Appendix 1 to Westwood S, Radua J, Rubia K. Noninvasive brain stimulation in children and adults with attention-deficit/hyperactivity disorder: a systematic review and meta-analysis. *J Psychiatry Neurosci* 2020.

DOI: 10.1503/jpn.190179

Online appendices are unedited and posted as supplied by the authors.

Supplement Table 1. list of excluded studies with reasons for exclusion

Excluded paper	Reason for exclusion
Aycicegi-Dinn, 2017. TDCS and memory function among individuals with or without elevated ADHD symptoms. *Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation*, *10*(2), 405.	Conference poster
Bayoumy, I. M., Khaleel, S. H., Nada, M., Awaad, M. I., Khalifa, D., & Hatata, H. (2014). Efficacy and Attributes of Repetitive Transcranial Magnetic Stimulation (rTMS) in Treatment of a Sample of Children with Attention Deficit Hyperactivity Disorder (ADHD). *Egyptian Journal of Neurology, Psychiatry & Neurosurgery*, *51*(3).	Could not access paper and a translation could not be obtained from the authors
Colombo, B., Iannello, P., & Christensen, A. S. (2019). Neuromodulation as way to affect ADHD related symptoms. A tDCS study.	Conference poster
Krauel, K., C. Breitling, M. Dannhauer, J. Tegelbeckers, B. Bonath, H-H. Flechtner, and T. Zaehle. "Is the right inferior frontal gyrus a promising target for tDCS in ADHD?." *Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation* 10, no. 2 (2017): 530-531.	Conference poster
Loo, C., McFarquhar, T., & Walter, G. (2006). Transcranial magnetic stimulation in adolescent depression. *Australasian Psychiatry*, *14*(1), 81-85.	Two single-case studies in patients with Major Depression and comorbid ADHD
Niederhofer, H. (2008). Effectiveness of the repetitive Transcranical Magnetic Stimulation (rTMS) of 1 Hz for Attention-Deficit Hyperactivity Disorder (ADHD). *Psychiatria Danubina*, *20*(1), 91-92.	Single-case study
Niederhofer, H. (2011). Additional biological therapies for attention-deficit hyperactivity disorder: repetitive transcranical magnetic stimulation of 1 Hz helps to reduce methylphenidate. *Clinics and practice*, *2*(1), 8.	Single-case study (same as Niederhofer 2008).
Sarev, S., Kropotov, J. D., & Ponomarev, V. A. (2010) unpublished data in Kropotov, J. D. (2010). *Quantitative EEG, event-related potentials and neurotherapy*. Academic Press.	Unpublished, open label

Appendix 1 to Westwood S, Radua J, Rubia K. Noninvasive brain stimulation in children and adults with attention-deficit/hyperactivity disorder: a systematic review and meta-analysis. *J Psychiatry Neurosci* 2020.

DOI: 10.1503/jpn.190179

Shugar, O., & Bronnikov, V. (2014). *Transcranial direct current stimulation in the treatment of attention deficit hyperactivity disorder (ADHD) in children aged 7-12-years*. EFNS *European Journal of Neurology* 21 (Suppl. 1), 388–713	Conference poster
Theiner, P., Ustohal, L., Skřont, T., Bareš, M., & Kašpárek, T. (2015). Repetitive Transcranial Magnetic Stimulation in ADHD. In *ADHD-New Directions in Diagnosis and Treatment*. InTech.	Single-case study
Ustohal, L., Prikryl, R., Prikrylova Kucerova, H., Sisrova, M., Stehnova, I., Venclikova, S., ... & Ceskova, E. (2012). Emotional side effects after high-frequency rTMS of the right dorsolateral prefrontal cortex in an adult patient with ADHD and comorbid depression. *Psychiatria danubina*, *24*(1.), 102-103.	Single case study
Zangen, A., Shahar, H., Alyagon, U., Lazarovits, A., Hadar, A., Cohen, D., ... & Tendler, A. (2016). Right prefrontal transcranial magnetic stimulation for adults with ADHD: electrophysiological correlates and prognostic biomarkers. *Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation*, *9*(5),e4.	Conference poster

Appendix 1 to Westwood S, Radua J, Rubia K. Noninvasive brain stimulation in children and adults with attention-deficit/hyperactivity disorder: a systematic review and meta-analysis. *J Psychiatry Neurosci* 2020.

DOI: 10.1503/jpn.190179

Supplement Table 2: Risk of bias ratings with supporting evidence in italics underneath.

	Selection Bias		Performance Bias	Detection Bias	Attrition Bias	Reporting Bias	
Type of stimulation study	**Random sequence generation**	**Allocation concealment**	**Blinding participants/ personnel**	**Blinding of outcome assessment**	**Incomplete outcome data**	**Selective reporting**	**Other bias**
rTMS studies							
Bloch et al, 2010	LOW *randomized*	UNCLEAR *single-blind*	HIGH *different skin sensations*	LOW *self-ratings; neurocognitive*	LOW *none*	LOW *expected outcomes reported*	LOW *n/a*
Paz et al, 2017	LOW *randomized, no group differences*	LOW *double-blind*	UNCLEAR *blinding n/t*	LOW *self-ratings; neurocognitive*	LOW *none*	UNCLEAR *only total scores reported*	LOW *n/a*
Weaver et al, 2012	LOW *randomized*	UNCLEAR *single-blind*	UNCLEAR *blinding n/t*	LOW *blinded raters*	LOW *none*	LOW *expected outcomes reported*	LOW *n/a*
tDCS studies							
Allenby et al, 2018	LOW *randomized*	LOW double-blind	HIGH *blinding failed*	LOW *neurocognitive*	LOW *none*	LOW *expected outcomes reported*	LOW *n/a*
Breitling et al, 2016	LOW *randomized, no group differences*	UNCLEAR *single-blind*	UNCLEAR *blinding partly failed*	LOW *neurocognitive*	LOW *none*	HIGH *Flanker effect n/r*	HIGH *one-tailed t-tests, no multiple testing correction*
Cachoeira et al, 2017	LOW *randomized, no group differences*	LOW *double-blind*	UNCLEAR *63% guessed correctly*	LOW *self-ratings*	UNCLEAR *imputed data for intention-to-treat approach.*	LOW *expected outcomes reported*	LOW *n/a*

Appendix 1 to Westwood S, Radua J, Rubia K. Noninvasive brain stimulation in children and adults with attention-deficit/hyperactivity disorder: a systematic review and meta-analysis. *J Psychiatry Neurosci* 2020.

DOI: 10.1503/jpn.190179

Cosmo et al, 2015	LOW *randomized, no group differences*	LOW *double-blind*	UNCLEAR 43-70% *guessed correctly*	LOW *neurocognitive*	LOW *none*	LOW *pre-registered outcomes*	LOW *n/a*
Jacoby et al, 2018	LOW *probably randomised*	UNCLEAR *single-blind*	UNCLEAR *blinding n/t*	LOW *neurocognitive*	LOW *none*	LOW *expected outcomes reported*	LOW *n/a*
Munz et al, 2015	LOW *pseudo-randomized*	LOW *double-blind*	LOW *no side effect*	LOW *neurocognitive*	LOW *none*	LOW *expected outcomes reported*	LOW *n/a*
Nejati et al, 2017	LOW *randomized*	LOW *double-blind*	UNCLEAR *blinding n/t*	LOW *neurocognitive*	LOW *none*	HIGH *Stroop effect n/r*	HIGH *LSD post-hoc tests*
Prehn-Kristensen et al, 2014	LOW *pseudo-randomized*	LOW *double-blind*	LOW *no side effect*	LOW *neurocognitive*	LOW[a] *none*	LOW *expected outcomes reported*	LOW *n/a*
Soff et al, 2017	LOW *pseudo-randomized no group differences*	LOW *double-blind*	UNCLEAR – *60% guessed correctly*	UNCLEAR *parent rating probably blind*	UNCLEAR - *data post washout n/r*	UNCLEAR *data post washout n/r*	UNCLEAR
Soltaninejad et al, 2015a	LOW *pseudo-randomized*	UNCLEAR *single-blind*	UNCLEAR *blinding n/r*	LOW *neurocognitive*	LOW *none*	HIGH *Stroop effect n/r*	HIGH *LSD post-hoc tests*
Soltaninejad et al, 2015b[b]	LOW *pseudo-randomized*	UNCLEAR *single-blind*	UNCLEAR *blinding n/t*	LOW *neurocognitive*	LOW *none*	HIGH *Group means n/r*	LOW *none*
Sotnikova et al, 2017	LOW[c]	LOW[c]	UNCLEAR[c]	LOW[c]	LOW[c]	HIGH *Carryover effect n/r*	HIGH *no multiple testing correction*

[a]Personal communication (30/10/18): 2 boys excluded due to technical problems on the memory task

[b]Information provided via personal communication (04/05/19)

[c]same study as Soff et al, 2017

Appendix 1 to Westwood S, Radua J, Rubia K. Noninvasive brain stimulation in children and adults with attention-deficit/hyperactivity disorder: a systematic review and meta-analysis. *J Psychiatry Neurosci* 2020.

DOI: 10.1503/jpn.190179

Supplement Table 3: Sensitivity analyses assuming different crossover and task effect size correlations (green = significant effect)

	Correlations			Effect Sizes			Heterogeneity	
Meta-analysis	**Crossover Effects**	**Composite Effects**	**Study N**	**Hedges' g**	**95% CI**	***p value***	**I^2**	***p value***
Attention	0.407	0.1	12	0.17	-0.08, 0.43	0.19	**77**	**<0.001**
	0.407	0.3	12	0.16	-0.08, 0.41	0.20	**69**	**0.001**
	0.407	0.5	12	0.15	-0.08, 0.38	0.21	**61**	**0.01**
	0.629	0.1	12	0.19	-0.10, 0.48	0.19	**81**	**<0.001**
	0.629	0.3	12	0.18	-0.09, 0.45	0.20	**75**	**<0.001**
	0.629	0.5	12	0.16	-0.09, 042	0.21	**68**	**0.002**
	0.780	0.1	12	0.22	-0.11, 0.54	0.20	**85**	**<0.001**
	0.780	0.3	12	0.20	-0.11, 0.51	0.21	**80**	**<0.001**
	0.780	0.5	12	0.18	-0.11, 0.47	0.22	**74**	**<0.001**
Inhibition	**0.407**	**0.1**	**11**	**0.20**	**0.00, 0.41**	**0.05**	**62**	**0.01**
	0.407	**0.3**	**11**	**0.19**	**0.00, 0.38**	**0.05**	**51**	**0.03**
	0.407	0.5	11	0.18	-0.01, 0.36	0.06	40	0.06
	0.629	**0.1**	**11**	**0.22**	**0.00, 0.45**	**0.05**	**69**	**0.002**
	0.629	0.3	11	0.21	-0.01, 0.43	0.06	**60**	**0.01**
	0.629	0.5	11	0.20	-0.01, 0.40	0.06	**50**	**0.02**
	0.780	0.1	11	0.25	-0.01, 0.51	0.06	**77**	**<0.001**
	0.780	0.3	11	0.23	-0.02, 0.48	0.07	**69**	**0.002**

Appendix 1 to Westwood S, Radua J, Rubia K. Noninvasive brain stimulation in children and adults with attention-deficit/hyperactivity disorder: a systematic review and meta-analysis. *J Psychiatry Neurosci* 2020.

DOI: 10.1503/jpn.190179

Online appendices are unedited and posted as supplied by the authors.

	0.780	0.5	11	0.22	-0.02, 0.46	0.07	**62**	**0.01**
Processing Speed	0.407	0.1	8	0.15	-0.01, 0.30	0.06	16	0.41
	0.407	0.3	8	0.13	-0.02, 0.28	0.09	0	0.54
	0.407	0.5	8	0.12	-0.04, 0.27	0.13	0	0.64
	0.629	**0.1**	**8**	**0.16**	**0.00, 0.32**	**0.05**	19	0.37
	0.629	0.3	8	0.14	-0.01, 0.29	0.07	3	0.50
	0.629	0.5	8	0.13	-0.02, 0.28	0.10	0	0.59
	0.780	**0.1**	**8**	**0.17**	**0.01, 0.34**	**0.04**	22	0.32
	0.780	**0.3**	**8**	**0.16**	**0.00, 0.32**	**0.05**	10	0.43
	0.780	0.5	8	0.14	-0.01, 0.30	0.07	2	0.52

Appendix 1 to Westwood S, Radua J, Rubia K. Noninvasive brain stimulation in children and adults with attention-deficit/hyperactivity disorder: a systematic review and meta-analysis. *J Psychiatry Neurosci* 2020.

DOI: 10.1503/jpn.190179

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2-3
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	4-7
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	6-7
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	n/a
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	8
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	8
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	8
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	8-9

Appendix 1 to Westwood S, Radua J, Rubia K. Noninvasive brain stimulation in children and adults with attention-deficit/hyperactivity disorder: a systematic review and meta-analysis. *J Psychiatry Neurosci* 2020.

DOI: 10.1503/jpn.190179

Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	8-10
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	9-10, 50-53
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	9
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	9-11
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	10-12

Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	9
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	11-12
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	9, 1-3 (Supplement 1)
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	43-49
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	16, Supp Table 2
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	55

Appendix 1 to Westwood S, Radua J, Rubia K. Noninvasive brain stimulation in children and adults with attention-deficit/hyperactivity disorder: a systematic review and meta-analysis. *J Psychiatry Neurosci* 2020.

DOI: 10.1503/jpn.190179

Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	18-20, 55, 67-69
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	32, 4-7 (Supplement 1)
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	61-63, 8-9 (Supplement 1)
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	18-25
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	22-24
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	24-25
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	26

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit: **www.prisma-statement.org**.