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Early-life trauma, impulsivity and suicide attempt: a systematic review and meta-analysis

Alexandra Bender Nabinger^{1,2†}, Alana Castro Panzenhagen^{2,3†}, Thricy Dahmer^{2,4}, Roberto Farina Almeida⁵, André Utsch Dias⁶, Brenio Felipe Batista Pereira⁶, Cristine Weihrauch Pedro^{2,4}, Graziela Smaniotto Rodrigues^{1,2}, Izabela Keuffer Adão⁶, Pedro Henrique Oliveira Robini⁶, Julia Sampaio Silva⁶, Rafael Rocha^{2,4}, Raul Prates Dantas^{2,4}, José Cláudio Fonseca Moreira³, Edison Capp^{1‡}, Flávio Milman Shansis^{1,2,4‡}

¹Programa de Pós-graduação em Ciências da Saúde: Ginecologia e Obstetrícia, Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, RS, Brazil.

²Laboratório de Pesquisa Translacional em Comportamento Suicida, Univates, Lajeado, RS, Brazil.

³Programa de Pós-Graduação em Ciências Biológicas: Bioquímica, Universidade Federal do Rio Grande do Sul (UFRGS), Porto Alegre, RS, Brazil.

⁴Programa de Pós-Graduação em Ciências Médicas, Universidade do Vale do Taquari (Univates), Lajeado, RS, Brazil.

⁵ Programa de Pós-Graduação em Bioquímica e Bioprospecção, Universidade Federal de Pelotas (UFPEL),RS, Brazil.

⁶Faculdade de Medicina da Universidade Federal de Ouro Preto, Ouro Preto, MG, Brazil.

†These authors contributed equally as first authors.

‡These authors jointly supervised the work.

Corresponding author:

Alana Castro Panzenhagen

alana.castro@ufrgs.br

Rua Ramiro Barcelos 2600 - Anexo, Zipcode: 90035-003, Porto Alegre/RS, Brazil

ABSTRACT

Introduction: Suicide is a worldwide health concern and up to date there is no good predictor of it except a previous suicide attempt. Therefore, there are increasing efforts in the understanding of which factors, genetic or environmental, are associated with suicide behaviour. Objective: To review evidence of the effect of childhood trauma and impulsivity on suicidal behavior through a systematic review and meta-analysis. Methods: Searches were conducted on the 12th of June 2021 in the PubMed, Scopus, and Web of Science

databases. Two reviewers evaluated each record for eligibility and discussed upon disagreement, when no consensus was reached, a third reviewer was involved to make a decision. Results: A total of 11,530 records were identified through the searches. After duplicates were removed, 6,595 records remained to be screened. The full text was sought for 1,561 records. Our qualitative synthesis included 22 studies, from which 9 were included in the meta-analyses. We found a significant effect of sexual abuse, physical abuse, emotional abuse and physical neglect on suicide attempts in the prisoners, and Substance Use Disorder (SUD) subgroups. Moreover, there was a significant effect of Childhood Trauma Questionnaire (CTQ) total score and emotional neglect dimension for all the subgroups.

Conclusion: The present study has provided an overview of the state-of-the-art research on childhood trauma and impulsivity and their association with suicidal behavior and quantified their effects on suicide attempts. Hopefully this evidence will be considered in future research and harnessed for clinical gain in detection and treatment of suicide behaviour.

Keywords: behaviour, childhood, trauma, psychiatry, suicide.

INTRODUCTION

Suicide is a World Health Organization (WHO) priority health concern, affecting mainly low- and middle-income countries (77%). Every 40 seconds one person dies by suicide, this amounts to more than 700,000 people each year¹. Suicide is a leading cause of death worldwide, ahead of malaria, AIDS, breast cancer, war, and homicide^{1,2}. In 2019, suicide accounted for 1.3% of all deaths. Moreover, for each completed suicide there were more than 20 other attempts. The behavior is present throughout life, being the fourth leading cause of death among 15-29 year-old^{2,3}.

Advances in our understanding of suicidal behaviour have shown that it is indeed a complex phenotype, comprising environmental, social, clinical, genetic, and other biological factors⁴. Proximal and distal components might affect suicide risk, such as genetic susceptibility^{5,6} or traumatic and stressful events⁷⁻⁹. The multifactorial nature of suicidal behaviour makes it challenging to investigate its aetiology or predict individual hazards. The best predictor of suicide risk to date is a previous suicide attempt¹⁰, which is far from an ideal indicator for suicide prevention.

Furthermore, suicidal behaviour is a shared comorbid phenotype in different psychiatric disorders, although more prevalent in mood and affect-related disorders, such as major depressive disorder (MDD), bipolar disorder (BD), schizoaffective disorder (SZA), and

schizophrenia (SCZ) ⁴. Due to its cross-disorder characteristic, one would also expect to find shared features between disorders that might influence suicide risk, and maybe even the same associated predictors. This has been demonstrated by the first genome-wide association studies (GWAS) investigating suicide attempts in different disorder samples, revealing that indeed there seems to be a common genetic, and hence biological, component to the pathophysiology of suicide ^{5,11}.

There is also evidence in the literature about shared behavioral traits, such as self-criticism, hopelessness, guilt, anxiety, and personality, including impulsivity. The latter, in fact, does have common domain profiles across many disorders and is worthy of further investigation since it is usually formed early in life and changes little across the lifespan, which makes personality traits good candidate predictors. Among these, impulsivity seems to be a key factor for suicide attempt and death by suicide, contributing for trigger to the act itself ^{4,12}. Moreover traumatic events seem to play a role as distal factors that can be present early in life, and influence the coping capabilities in adulthood ^{5,13}. Therefore, we aim at i) providing a systematically-gathered overview of the literature on childhood trauma, personality traits and suicidal behaviour; ii) quantifying one of the main behaviours, suicide attempt, through a meta-analysis, which could guide future research and hint at potential predictors.

METHODS

This systematic review and meta-analysis was pre-registered on the International prospective register of systematic reviews (PROSPERO) under registration CRD42022345915. We followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) for reporting this work ¹⁴.

Eligibility criteria

The inclusion criteria for this systematic review comprised any study: with adult individuals (Population) presenting suicidal behaviour, namely suicide risk, suicidal ideation, suicide attempt, or suicide completion (Exposure), with or without a control group for suicidal behaviour (Comparison), presenting an evaluation of personality and childhood trauma through documented questionnaire scale instruments (Outcome), and designed as a cross-sectional, cohort, case-control or clinical trial study.

The exclusion criteria were: non-human studies, such as animal models, *in vitro*, or *in silico*; studies with adolescents or children in the sample; studies with individuals diagnosed with any personality or neurological disorder, such as borderline personality disorder or Alzheimer's disease; studies presenting only subjective records of personality and childhood trauma assessment (not based on a scored questionnaire scale); studies with no original data, such as reviews or commentaries; and studies published in other languages than English.

Information sources and search strategies

Searches were conducted on the 12th of June 2021 in the PubMed, Scopus, and Web of Science databases. No limitations were imposed on the date of publication. The following strategies were used: *PubMed* - (("personality"[tiab] OR "personality traits"[tiab] OR "BIG-5"[tiab] OR "Big Five personality"[tiab] OR "PID-5"[tiab] OR "PID-V"[tiab] OR "Personality Inventory for DSM-5"[tiab] OR "Tridimensional Personality Questionnaire"[tiab] OR ((("five-factor"[tiab] OR "five factor"[tiab] OR "five-factors"[tiab] OR "five factors"[tiab]) AND "personality"[tiab])) AND ("suicidal"[tiab] OR "suicide attempts"[tiab] OR "suicide"[tiab] OR "Suicide"[mesh])) NOT (review[title] OR "personality disorder"[title] OR "borderline disorder"[title] OR "antisocial disorder"[title] OR "Schizoid Personality Disorder"[title] OR "Narcissistic Personality Disorder"[title]); *Scopus* - TITLE-ABS ("personality" OR "personality traits" OR "BIG-5" OR "Big Five personality" OR "PID-5" OR "PID-V" OR "Personality Inventory for DSM-5" OR "Tridimensional Personality Questionnaire" OR (("five-factor" OR "five factor" OR "five-factors" OR "five factors") AND "personality")) AND TITLE-ABS ("suicidal" OR "suicide attempts" OR "suicide" OR "suicides" OR "parasuicide" OR "parasuicides" OR "fatal Attempt" OR "fatal attempts") AND NOT TITLE (review OR "personality disorder" OR "borderline disorder" OR "antisocial disorder" OR "Schizoid Personality Disorder" OR "Narcissistic Personality Disorder"); *Web of Science* - TOPIC("personality" OR "personality traits" OR "BIG-5" OR "Big Five personality" OR "PID-5" OR "PID-V" OR "Personality Inventory for DSM-5" OR "Tridimensional Personality Questionnaire" OR (("five-factor" OR "five factor" OR "five-factors" OR "five factors") AND ("personality"))) AND ("suicidal" OR "suicide attempts" OR "suicide" OR "suicides" OR "parasuicide" OR "parasuicides" OR "fatal Attempt" OR "fatal attempts") NOT TITLE:(review OR "personality disorder" OR "borderline disorder" OR "antisocial disorder" OR "Schizoid Personality Disorder" OR "Narcissistic Personality Disorder").

Selection of studies and data collection

Records were uploaded to the rayyan.ai online tool, where duplicates were removed by human screening after detecting possible duplicate records using Rayyan's algorithm. Two independent reviewers evaluated all studies for eligibility, first through title and abstract screening and second by full-text evaluation. Disagreements were resolved by discussion between reviewers or by a third reviewer when consensus could not be reached. The hierarchy of exclusion criteria was the language of the record, design of the study, non-human samples, studies without suicidal behaviour, studies without an objective personality evaluation, studies including individuals with personality disorders or neurological disorders, and studies without an objective childhood trauma evaluation.

Data collection was conducted manually by one reviewer, and information was inserted into a spreadsheet. The process was divided into two main steps: 1) screening of studies and summary data collection; and 2) data collection for meta-analysis. The following data was extracted in the first step: first author last name, year of publication, the sample size of cases, the sex ratio of individuals, mean age or age range reported, if the study included a control group and its sample size, which was the population the sample was based on, which personality and childhood trauma evaluation scales the study used, the type of suicidal behaviour, and the scale used to evaluate suicidal behaviour, when available. In the second step, the specific sample size for groups of interest, mean, and standard deviation or standard error of the mean were collected.

Synthesis methods

The study results are summarised in a characteristics table with all main demographic information, and instruments used. A meta-analysis was conducted for the main groups of suicide attempters versus non-attempters, in prisoners, major depressive disorder (MDD) patients, and substance use disorder (SUD) patients. The meta-analyses were performed by calculating random-effects estimates using inverse variance weighting for pooling. The method used for estimating the standardised mean difference (SMD) was the Hedges' g method. Heterogeneity was also estimated through I^2 and τ^2 methods. Subgroup analyses were conducted by the base population group. Meta-regressions were performed, including age and sex ratio as independent variables through the restricted maximum likelihood mixed model. Publication bias was assessed by funnel plotting and the Egger's regression test. All analyses were performed using R Statistical Software (v4.1.2; R Core Team 2021). The meta-analyses, meta-regressions, Egger's regression, forest plots, and

funnel plots were generated using the R packages *meta* (v5.2-0; Balduzzi 2019) and *metafor* (v3.4-0; Viechtbauer 2010).

RESULTS

Study selection

A total of 11,530 records were identified through the following searches: 3,024 in PubMed, 4,679 in Web of Science, and 3,827 in Scopus. After duplicates were removed, 6,595 records remained to be screened. With the title and abstract exclusions, 5,034 records were eliminated. The full text was sought for 1,561 records, which were assessed for eligibility. From those, 1,539 were excluded, the majority because they did not present any objective personality evaluation, did not include original data, or did not present any objective childhood trauma evaluation. Our qualitative synthesis included, therefore, 22 studies, from which 9 were included in the meta-analyses. The reasons for exclusion and the whole selection process are depicted in Figure 1. All the 22 included report references and the personality assessments conducted in them are cited in the Additional File 1.

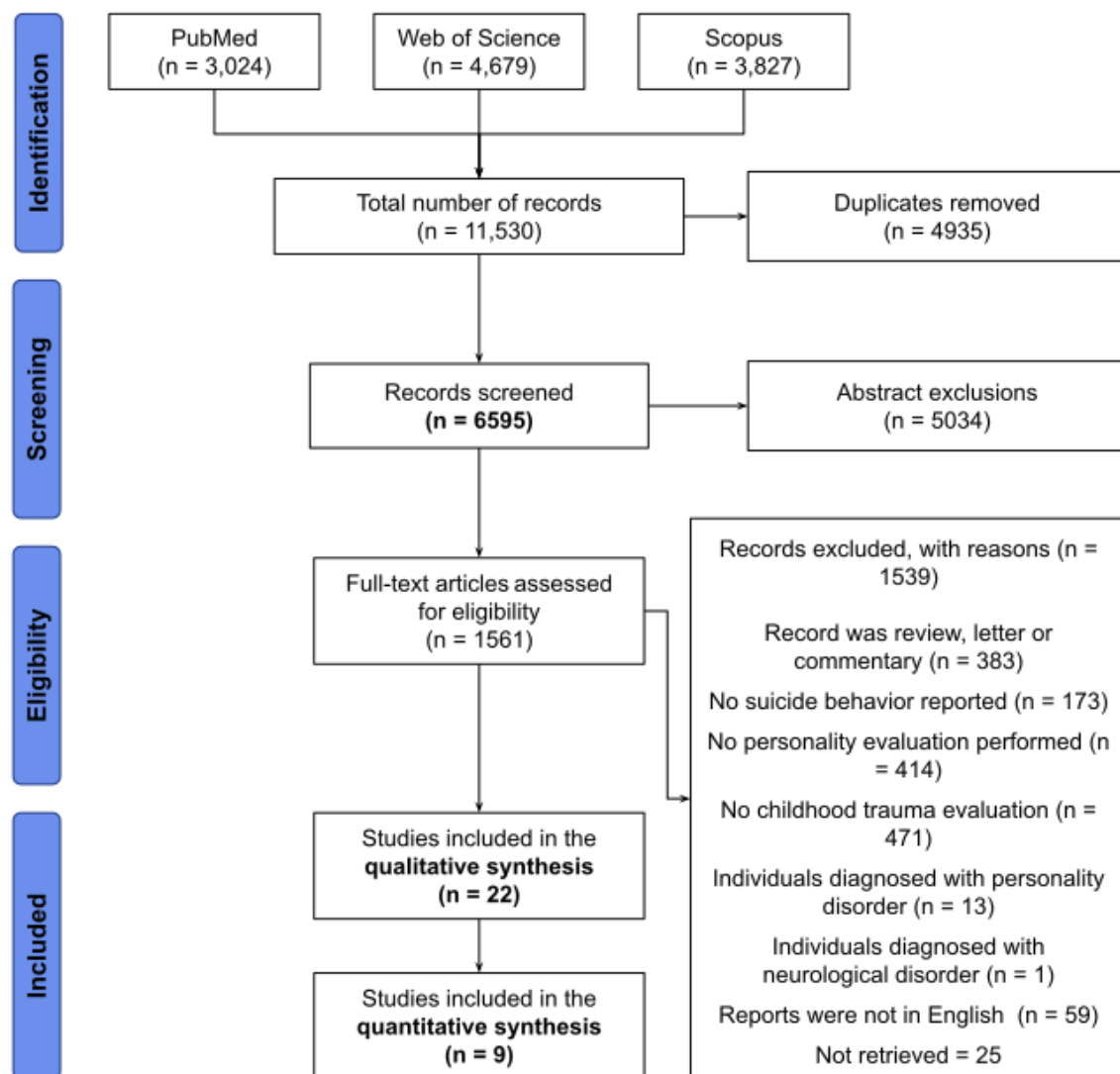


Figure 1. Flowchart of the screening procedure.

Study characteristics

The description of studies included in the qualitative synthesis is presented in Table 1. The studies comprised mostly suicide attempt samples. The base population (healthy individuals, patients with psychiatric disorders, etc), sex, and age information is provided. Studies could include or not a control group, which is also described with the number of individuals in the group.

Table 1. Description of the studies included in the qualitative synthesis.

Paper	Childhood Trauma Scale	Sex	Age (years)	Population	Suicide behavior
Bach 2017	CTQ	78,2% women, 21,8% men	mean 29, 18-56	psychiatric outpatients	suicidal ideation, suicide attempt
Blasco-Fontecilla 2013	CTQ	72% women, 28% men	18-83	hospitalized suicide attempters	suicide attempt
Blasco-Fontecilla 2014	CTQ	71% women, 29% men	18-83	suicide attempters	suicide attempt
Carli 2010	CTQ	100% men	mean 39	incarcerated individuals	suicidal ideation, suicide attempt
Carli 2011	CTQ-34	100% men	18-77	prisoners	suicide attempt
Carli 2013	CTQ-34	100% men	mean 39	prisoners	suicide attempt
Carlier 2016	CTQ	60,4% female, 39,6% men	mean 38, 18-79	mood, anxiety and somatoform outpatients	suicidal ideation, suicide attempt
Dalsanto 2020	CTQ-28	66% female, 34% men	mean 54	MDD outpatients	suicide attempt
Gorodetsky 2016	CTQ-34	100%	mean 41	prisoners	suicide attempt
Kamali 2018	CTQ	65,5% women, 34,5% men	mean 40	bipolar patients with follow-up	suicide attempt, suicide ideation
Lopez-Castroman 2012	CTQ-28	72% women, 28%	18-75	survivors of a current suicide attempt	suicide attempt
Marzano 2011	CTQ	100%	mean 25	prisoners	suicide attempt
Pompili 2009	CTQ	77,4% women, 22,6%	mean 42	physically or sexually abused psychiatric inpatients	suicide ideation
Rivlin 2013	CTQ	100% men	>18	prisoners	suicide attempt
Roy 2003	CTQ	31,4% women, 68,6% men	mean 43	alcoholics	suicide attempt
Roy 2003	CTQ-34	22,2% women, 77,8% men	mean 43	drug addicts	suicide attempt
Roy 2003b	CTQ	21,7% women, 21,7% men	mean 43	substance dependent suicide attempters	suicide attempt
Roy 2014	CTQ-34	100% men	mean 40	prisoners	suicide attempt

Sarchiapone 2009	CTQ	100% men	mean 39, 18-81	prisoners	suicidal ideation, suicide attempt
Sarchiapone 2009	CTQ-34	100% men	mean 40	prisoners	suicide attempt
Stewart 2015	CTQ	76,6% women, 23,4% men	13-18	MDD and/or dysthymia patients	suicide attempt
Velasco 2019	CTQ	58,2% women, 41,8%	mean 50	major depressive disorder patients	suicide attempt, suicide ideation

JOURNAL PRE-PROOF

Suicide attempts and the Childhood Trauma Questionnaire (CTQ)

A total of 22 studies used the Childhood Trauma Questionnaire (CTQ) ¹⁵ to assess childhood trauma, from which nine (9) presented the data necessary for a meta-analysis. The studies included in the quantitative synthesis amounted to 1,063 suicide attempters and 1,854 controls. Five (5) studies had the prisoners as base population for the sample, two (2) had MDD patients, and another two (2) had SUD patients.

The total score of CTQ was higher in suicide attempts for all the subgroups (prisoners, MDD patients, and SUD patients). The overall effect was significant, in which childhood trauma seems higher in suicide attempters with a moderate standardised mean difference of 0.64 (0.51; 0.77). The test for the overall effect presented a $z = 9.94$ and $P\text{-value} < 0.01$. The heterogeneity was low overall ($I^2 = 33\%$; $\tau^2 = 0.0118$, $p = 0.16$). The subgroup and overall meta-analysis results are depicted in Figure 2. The funnel plot and Egger's regression test indicate there is no evidence of publication bias ($t = -1.86$, $P\text{-value} = 0.11$; Figure 9A).

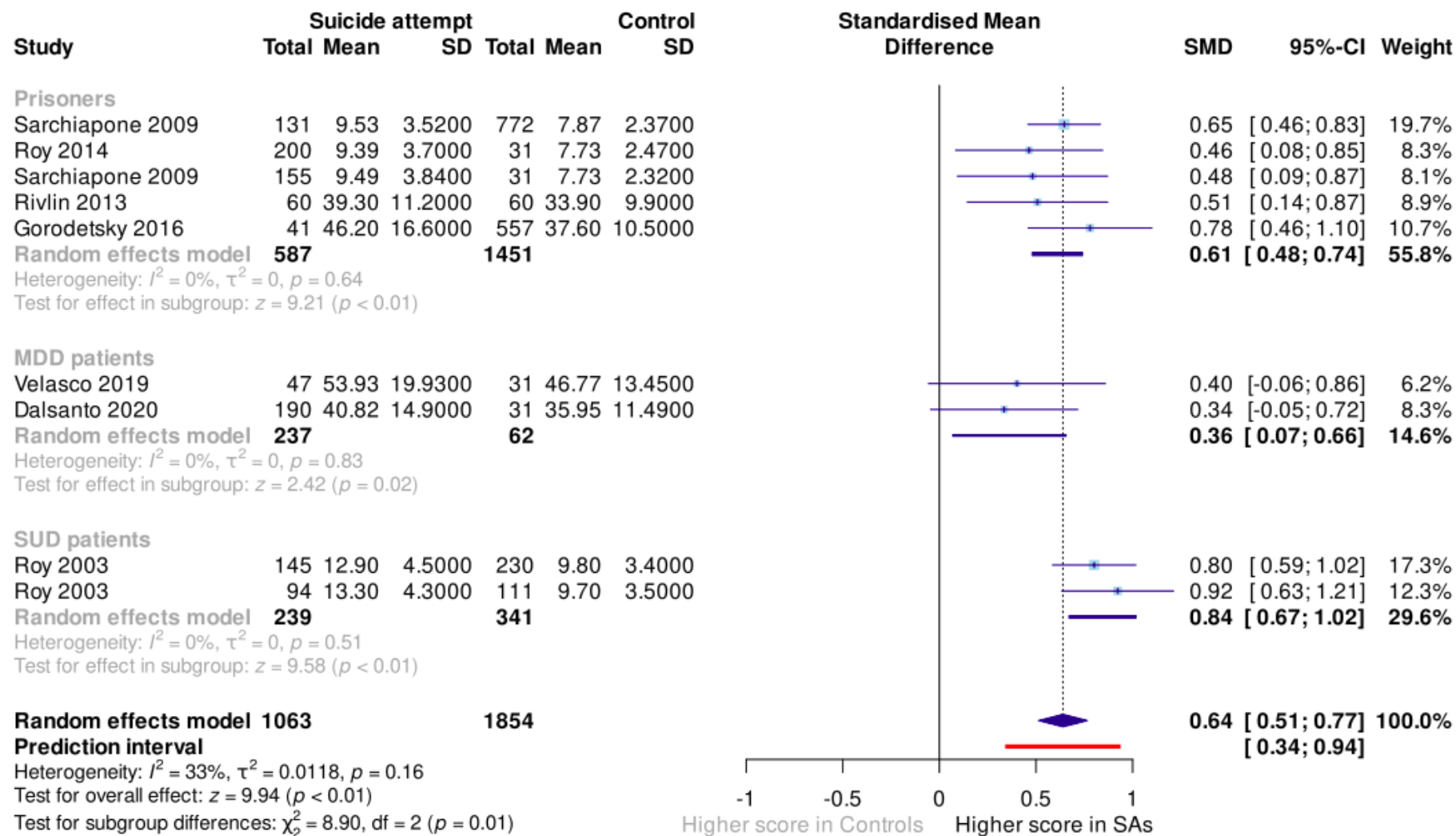


Figure 2. Forest plot of the meta-analysis of CTQ's total score in suicide attempt. SD = standard deviation, SMD = standardised mean difference, SA = suicide attempt.

For the sexual abuse dimension of CTQ, only the prisoners (SMD = 0.21 (0.06; 0.37); $z = 2.75$, $p < 0.01$) and the SUD (SMD = 0.68 (0.51; 0.85); $z = 7.80$, $p < 0.01$) subgroups were associated. However, the overall effect was also significant, with a mild mean difference (0.38 (0.19; 0.57)), showing moderate heterogeneity overall ($I^2 = 66\%$; $\tau^2 = 0.0371$, $p < 0.01$), but very low for the subgroups ($I^2 = 0\%$). The subgroup and overall meta-analysis results are depicted in Figure 3. The funnel plot and Egger's regression test indicate there is no evidence of publication bias ($t = -0.42$, $P\text{-value} = 0.69$; Figure 9C).

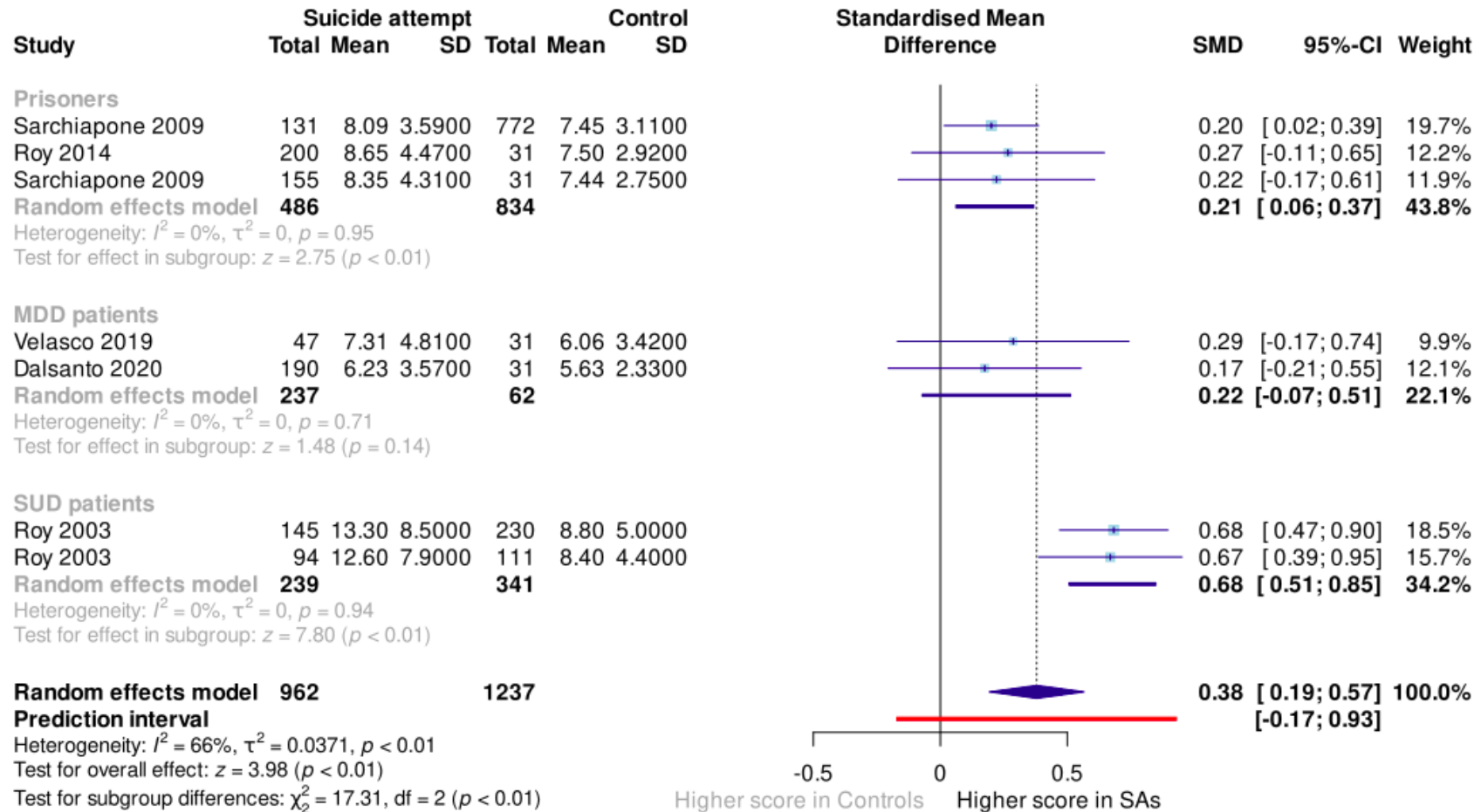


Figure 3. Forest plot of the meta-analysis of CTQ - Sexual Abuse dimension score in suicide attempt. SD = standard deviation, SMD = standardised mean difference, SA = suicide attempt.

For the physical abuse dimension of CTQ, similar to sexual abuse, only the prisoners (SMD = 0.48 (0.32; 0.63); $z = 6.08$, $p < 0.01$) and the SUD (SMD = 0.62 (0.45; 0.79); $z = 7.16$, $p < 0.01$) subgroups were associated. Additionally, the overall effect was significant, with a mild mean difference (0.48 (0.35; 0.60)), showing low heterogeneity overall ($I^2 = 26\%$; $\tau^2 = 0.0057$, $p = 0.23$), and very low for the subgroups ($I^2 = 0\%$). The subgroup and overall meta-analysis results are depicted in Figure 4. However, the funnel plot and Egger's regression test indicate there is some evidence of publication bias ($t = -3.09$, P-value = 0.03; Figure 9E).

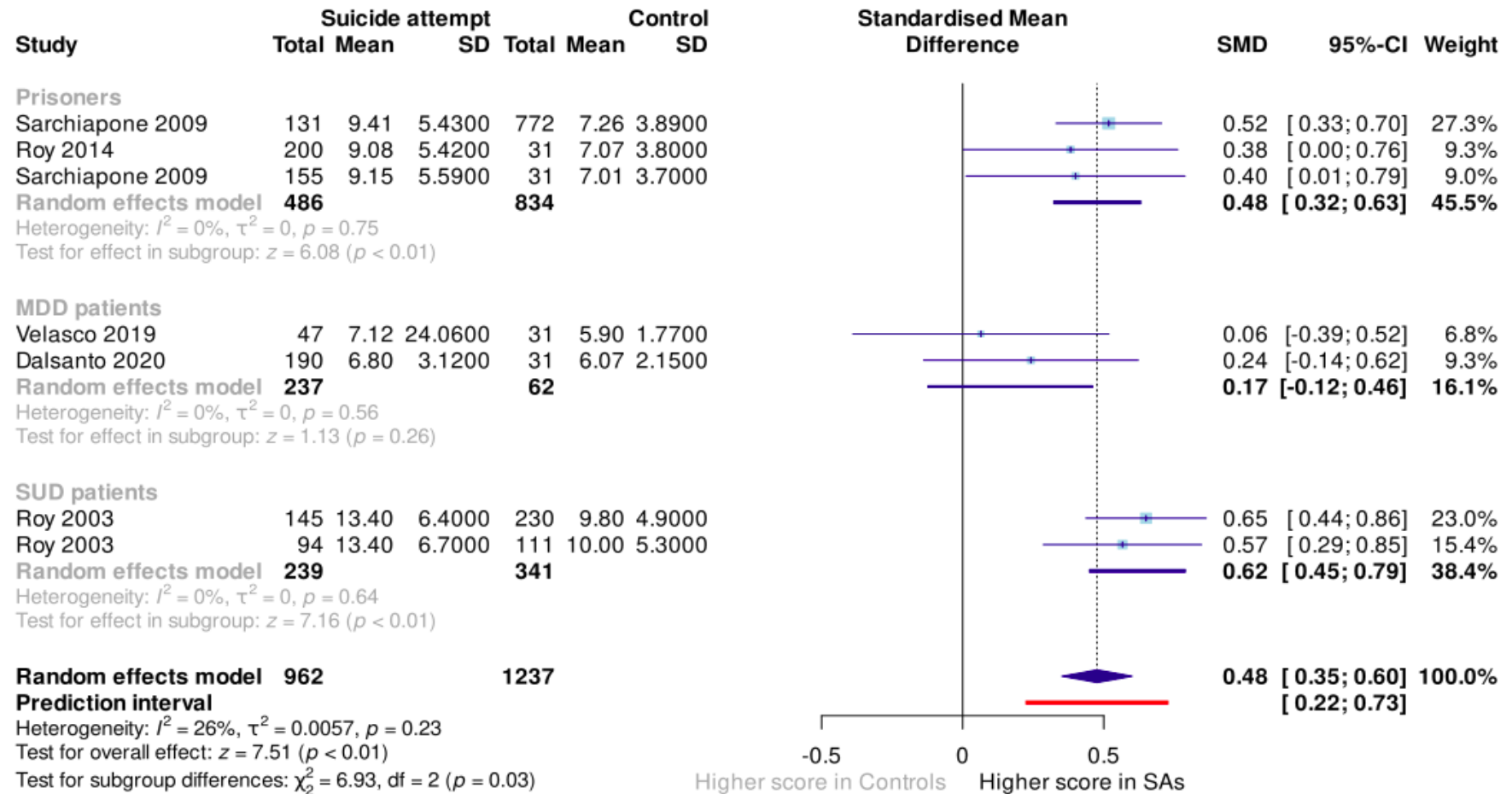


Figure 4. Forest plot of the meta-analysis of CTQ - Physical Abuse dimension score in suicide attempt. SD = standard deviation, SMD = standardised mean difference, SA = suicide attempt.

For the emotional abuse dimension of CTQ, only the prisoners (SMD = 0.52 (0.37; 0.68); $z = 6.67$, $p < 0.01$) and the SUD (SMD = 0.76 (0.58; 0.93); $z = 8.65$, $p < 0.01$) subgroups were associated once again. The overall effect was also significant, with a moderate mean difference (0.56 (0.42; 0.70)), showing low heterogeneity overall ($I^2 = 35\%$; $\tau^2 = 0.0128$, $p = 0.16$), and very low for the subgroups ($I^2 = 0\%$). The subgroup and overall meta-analysis results are depicted in Figure 5. The funnel plot and Egger's regression test indicate there is no evidence of publication bias ($t = -1.96$, $P\text{-value} = 0.11$; Figure 9B).

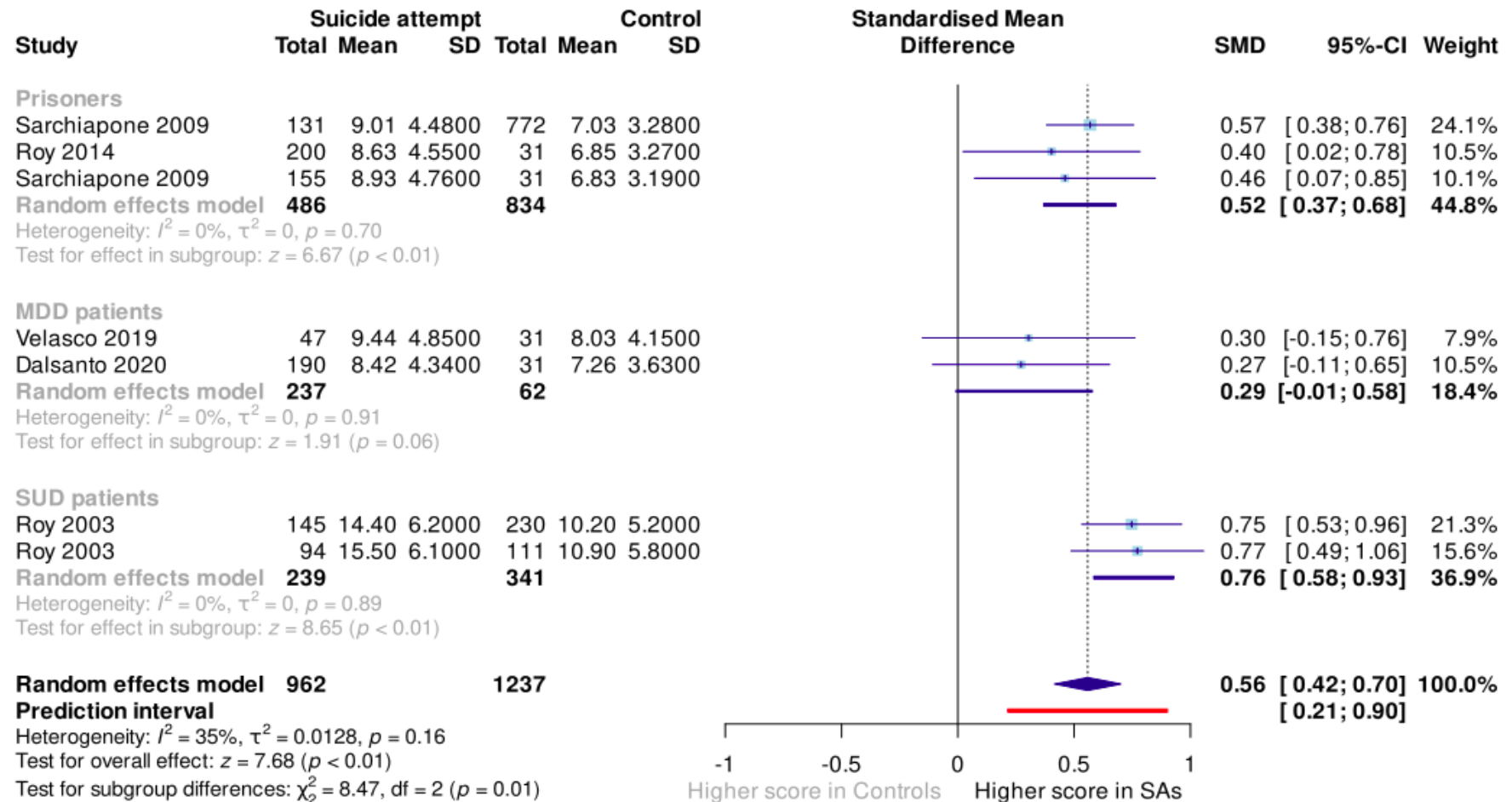


Figure 5. Forest plot of the meta-analysis of CTQ - Emotional Abuse dimension score in suicide attempt. SD = standard deviation, SMD = standardised mean difference, SA = suicide attempt.

For the physical neglect dimension of CTQ, only the prisoners (SMD = 0.45 (0.30; 0.60); $z = 5.75$, $p < 0.01$) and the SUD (SMD = 0.49 (0.17; 0.81); $z = 3.04$, $p < 0.01$) subgroups were associated. Additionally, the overall effect was significant, with a moderate mean difference (0.42 (0.32; 0.53)), showing very low heterogeneity overall ($I^2 = 0\%$; $\tau^2 = 0.0004$, $p = 0.44$). Moreover, a very low heterogeneity was identified for the prisoners and MDD subgroups ($I^2 = 0\%$), but not for the SUD subgroup ($I^2 = 69\%$). The subgroup and overall meta-analysis results are depicted in Figure 6. The funnel plot and Egger's regression test indicate there is no evidence of publication bias ($t = -0.81$, $P\text{-value} = 0.46$; Figure 9D).

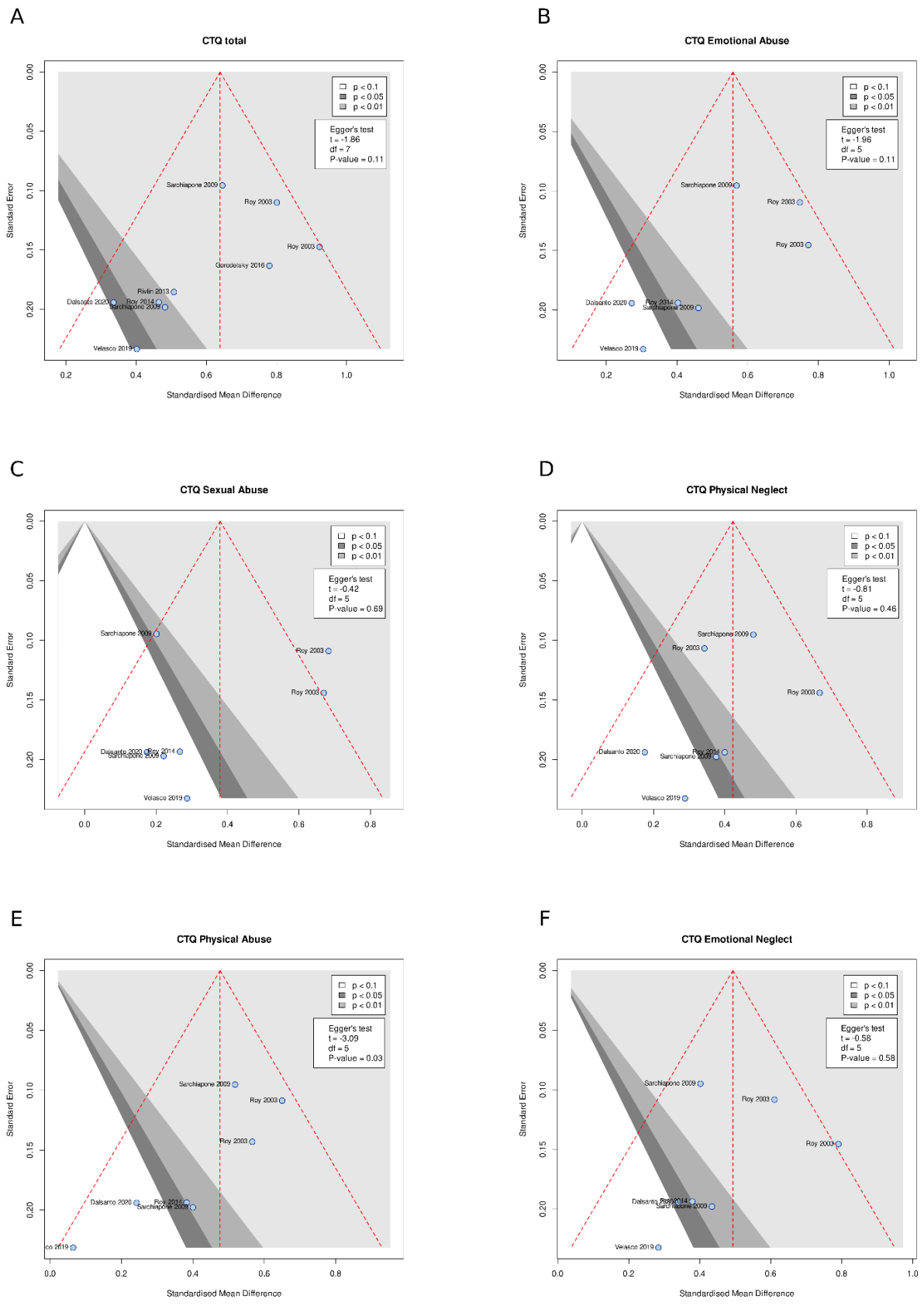


Figure 9. Funnel plots indicating the publication bias of studies included in the meta-analysis of impulsivity (A), harm avoidance (B), novelty seeking (C), reward dependence (D), neuroticism (E), extroversion (F), and psychoticism (G).

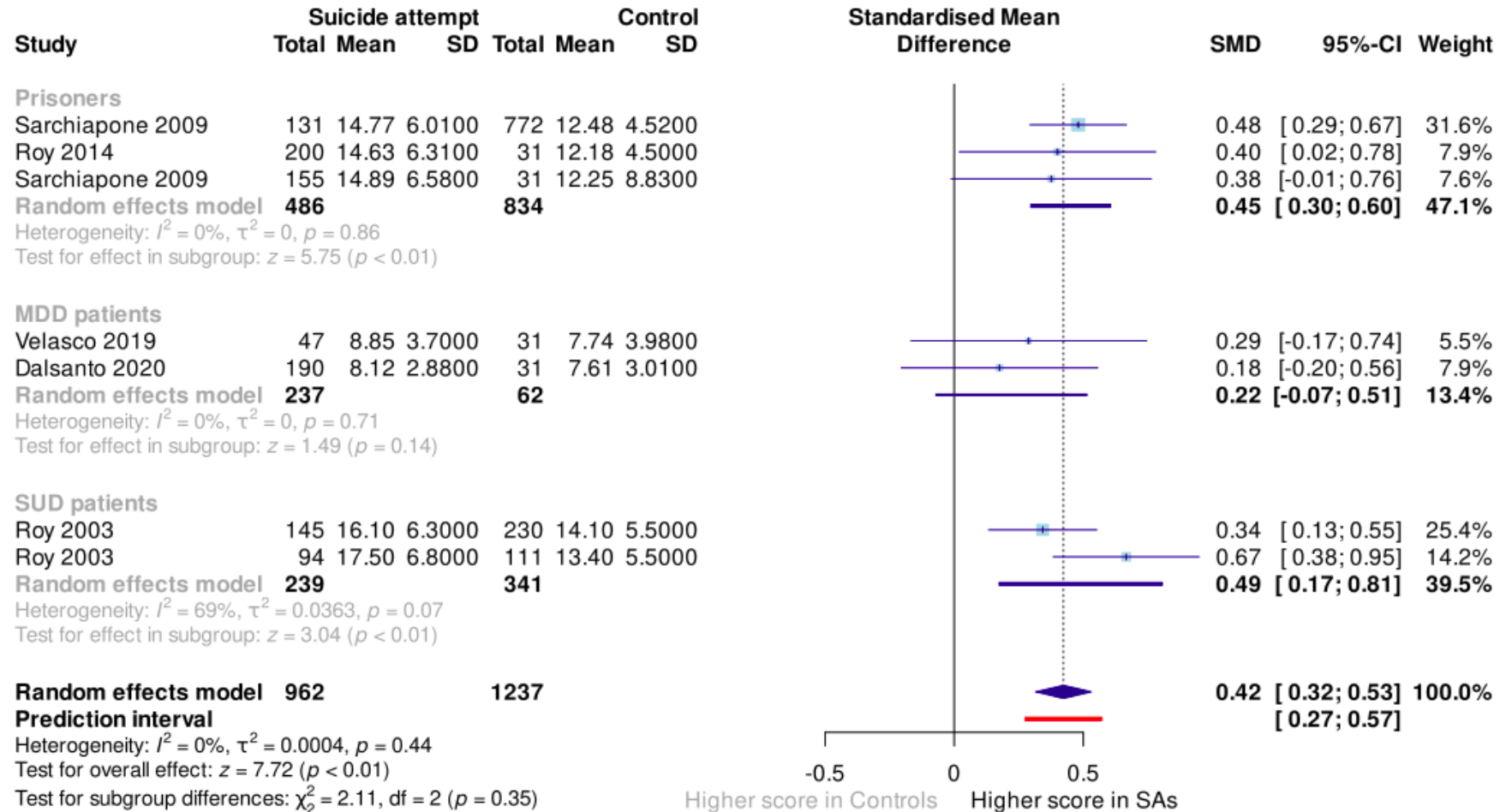


Figure 6. Forest plot of the meta-analysis of CTQ - Physical Neglect dimension score in suicide attempt. SD = standard deviation, SMD = standardised mean difference, SA = suicide attempt.

For the emotional neglect dimension of CTQ, all subgroups were associated with the outcome: prisoners (SMD = 0.40 (0.25; 0.56); $z = 5.15$, $p < 0.01$), MDD patients (SMD = 0.32 (0.02; 0.61); $z = 2.12$, $p = 0.03$) and SUD patients (SMD = 0.49 (0.36; 0.80); $z = 7.76$, $p < 0.01$). Additionally, the overall effect was significant, with a moderate mean difference (0.49 (0.36; 0.63)), showing low heterogeneity overall ($I^2 = 26\%$; $\tau^2 = 0.0098$, $p = 0.23$). Moreover, a very low heterogeneity was identified in all subgroups ($I^2 = 0\%$). The subgroup and overall meta-analysis results are depicted in Figure 7. The funnel plot and Egger's regression test indicate there is no evidence of publication bias ($t = -0.58$, $P\text{-value} = 0.58$; Figure 9F).

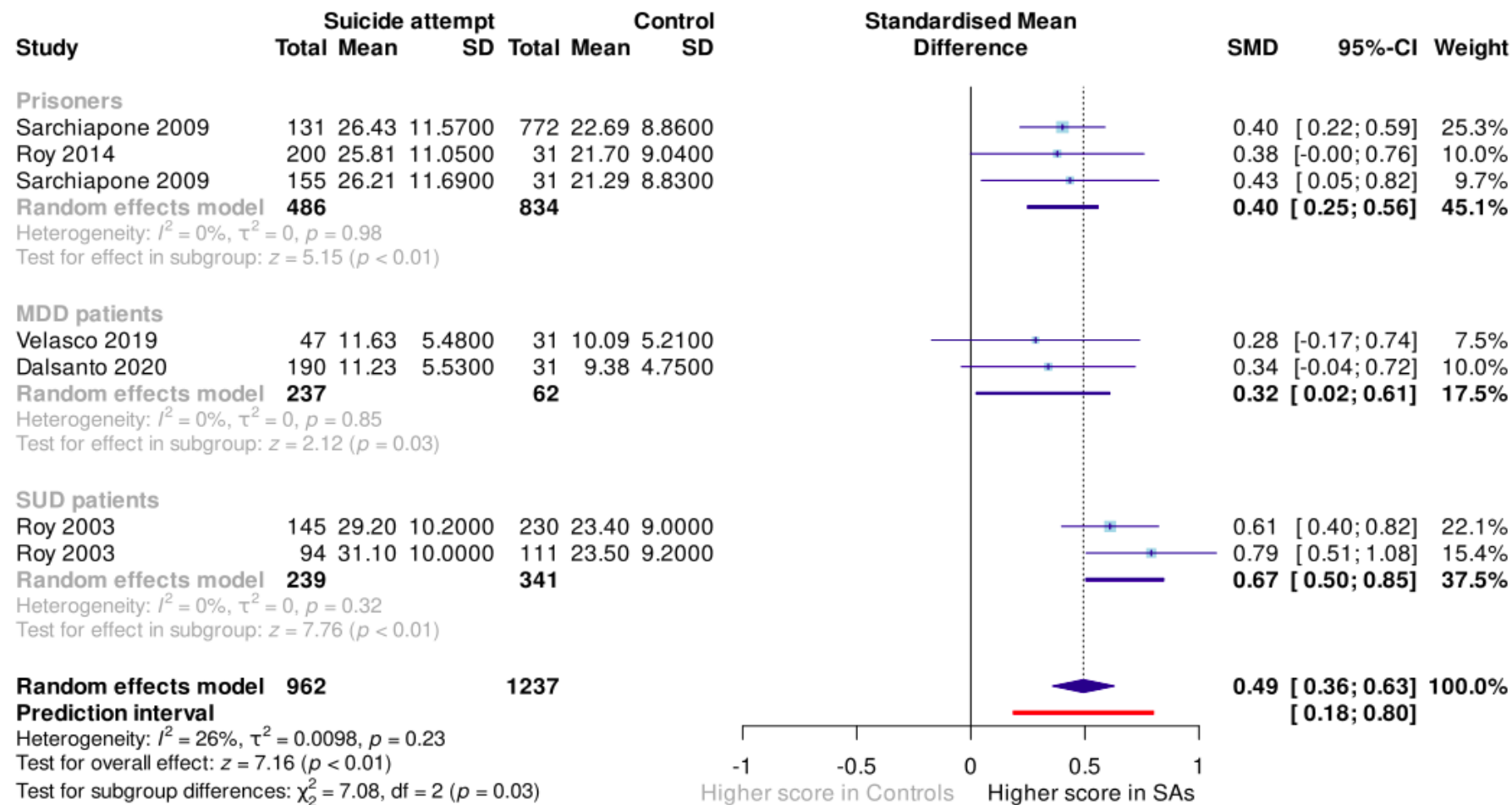


Figure 7. Forest plot of the meta-analysis of CTQ - Emotional Neglect dimension score in suicide attempt. SD = standard deviation, SMD = standardised mean difference, SA = suicide attempt.

Barratt Impulsiveness Scale

Regarding the personality assessments, only two studies ^{16,17} from the ones included in the quantitative synthesis also presented personality data, namely impulsivity evaluated using the Barratt Impulsiveness Scale ¹⁸. Results show that the suicide attempt group present higher impulsivity scores (Figure 8), while also presenting more emotional neglect in CTQ compared to controls (Figure 7). These reports are coincidentally the ones in the MDD patient subgroup ^{16,17}.

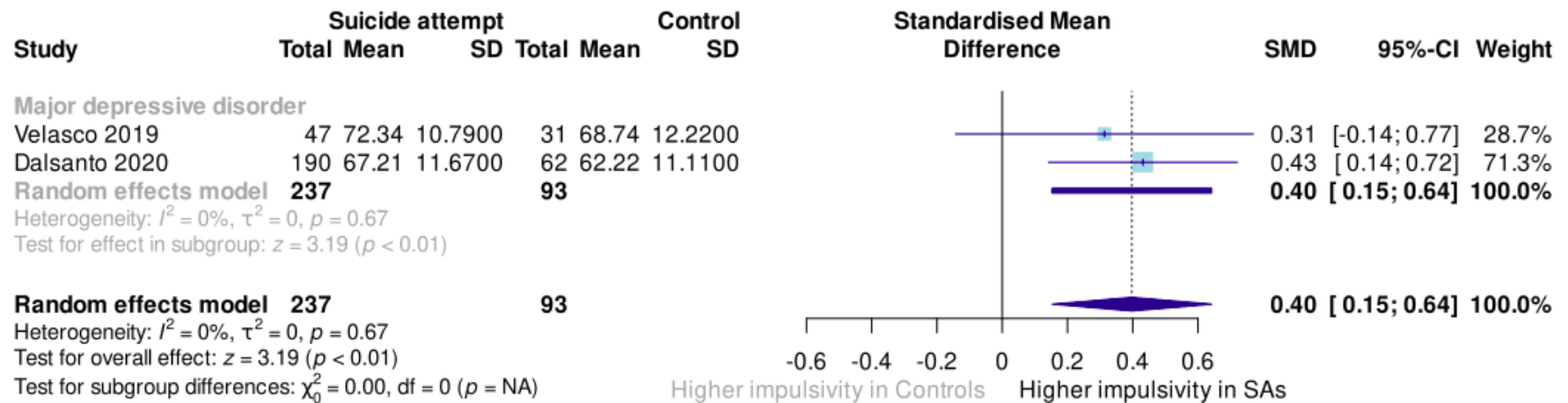


Figure 8. Forest plot of the meta-analysis of impulsivity in suicide attempt. SD = standard deviation, SMD = standardised mean difference, SA = suicide attempt.

Meta-regression analysis

The meta-regression analysis showed that sex or age accounted for 100% of the variability for emotional abuse, physical neglect, and emotional neglect; 68.47% for sexual abuse, and 47.06 for physical abuse. Unfortunately sex ratio and age did account for the heterogeneity found in the total score meta-analysis. However, there seems to be little residual heterogeneity left from the analysis. We would like to stress that both sex ratio and age are particularly related to sexual abuse, emotional abuse, and emotional neglect. The results for the main estimators are summarized in Table 2 and for the mixed-effects model in Table 3.

Table 2. Residual heterogeneity and moderators after meta-regression using sex ratio and age as covariates

Analysis	Residual Heterogeneity								Moderators			
	tau ²	SE	tau	I ² (%)	H ²	R ² (%)	QE	df	P-value	QM	df	P-value
Total score	0.017	0.025	0.13	43.25	1.76	0.00	8.524	5	0.130	2.010	2	0.367
Sexual abuse	0.012	0.025	0.108	33.69	1.51	68.47	5.413	4	0.248	6.628	2	0.037
Physical Abuse	0.003	0.017	0.055	11.56	1.13	47.06	4.475	4	0.346	3.261	2	0.196
Emotional Abuse	0.00	0.015	0.00	0.00	1.00	100.00	3.337	4	0.503	5.869	2	0.053
Physical Neglect	0.00	0.014	0.00	0.00	1.00	100.00	2.436	4	0.656	3.382	2	0.184
Emotional Neglect	0.00	0.015	0.00	0.00	1.00	100.00	1.387	4	0.847	6.754	2	0.034

tau² = estimated amount of residual heterogeneity; tau = square root of estimated tau² value; I² = residual heterogeneity / unaccounted variability; H² = unaccounted variability / sampling variability; R² = amount of heterogeneity accounted for; QE = test for residual heterogeneity QM = test of moderators (coefficients 2:3).

Table 3. Meta-regression estimates using sex ratio and age as covariates

	Estimate	SE	Z-value	P-value	CI
CTQ total score					
Intercept	1.9117	0.8968	2.1317	0.0330	0.1541; 3.6693
Sex ratio	-0.0020	0.0025	-0.8218	0.4112	-0.0069; 0.0028
Age	-0.0261	0.0186	-1.4070	0.1594	-0.0625; 0.0103
<i>Sexual Abuse</i>					
Intercept	9.2809	3.4831	2.6645	0.0077	2.4541; 16.1077
Sex ratio	-0.0307	0.0120	-2.5691	0.0102	-0.0542; -0.0073
Age	-0.1492	0.0592	-2.5225	0.0117	-0.2651; -0.0333
<i>Physical Abuse</i>					
Intercept	4.1692	2.9642	1.4066	0.1596	-1.6404; 9.9789
Sex ratio	-0.0096	0.0101	-0.9552	0.3395	-0.0293; 0.0101
Age	-0.0678	0.0506	-1.3391	0.1805	-0.1670; 0.0314
<i>Emotional Abuse</i>					
Intercept	6.9356	2.7846	2.4907	0.0127	1.4779; 12.3933
Sex ratio	-0.0194	0.0094	-2.0696	0.0385	-0.0378; -0.0010
Age	-0.1114	0.0477	-2.3376	0.0194	-0.2049; -0.0180
<i>Physical Neglect</i>					
Intercept	4.5685	2.7652	1.6521	0.0985	-0.8512; 9.9883
Sex ratio	-0.0116	0.0093	-1.2505	0.2111	-0.0299; 0.0066
Age	-0.0747	0.0474	-1.5767	0.1149	-0.1675; 0.0182
<i>Emotional Neglect</i>					
Intercept	7.7142	2.7847	2.7702	0.0056	2.2563; 12.1721
Sex ratio	-0.0241	0.0094	-2.5760	0.0100	-0.0425; -0.0058
Age	-0.1226	0.0477	-2.5702	0.0102	-0.2160; -0.0291

DISCUSSION

We found a significant effect of sexual abuse, physical abuse, emotional abuse and physical neglect on suicide attempts in the prisoners, and SUD subgroups. Moreover, there was a significant effect of CTQ total score and emotional neglect dimension for all the subgroups. These results show that suicide attempt in MDD may be closely related to

emotional neglect, since this was the only subgroup with a positive meta-analysis result for it.

We show that suicide attempt is associated with early-life trauma assessed by CTQ, and in all its dimensions, across most of the populations included. Childhood trauma is a distal factor that is associated with several, if not all, disorders across the psychiatry spectrum^{19,20}. Negative influences during the neurodevelopment, a fragile time window, have exacerbated effects on emotional memories. Baseline susceptibility to mental disorders added to stressors in everyday-life and traumatic events might be triggering enough to predict suicide attempt²¹. Moreover, there are also special components that might differentiate ideation and attempt²². We hypothesize that this differentiation may be related to the interaction of traumatic events with personality traits, more specifically, impulsivity.

The action of suicide attempt seems to require a level of action-taking behaviour. Bipolar disorder (BD) and MDD, for example, appear in different frequencies when we compare suicidal ideation and suicide attempt. Some argue that this is due to the more externalizing, and impulsive component of BD, more specifically, mania^{18,23}. Another estimate that seems to corroborate this idea is that more women present ideation, but mostly men attempt and complete suicide²⁴. The distribution of psychiatric disorders has a different presentation between men and women, in which men are more likely to be diagnosed with externalizing disorders, and women with internalizing disorders. For instance, a study that examined the differential effects of childhood maltreatment and impulsivity on interpersonal violence, suicide attempts and self-injury, with a sample of 34,653 US adults, showed that childhood impulsivity and maltreatment independently increased the risk of attempts of suicide, self-mutilation and interpersonal violence. Childhood maltreatment was a stronger predictor of self-directed violence in both sexes, while impulsivity had a greater effect on self-injury than suicide attempt or interpersonal violence only in men²⁵. These sex differences should be explored further, since suicide attempt and completion in women might require a specific set of comorbidities to take place, due to the relative low impulsive component.

Furthermore, regarding the lack of association between most CTQ dimensions and the MDD subgroup, we hypothesize that trauma as a whole might be already too associated with MDD, so that the signal is lost in the noise. Impulsivity was unfortunately only evaluated in the MDD subgroup, so no conjectures about how it could be in other subgroups can be drawn, but it is also elevated in suicide attempters. Many have hypothesized that it would be one of the triggers necessary to the attempt/completion act, especially in women²⁶.

This work should be viewed in light of some limitations: 1) although publication bias does not seem to be of concern, there was low to moderate heterogeneity in some analyses. Fortunately, this could be mostly explained by the meta-regression analyses including sex ratio and age mean; 2) impulsivity or trauma will hardly be a determinant factors, but when combined with polygenic risk scores²⁷ and with other predicting variables it might add important value; 3) the evidence summarized here is not useful to clinical practice yet, though any additional care in this sense should be certainly exploited in identifying individuals at risk; 4) the review process might have overlooked a few studies on the subject, although unlikely due to the standardized procedures.

The present study has provided an overview of the state-of-the-art research on childhood trauma and impulsivity and their association with suicidal behaviour and quantified their effects on suicide attempts. We hope these results can guide future research since the evidence regarding the influence of trauma on suicidal behaviour might be important for phenotype aetiology and as a candidate predictor.

Conflicts of interest? No

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