult psychosis: longitudinal prospective study <i>BMJ</i> , 325(7374), 1212-3                                                                                                                                                               | Yes |                                                                       |
| Baggio, S.,N'Goran, A. A.,Deline, S.,Studer, J.,Dupuis, M.,Henchoz, Y., Mohler-Kuo, M.,Daeppen, J. B.,Gmel, G. (2014). Patterns of cannabis use and prospective associations with health issues among young males <i>Addiction</i> , 109(6), 937-45                                                                                                                          | Yes |                                                                       |
| Brook, D. W.,Brook, J. S.,Zhang, C.,Cohen, P.,Whiteman, M. (2002). Drug use and the risk of major depressive disorder, alcohol dependence, and substance use disorders <i>Archives of General Psychiatry</i> , 59(11), 1039-44                                                                                                                                               | Yes |                                                                       |
| Brook, J. S., Lee, J. Y., Brown, E. N., Finch, S. J., Brook, D. W. (2011). Developmental trajectories of marijuana use from adolescence to adulthood: personality and social role outcomes <i>Psychological Reports</i> , 108(2), 339-57                                                                                                                                     | Yes |                                                                       |
| <b>Brook, Judith S,Cohen, Patricia, Brook, David W</b> (1998). Longitudinal study of co-occurring psychiatric disorders and substance use <i>Journal of the American Academy of Child &amp; Adolescent Psychiatry</i> , 37(3), 322-330                                                                                                                                       | Yes |                                                                       |
| Caldeira, K. M.,O'Grady, K. E.,Vincent, K. B.,Arria, A. M. (2012).  Marijuana use trajectories during the post-college transition: health outcomes in young adulthood <i>Drug &amp; Alcohol Dependence</i> , 125(3), 267-75                                                                                                                                                  | Yes |                                                                       |

| D'Amico, E. J., Tucker, J. S., Miles, J. N., Ewing, B. A., Shih, R. A., Pedersen, E. R. (2016). Alcohol and marijuana use trajectories in a diverse longitudinal sample of adolescents: examining use patterns from age 11 to 17 years <i>Addiction</i> , 111(10), 1825-35                                | Yes |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Degenhardt, L.,Coffey, C.,Carlin, J. B.,Swift, W.,Moore, E.,Patton, G. C.</b> (2010). Outcomes of occasional cannabis use in adolescence: 10-year follow-up study in Victoria, Australia <i>British Journal of Psychiatry</i> , 196(4), 290-5                                                          | Yes |
| Degenhardt, L.,Coffey, C.,Romaniuk, H.,Swift, W.,Carlin, J. B.,Hall, W. D.,Patton, G. C. (2013). The persistence of the association between adolescent cannabis use and common mental disorders into young adulthood <i>Addiction</i> , 108(1), 124-33                                                    | Yes |
| Epstein, M., Hill, K. G., Nevell, A. M., Guttmannova, K., Bailey, J. A., Abbott, R. D., Kosterman, R., Hawkins, J. D. (2015). Trajectories of marijuana use from adolescence into adulthood: Environmental and individual correlates <i>Developmental Psychology</i> , 51(11), 1650-63                    | Yes |
| <b>Fergusson, D. M., Horwood, L. J.</b> (1997). Early onset cannabis use and psychosocial adjustment in young adults <i>Addiction</i> , 92(3), 279-96                                                                                                                                                     | Yes |
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