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Supplementary Table S1 Baseline characteristics of included studies

Study	Sample[a] (% male)	Mean Age (SD)	Brain region[b]	Online/ offline	Design	Current strength and duration	Electrode size (anode/cathode)	Aggression measurement tool
Choy et al.[1]	81 (44)	20.21±3.31	DLPFC bilaterally	Offline	Between	2mA, 1200s	25cm^2/35cm^2	VDT
Chen et al.[2]	32 (50)	20.40±1.33	rVLPFC	Online	Between	2mA, 750s	35cm^2/35cm^2	TAP
Dambacher et al.[3]	32 (40)	22.14±2.00	rDLPFC	Online	Between	2mA, 750s	35cm^2/35cm^2	TAP
Kelley et al.[4]	61	Not reported	lDLPFC	Online	Between	2mA, 900s	35cm^2/35cm^2	ECP
	62	Not reported	rDLPFC	Online	Between	2mA, 900s	35cm^2/35cm^2	ECP
Ling et al.[5]	92 (47%)	19.98±1.65	PFC (AFz)	Offline	Between	2mA, 1200s	2cm^2/2cm^2(4)	VDT
Plewnia et al.[6]	28 (100)	27.9±9.3	lDLPFC	Online	Between	1mA, 1200s	35cm^2/35 cm^2	PASAT
Riva et al.[7]	80 (21)	23.06±4.36	rVLPFC	Online	Between	1,5mA, 1200s	25cm^2/35 cm^2	HSP
Riva et al.[8]	79 (52)	21.73±2.38	rVLPFC	Offline	Between	1,5mA, 1200s	25cm^2/50 cm^2	TAP

l = left; r = right; DLPFC = dorsolateral prefrontal cortex; VLPFC = ventrolateral prefrontal cortex; PFC = prefrontal cortex; PASAT = Paced Auditory Serial Addition Task; TAP = Taylor aggression paradigm; ECP = essay criticism paradigm; HSP = hot sauce paradigm; VDT = voodoo doll task; mA = milliamps.

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Supplementary Table S2 Details for effect size calculations of tDCS studies on reactive aggressive behavior

Study	Conversion method option	Data reported in the original study or provided by the authors	Calculated Cohen's d effect size and standard error (SE)
Chen et al.[2]	Means and SD	Mean (SD) tDCS: 5.19 (0.92) Sham: 5.96 (1.17)	Cohen's d = -0.73 SE = 0.36
Choy et al.[1]	Means and SD	Mean (SD) tDCS: 5.31 (11.8) Sham: 2.62 (8.56)	Cohen's d = 0.26 SE = 0.22
Dambacher et al.[3]	Means and SD	Mean (SD) tDCS: 3.84 (1.16) Sham: 4.0 (1.33)	Cohen's d = -0.11 SE = 0.35
Kelley et al.[4]	Cohen's d	d = 0.46	Cohen's d = -0.46 SE = 0.26
	Cohen's d	d = 0.27	Cohen's d = -0.28 SE = 0.26
Ling et al.[5]	U-value	Mann-Whitney U: 880.5	Cohen's d = 0.28 SE = 0.21
Plewnia et al.[6]	F-value	F = 12.32	Cohen's d = -0.66 SE = 0.32
Riva et al.[7]	Cohen's d	d = 0.62	Cohen's d = -0.62 SE = 0.32
Riva et al.[8]	Cohen's d	d = 0.36	Cohen's d = -0.36 SE = 0.31

For studies that provided Cohen's d, we used statistical values in R software according to the direction of the effect. If the stimulation decreased reactive aggressive behavior, we used negative values, e.g., (d = 0.36) to d = -0.36.

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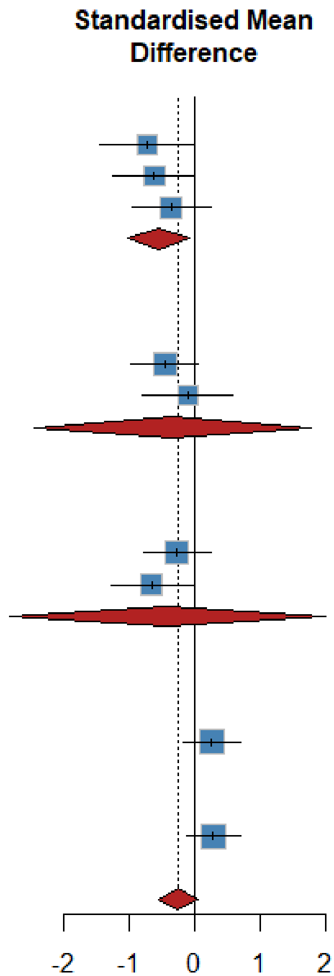
Supplementary Figure S1 Forest plot illustrating significant effects n rVLPFC and insignificance in other subregions

Study	SMD	SE(SMD)	n(tDCS)	n(Sham)	SMD	95%CI	Weight (%)
Subregion = rVLPFC							
Chen et al. 2018	-0.7300	0.3700	16	16	-0.73	[-1.46; -0.00]	8.4
Riva et al. 2015	-0.6200	0.3200	20	20	-0.62	[-1.25; 0.01]	9.9
Riva et al. 2017	-0.3600	0.3100	20	20	-0.36	[-0.97; 0.25]	10.2
Random effects model (HK)			**56**	**56**	**-0.55**	**[-1.02; -0.08]**	**28.5**
Heterogeneity: $I^2 = 0\%$, $\tau^2 = 0$, $p = 0.7189$							
Subregion = rDLPFC							
Kelley et al. 2013. 1	-0.4600	0.2600	28	33	-0.46	[-0.97; 0.05]	12.2
Dambacher et al. 2015	-0.1100	0.3500	16	16	-0.11	[-0.80; 0.58]	8.9
Random effects model (HK)			**44**	**49**	**-0.34**	**[-2.46; 1.79]**	**21.1**
Heterogeneity: $I^2 = 0\%$, $\tau^2 = 0$, $p = 0.4221$							
Subregion = lDLPFC							
Kelley et al. 2013. 2	-0.2700	0.2600	29	33	-0.27	[-0.78; 0.24]	12.2
Plewnia et al. 2015	-0.6600	0.3200	14	14	-0.66	[-1.29; -0.03]	9.9
Random effects model (HK)			**43**	**47**	**-0.43**	**[-2.85; 2.00]**	**22.1**
Heterogeneity: $I^2 = 0\%$, $\tau^2 = 0$, $p = 0.3442$							
Subregion = DLPFC							
Choy et al. 2018	0.2600	0.2200	39	42	0.26	[-0.17; 0.69]	13.9
Subregion = mPFC							
Ling et al. 2018	0.2800	0.2100	50	42	0.28	[-0.13; 0.69]	14.4
Random effects model (HK)			**232**	**236**	**-0.25**	**[-0.55; 0.05]**	**100.0**
Heterogeneity: $I^2 = 52.4\%$, $\tau^2 = 0.0843$, $p = 0.0322$							
Test for subgroup differences: $\chi^2_4 = 19.81$, df = 4 ($p = 0.0005$)							



l = left; m = medial; r = right; DLPFC = dorsolateral prefrontal cortex; HK = Hartung-Knapp method; PFC = prefrontal cortex; SMD = standardized mean difference.

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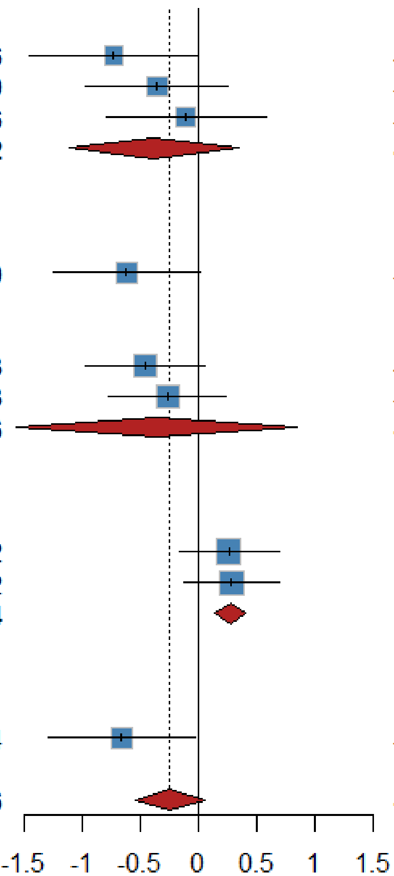
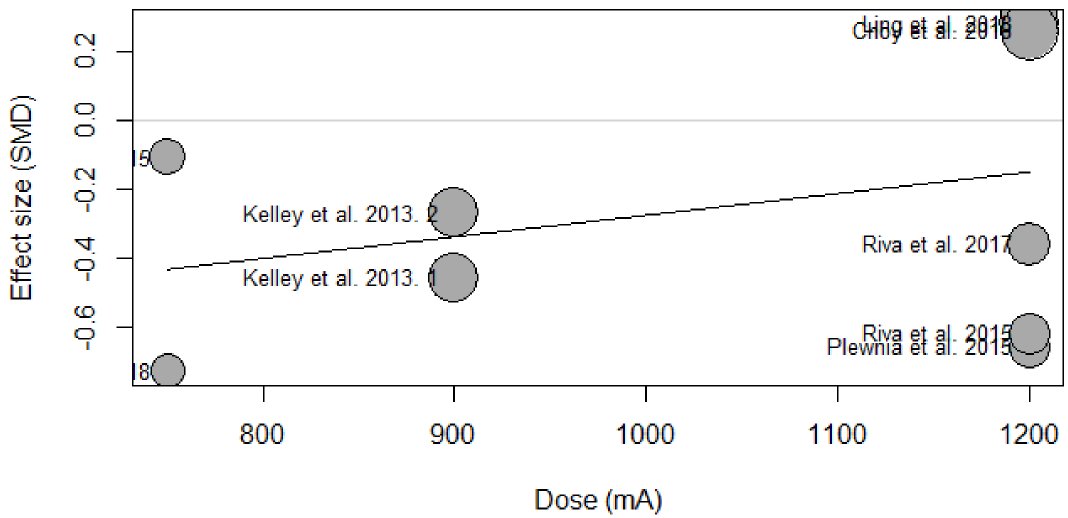
Supplementary Figure S2 Forest plot illustrating low heterogeneity across all subgroups in relation to the task

Study	SMD	SE(SMD)	n(tDCS)	n(Sham)	Standardised Mean Difference	SMD	95%CI	Weight (%)
Task = TAP								
Chen et al. 2018	-0.7300	0.3700	16	16		-0.73	[-1.46; -0.00]	8.4
Riva et al. 2017	-0.3600	0.3100	20	20		-0.36	[-0.97; 0.25]	10.2
Dambacher et al. 2015	-0.1100	0.3500	16	16		-0.11	[-0.80; 0.58]	8.9
Random effects model (HK)			**52**	**52**		**-0.39**	**[-1.12; 0.35]**	**27.5**
Heterogeneity: $I^2 = 0\%$, $\tau^2 = 0$, $p = 0.4740$								
Task = HSP								
Riva et al. 2015	-0.6200	0.3200	20	20		-0.62	[-1.25; 0.01]	9.9
Task = ECP								
Kelley et al. 2013. 1	-0.4600	0.2600	28	33		-0.46	[-0.97; 0.05]	12.2
Kelley et al. 2013. 2	-0.2700	0.2600	29	33		-0.27	[-0.78; 0.24]	12.2
Random effects model (HK)			**57**	**66**		**-0.36**	**[-1.57; 0.84]**	**24.3**
Heterogeneity: $I^2 = 0\%$, $\tau^2 = 0$, $p = 0.6053$								
Task = VDT								
Choy et al. 2018	0.2600	0.2200	39	42		0.26	[-0.17; 0.69]	13.9
Ling et al. 2018	0.2800	0.2100	50	42		0.28	[-0.13; 0.69]	14.4
Random effects model (HK)			**89**	**84**		**0.27**	**[0.14; 0.40]**	**28.3**
Heterogeneity: $I^2 = 0\%$, $\tau^2 = 0$, $p = 0.9476$								
Task = PASAT								
Plewnia et al. 2015	-0.6600	0.3200	14	14		-0.66	[-1.29; -0.03]	9.9
Random effects model (HK)			**232**	**236**		**-0.25**	**[-0.55; 0.05]**	**100.0**
Heterogeneity: $I^2 = 52.4\%$, $\tau^2 = 0.0843$, $p = 0.0322$								
Test for subgroup differences: $\chi^2_4 = 74.65$, df = 4 ($p < 0.0001$)								



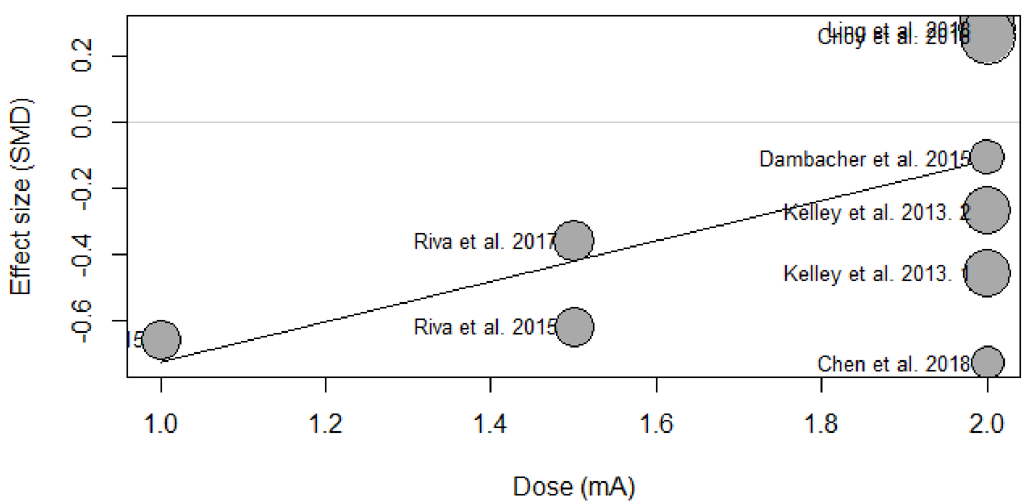
ECP = essay criticism paradigm; HK = Hartung-Knapp method; HSP = hot sauce paradigm; PASAT = Paced Auditory Serial Addition Task; SE = standard error; SMD = standardized mean difference; TAP = Taylor aggression paradigm; VDT = voodoo doll task.

Supplementary Figure S3 Bubble plot illustrating the non-significance of stimulation duration on the effect size



mA = milliamps; SMD = standardized mean difference.

Supplementary Figure S4 Bubble plot illustrating a trend to small effect sizes at high doses



mA = milliamps; SMD = standardized mean difference.

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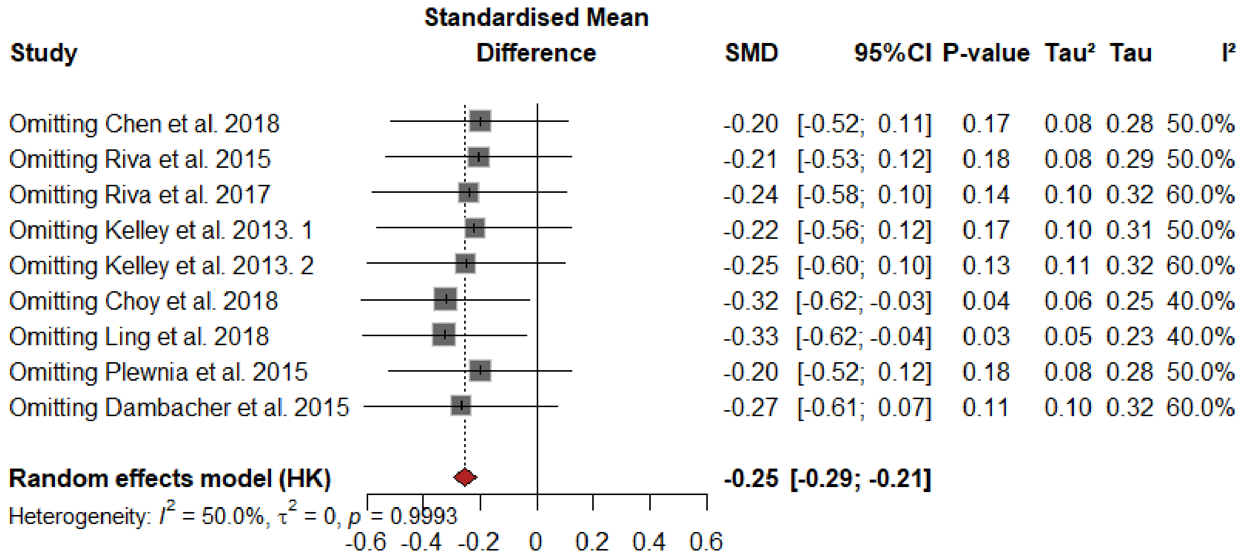
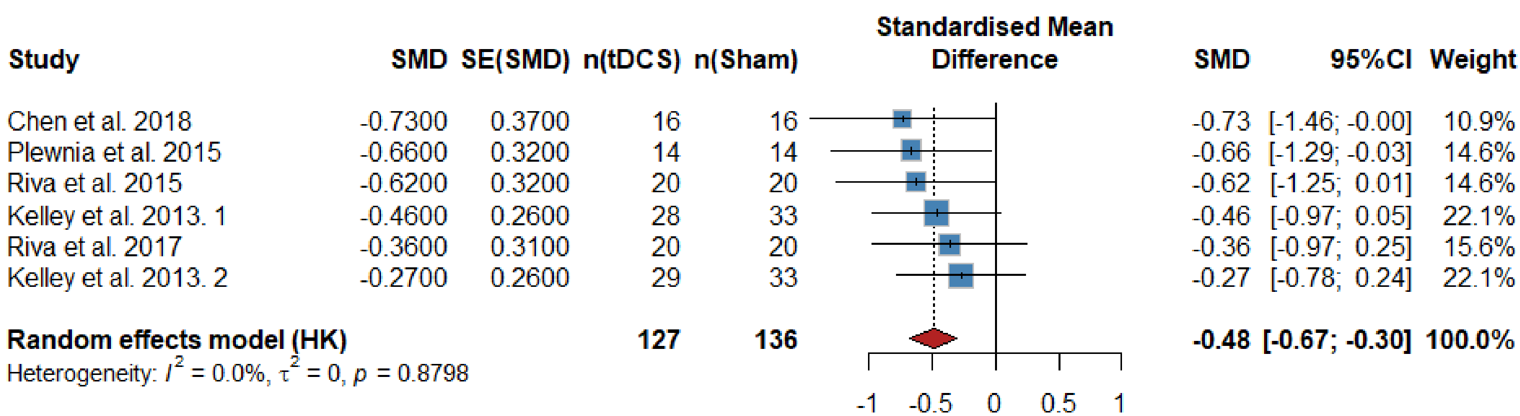
Supplementary Figure S5 Forest plot illustrating leave-one-out analysis



Supplementary Figure S6 Forest plot illustrating the non-significant effect of outlier studies



HK = Hartung-Knapp; SE = standard error; SMD = standardized mean difference.

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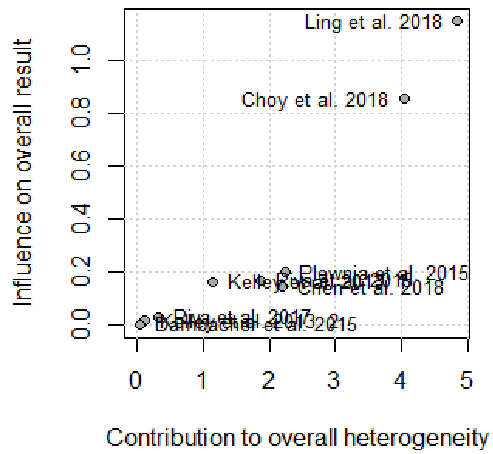
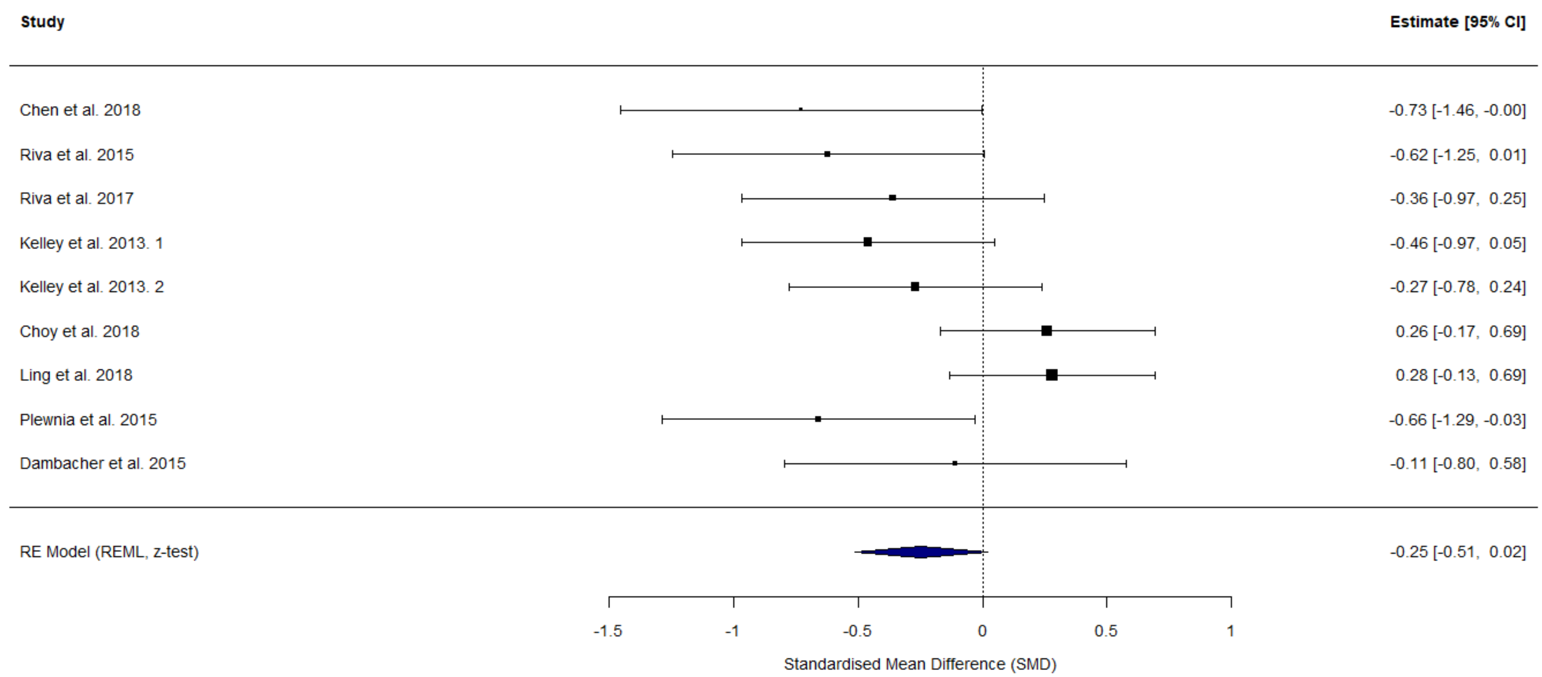
Supplementary Figure S7 Baujat plot illustrating the contribution of each study to the overall effect and heterogeneity



Supplementary Figure S8 Forest plot illustrating non-significant effects using the DerSimonian-Laird method in the metafor package



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Supplementary Table S3 Risk of bias assessment

Study	Bias from the randomization process	Bias due to deviations from intended interventions	Bias due to missing outcome data	Bias in measurement of the outcome	Bias in selection of the reported result	Overall risk of bias
Choy et al.[1]	Low	Low	Low	Low	Low	Low
Ling et al.[5]	Low	Some concerns	Low	Low	Some concerns	Some concerns
Chen et al.[2]	Low	Low	Low	Low	Some concerns	Some concerns
Plewnia et al.[6]	Same concerns	Low	Low	Low	Some concerns	Some concerns
Kelley et al.[4]	Low	Low	Low	Low	Some concerns	Some concerns
Kelley et al.[4]	Low	Low	Low	Low	Some concerns	Some concerns
Dambacher et al.[3]	Low	Low	Low	Low	Some concerns	Some concerns
Riva et al.[7]	Low	Low	Low	Low	Some concerns	Some concerns
Riva et al.[8]	Low	Low	Low	Low	Some concerns	Some concerns

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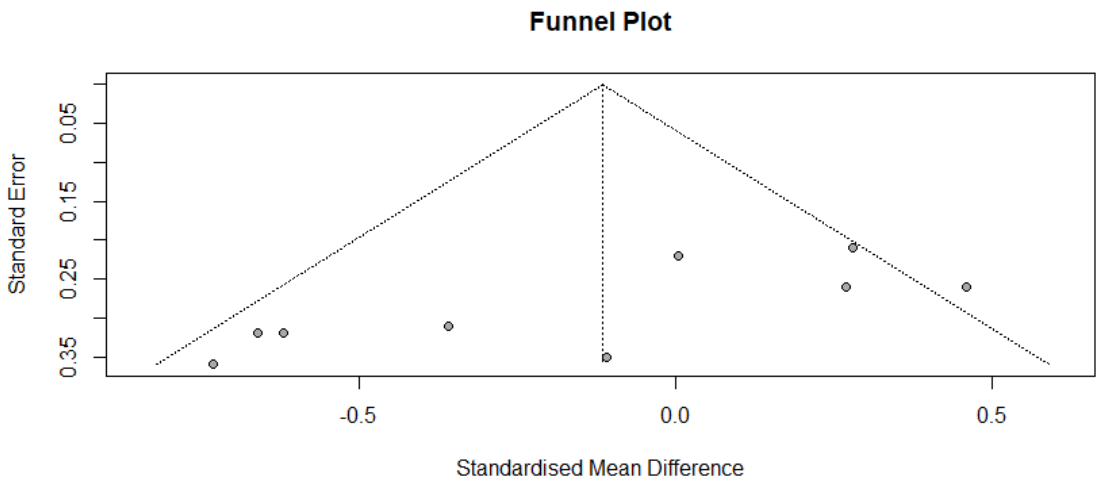
Supplementary Figure S9 Funnel plot



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