**Supplementary Material**

**Supplemental Table 1.** *Full-texts excluded and reasons.*

|  |  |
| --- | --- |
| Study | Reason |
| Williams et al., 2020 (Williams et al., 2020) | No assessment of suicide attempt histories |
| Wells et al., 2020 (Wells et al., 2020) | Does not use the D-IAT |
| Ballard et al., 2019 (Ballard et al., 2019) | No assessment of suicide attempt histories |
| Ho et al., 2018 (Ho et al., 2018) | No assessment of suicide attempt histories |
| Chiurliza et al., 2018 (Chiurliza et al., 2018) | No assessment of suicide attempt histories |
| Cha et al., 2018 (Cha et al., 2018) | No assessment of suicide attempt histories |
| Barnes et al., 2019 (Barnes et al., 2019) | Same sample as Barnes and colleagues 2017 |
| Tucker et al., 2018 (Tucker et al., 2018) | Does not use the D-IAT |
| Kene 2017 (Kene, 2017) | Does not use the D-IAT |
| Arendt et al., 2016 (Arendt et al., 2016) | No assessment of suicide attempt histories |
| Hussey et al., 2015 (Hussey et al., 2016) | No assessment of suicide attempt histories |
| Price et al., 2014 (Price et al., 2014) | No assessment of suicide attempt histories |
| Randall et al., 2013 (Randall et al., 2013) | No separation of non-suicidal self injury from suicide attempts in collection of self-harm data |
| Tang et al., 2013 (Tang et al., 2013) | No assessment of suicide attempt histories |
| Glashouwer et al., 2010 (Glashouwer et al., 2010) | Does not use the D-IAT |
| Price et al., 2009 (Price et al., 2009) | No assessment of suicide attempt histories |
| Chen et al., 2020 (Chen et al., 2020) | No measure of suicide attempts in combination with D-IAT |
| van Leeuwen et al., 2020 (Chen et al., 2020) | No assessment of suicide attempt histories |
| Cha et al., 2016 (Cha et al., 2016) | No assessment of suicide attempt histories |
| Ballard et al., 2020 (Ballard et al., 2020) | Suicidal group did not meet minimum sample size of n=5 (n=4). |
| Gratz et al., 2016 (Gratz et al., 2016) | No assesssment of suicide histories |
| Nock & Banaji, 2007 (Nock & Banaji, 2007a) | Does not use the D-IAT |
| Nock & Banaji, 2007 (Nock & Banaji, 2007b) | Does not use the D-IAT |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Study | Confounding | Participant selection | Classification of interventions | Deviations from intended intervention | Missing data (B/F) | Measurement of outcomes | Reported result | Overall rating  (B/F) |
| Nock et al., 2010 | Low | Low | Low | Low | Low/Mod | Low | Low | Low/Mod |
| Harrison et al., 2014 | Low | Low | Low | Low | Low | Low | Low | Low |
| Dickstein et al., 2015 | Low | Low | Low | Low | Low | Low | Low | Low |
| Ellis et al., 2016 | Mod | Low | Low | Low | Low | Low | Low | Mod |
| Barnes et al., 2017 | Low | Low | Low | Low | Low/Low | Low | Low | Low/Low |
| Glenn CR et al., 2017 | Low | Low | Low | Low | Low | Low | Low | Low |
| Glenn JJ et al., 2017 | Mod | Low | Low | Low | Low | Low | Low | Mod |
| Harrison et al., 2018 | Mod | Low | Low | Low | Low/Low | Low | Low | Mod/Mod |
| Millner et al., 2018 | Mod | Low | Low | Low | Low | Low | Low | Mod |
| Millner et al., 2019 | Low | Low | Low | Low | Low | Low | Low | Low |
| Bender et al., 2019 | Low | Low | Low | Low | Low | Low | Low | Low |
| Glenn CR et al., 2019 | Low | Low | Low | Low | Low/Low | Low | Low | Low/Low |
| Podlogar et al., 2019 | Low | Low | Low | Low | Low | Low | Low | Low |
| Tello et al., 2020 | Low | Low | Low | Low | Low/Low | Low | Low | Low/Low |
| O’Shea et al., 2020 | Mod | Low | Low | Low | Low | Low | Low | Mod |
| Wang et al., 2020 | Low | Low | Low | Low | Low | Low | Low | Low |
| Ho et al., 2021 | Low | Low | Low | Low | Low | Low | Low | Low |
| Rath et al., 2021 (1) | Low | Low | Low | Low | Mod | Low | Low | Mod |
| Rath et al., 2021 (2) | Low | Low | Low | Low | Mod/Mod | Low | Mod | Mod/Mod |

**Supplementary Table 2.** *Ratings of study quality.*

*Note.* Each box represents the likelihood of bias as measured using the ROBINS-I tool. B/F=baseline/follow-up measures where applicable. Mod=Moderate.

**Database Search**

MEDLINE: Updated search date February 9th, 2021

PsychINFO: Updated search date February 9th, 2021

EMBASE: Updated search date February 9th, 2021

Cochrane Central Register of Controlled Trials (CENTRAL): Updated search date February 9th, 2021

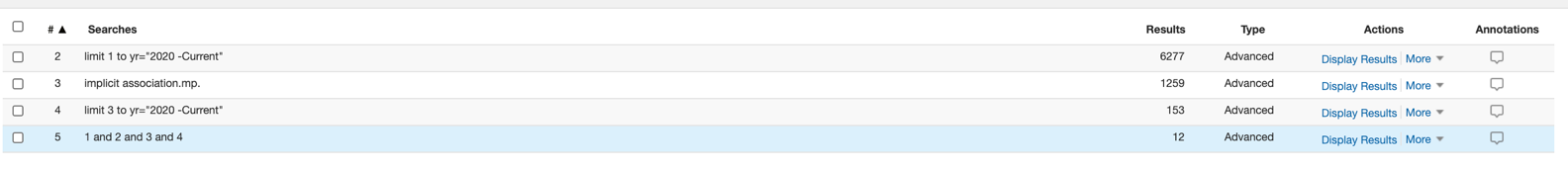
**Supplemental Figure 1.** *MEDLINE (OVID interface) search strategy and results.*

November 14th, 2020

Background pattern

Description automatically generated

Updated: February 9th, 2021



**Supplemental Figure 2.** *PsychINFO (OVID interface) search strategy and results.*

November 14th, 2020

Background pattern

Description automatically generated

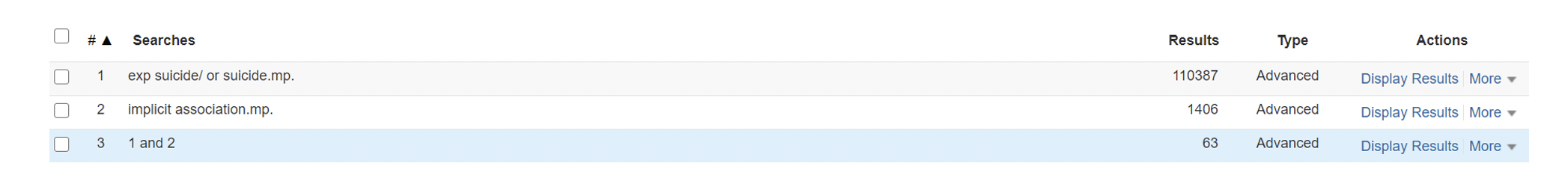
Updated: Februrary 9th, 2021

Background pattern

Description automatically generated

**Supplemental Figure 3.** *EMBASE (OVID interface) search strategy and results.­*

November 14th, 2020

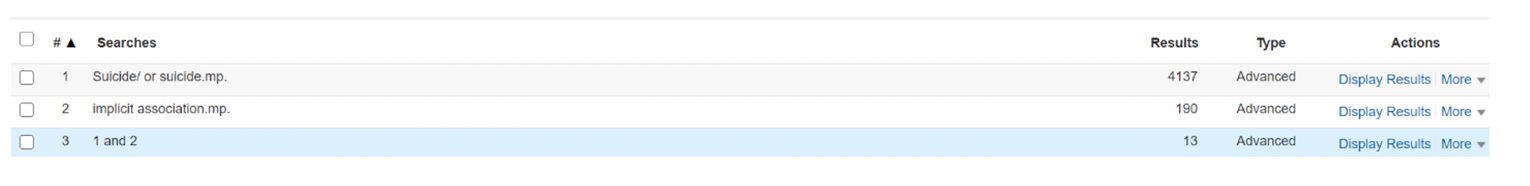


Updated: Februrary 9th, 2021



**Supplemental Figure 4.** *Cochrane Central Register of Controlled Trials (CENTRAL; OVID interface) search strategy and results.­*

November 14th, 2020



Updated: February 9th, 2021



**Supplemental Table 3.** *Raw data and group composition.*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Study | NA Group (*n*) | NA D-IAT Mean (SD) | SA Group (*n*) | SA D-IAT Mean (SD) | Group differences | % Sample D-IAT ≥ 0 | Country |
| Nock et al., 2010 | Presented to ED with psychiatric emergency (*n*=114) |  | Presented to ED with SA in past week (*n*=43) |  | *t*(155) = 2.46, p < .05 | 24.18% (SA) | USA |
| Harrison et al., 2014 | Undergraduate students (*n*=357). *n*=154 with past-year SI | -0.48 (0.32) | Lifetime SA (*n*=51) | -0.38 (0.30) |  | 9.07% | USA |
| Dickstein et al., 2015 | NSSI Disorder (*n*=46), HC (*n*=43) | -0.27 (0.31) | SA in past 30-days. No history of NSSI (*n*=47) | -0.34 (0.29) |  |  | USA |
| Ellis et al., 2016 | SI (*n*=211) | -0.47 (0.39) | Lifetime SA (*n*=207) | -0.40 (0.44) |  | 16.26% | USA |
| Barnes et al., 2017 | Hospitalized due to suicide risk (*n*=47) | -0.49 (0.40) | Lifetime SA (*n*=126) | -0.46 (0.40) |  | 12.14% | USA |
| Glenn C.R. et al., 2017 | Lifetime SI (*n*=166) | -0.28 (0.40) | Lifetime SA (*n*=110) | -0.29 (0.33) |  | 22.91% | USA |
| Glenn J.J. et al., (1) | No NSSI. >50% SI (*n*=720) |  | Lifetime SA (*n*=266) |  | *t*(984) = 5.32, p<.001 | 18.63% | USA |
| Glenn J.J. et al., (2) | No NSSI >50% SI (*n*=720) |  | Lifetime SA (*n*=264) |  | *t*(982) = 4.49, p < .001 | 18.63% | USA |
| Harrison et al., 2018 | Presented to ED with SI (*n*=21) | -0.43 (0.39) | Lifetime SA (*n*=107) | -0.52 (0.67) |  | 16.41% | USA |
| Millner et al., 2018 | >50% SI (*n*=1257) | -0.41 (0.03) | Lifetime SA (*n*=598) | -0.19 (0.03) |  | 19.08% | USA |
| Millner et al., 2019 | *n*=18 SI, *n*=14 non-suicidal | -0.37 (0.27) | Lifetime SA (*n*=34) | -0.23 (0.43) |  | 19.72% | USA |
| Bender et al., 2019 | HC, *n*=6 SI (*n*=134) | 0.16 (0.20) | Lifetime SA (*n=*8) | 0.16 (0.30) |  | 81.16% | USA |
| Glenn C.R. et al., 2019 | *n*=35 HC, *n*=12 lifetime SI, *n*=42 past year SI | -0.47 (0.22) | *n*=22 past-year SA, *n*=30 lifetime SA | -0.36 (0.23) |  | 14.18% | USA |
| Podlogar et al., 2019 | *n*=89 no STB, *n*=140 SI, *n*=91 suicide plans |  | Lifetime SA (*n=*62) |  | *t* (380)=3.49 | 11.52% | USA |
| Tello et al., 2020 | Presented to ED with psychiatric emergency (*n*=60) | -0.61 (0.34) | Lifetime SA (*n=*102) | -0.50 (0.39) |  | 10.37% | France |
| O’Shea et al., 2020 | 51.91% any STB (*n=*1731) | -0.41 (0.46) | Lifetime SA (*n=*802) | -0.20 (0.50) |  | 22.62% | USA |
| Wang et al., 2020 | HC (*n*=125), depressed (*n*=90) | -0.27 (0.42) | Lifetime SA (*n*=40) | -0.03 (0.43) |  |  | China |
| Ho et al., 2021 | Depressed (*n*=41) | -0.09 (0.22) | Lifetime SA (*n*=12) | -0.27 (0.29) |  | 18.87% | USA |
| Rath et al., 2021 (1) | Lifetime SI (*n*=45) | -0.35 (0.29) | Lifetime SA (*n*=26) | -0.42 (0.41) |  | 14.08% | Germany |
| Rath et al., 2021 (2) | Lifetime SI: currently hopsitalized for severe SI (*n*=55) | -0.34 (0.32) | Lifetime SA (*n*=171) | -0.34 (0.34) |  | 14.16% | Germany |

*Note.* NA = non-attempter. SA = Suicide Attempter. SI = Suicidal Ideation. Group column describes group composition. HC = Healthy Controls. D-IAT = Death Implicit Association Test. SD = Standard Deviation. ED = Emergency Department. STB = Suicidal Thoughts and Behaviours. Means from Harrison et al., (2014; 2018) were reverse coded from how they were presented in the originial publication (here, negative scores represent stronger association with life). Country = country where study was conducted. Group differences only presented here if means and SD not available.

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**Supplemental Figure 5.** Funnel plot depicting the standard mean difference versus study precision in eighteen studies that assessed D-IAT scores in individuals with and without a lifetime history of suicide attempt (Intercept = -2.16, 95%CI: -3.40 to -0.93, *p*=0.002). \*The nineteenth and twentieth points represent the replication sample from J.J. Glenn et al., 2017 and study 2 from Rath et al., 2021.

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**Supplemental Figure 6.** Funnel plot depicting log odds ratio versus study precision in fifteen studies presenting retrospective odds ratios of a lifetime history of suicide attempt(s) when D-IAT scores fall above or equal to zero (Intercept = -0.95, 95%CI: -2.65 to 0.74, *p*=0.25). \*The sixteenth data point represents the second sample from Rath et al., 2021.

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**Supplemental Figure 7.** Funnel plot depicting log odds ratio versus study precision in six studies presenting predictive odds ratios of a suicide attempt within six-months when D-IAT scores fall above or equal to zero (intercept=0.65, 95%CI: -5.96 to 7.26, *p*=0.80).

**References**

Arendt, F., Till, B., & Niederkrotenthaler, T. (2016). Effects of Suicide Awareness Material on Implicit Suicide Cognition: A Laboratory Experiment. *Health Communication*, *31*(6), 718–726. https://doi.org/10.1080/10410236.2014.993495

Ballard, E. D., Gilbert, J. R., Fields, J. S., Nugent, A. C., & Zarate, C. A. (2020). Network Changes in Insula and Amygdala Connectivity Accompany Implicit Suicidal Associations. *Frontiers in Psychiatry*, *11*, 577628. https://doi.org/10.3389/fpsyt.2020.577628

Ballard, E. D., Reed, J. L., Szczepanik, J., Evans, J. W., Yarrington, J. S., Dickstein, D. P., Nock, M. K., Nugent, A. C., & Zarate, C. A. (2019). Functional Imaging of the Implicit Association of the Self With Life and Death. *Suicide and Life-Threatening Behavior*, *49*(6), 1600–1608. https://doi.org/10.1111/sltb.12543

Barnes, S. M., Monteith, L. L., Forster, J. E., Nazem, S., Borges, L. M., Stearns‐Yoder, K. A., & Bahraini, N. H. (2019). Developing Predictive Models to Enhance Clinician Prediction of Suicide Attempts Among Veterans With and Without PTSD. *Suicide and Life-Threatening Behavior*, *49*(4), 1094–1104. https://doi.org/10.1111/sltb.12511

Cha, C. B., Augenstein, T. M., Frost, K. H., Gallagher, K., D’Angelo, E. J., & Nock, M. K. (2016). Using Implicit and Explicit Measures to Predict Nonsuicidal Self-Injury Among Adolescent Inpatients. *Journal of the American Academy of Child & Adolescent Psychiatry*, *55*(1), 62–68. https://doi.org/10.1016/j.jaac.2015.10.008

Cha, C. B., O’Connor, R. C., Kirtley, O., Cleare, S., Wetherall, K., Eschle, S., Tezanos, K. M., & Nock, M. K. (2018). Testing mood-activated psychological markers for suicidal ideation. *Journal of Abnormal Psychology*, *127*(5), 448–457. https://doi.org/10.1037/abn0000358

Chen, Z., Poon, K.-T., DeWall, C. N., & Jiang, T. (2020). Life lacks meaning without acceptance: Ostracism triggers suicidal thoughts. *Journal of Personality and Social Psychology*. https://doi.org/10.1037/pspi0000238

Chiurliza, B., Hagan, C. R., Rogers, M. L., Podlogar, M. C., Hom, M. A., Stanley, I. H., & Joiner, T. E. (2018). Implicit Measures of Suicide Risk in a Military Sample. *Assessment*, *25*(5), 667–676. https://doi.org/10.1177/1073191116676363

Glashouwer, K. A., de Jong, P. J., Penninx, B. W. J. H., Kerkhof, A. J. F. M., van Dyck, R., & Ormel, J. (2010). Do Automatic Self-Associations Relate to Suicidal Ideation? *Journal of Psychopathology and Behavioral Assessment*, *32*(3), 428–437. https://doi.org/10.1007/s10862-009-9156-y

Gratz, K. L., Chapman, A. L., Dixon-Gordon, K. L., & Tull, M. T. (2016). Exploring the association of deliberate self-harm with emotional relief using a novel Implicit Association Test. *Personality Disorders: Theory, Research, and Treatment*, *7*(1), 91–102. https://doi.org/10.1037/per0000138

Ho, T. C., Cichocki, A. C., Gifuni, A. J., Catalina Camacho, M., Ordaz, S. J., Singh, M. K., & Gotlib, I. H. (2018). Reduced dorsal striatal gray matter volume predicts implicit suicidal ideation in adolescents. *Social Cognitive and Affective Neuroscience*, *13*(11), 1215–1224. https://doi.org/10.1093/scan/nsy089

Hussey, I., Barnes-Holmes, D., & Booth, R. (2016). Individuals with current suicidal ideation demonstrate implicit “fearlessness of death.” *Journal of Behavior Therapy and Experimental Psychiatry*, *51*, 1–9. https://doi.org/10.1016/j.jbtep.2015.11.003

Kene, P. (2017). Self-Injury Implicit Association Test: Comparison of Suicide Attempters and Non-attempters. *Psychiatric Quarterly*, *88*(1), 155–165. https://doi.org/10.1007/s11126-016-9438-y

Nock, M. K., & Banaji, M. R. (2007a). Prediction of suicide ideation and attempts among adolescents using a brief performance-based test. *Journal of Consulting and Clinical Psychology*, *75*(5), 707–715. https://doi.org/10.1037/0022-006X.75.5.707

Nock, M. K., & Banaji, M. R. (2007b). Assessment of Self-Injurious Thoughts Using a Behavioral Test. *American Journal of Psychiatry*, *164*(5), 820–823. https://doi.org/10.1176/ajp.2007.164.5.820

Price, R. B., Iosifescu, D. V., Murrough, J. W., Chang, L. C., Al Jurdi, R. K., Iqbal, S. Z., Soleimani, L., Charney, D. S., Foulkes, A. L., & Mathew, S. J. (2014). Effects of ketamine on explicit and implicit suicidal cognition: A randomized controlled trail in treatment-resistant depression: Effects of ketamine on suicidality. *Depression and Anxiety*, *31*(4), 335–343. https://doi.org/10.1002/da.22253

Price, R. B., Nock, M. K., Charney, D. S., & Mathew, S. J. (2009). Effects of Intravenous Ketamine on Explicit and Implicit Measures of Suicidality in Treatment-Resistant Depression. *Biological Psychiatry*, *66*(5), 522–526. https://doi.org/10.1016/j.biopsych.2009.04.029

Randall, J. R., Rowe, B. H., Dong, K. A., Nock, M. K., & Colman, I. (2013). Assessment of self-harm risk using implicit thoughts. *Psychological Assessment*, *25*(3), 714–721. https://doi.org/10.1037/a0032391

Tang, J., Wu, S., & Miao, D. (2013). Experimental Test of Escape Theory: Accessibility to Implicit Suicidal Mind. *Suicide and Life-Threatening Behavior*, *43*(4), 347–355. https://doi.org/10.1111/sltb.12021

Tucker, R. P., Wingate, L. R., Burkley, M., & Wells, T. T. (2018). Implicit Association with Suicide as Measured by the Suicide Affect Misattribution Procedure (S-AMP) Predicts Suicide Ideation. *Suicide and Life-Threatening Behavior*, *48*(6), 720–731. https://doi.org/10.1111/sltb.12392

Wells, T. T., Tucker, R. P., Kraines, M. A., Smith, L. M., & Unruh-Dawes, E. (2020). Implicit bias for suicide persists after ideation resolves. *Psychiatry Research*, *285*, 112784. https://doi.org/10.1016/j.psychres.2020.112784

Williams, C. L., Gauthier, J. M., & Witte, T. K. (2020). Effects of Exposure to Multiple, Graphic Suicide News Articles on Explicit and Implicit Measures of Suicide Risk. *Archives of Suicide Research*, 1–21. https://doi.org/10.1080/13811118.2020.1715905