

Eriksen, J. W. et al: **Psychological intervention for gambling disorder: A systematic review and meta-analysis**

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Table S1 – Outline of database searches and additional search steps

Block	Query	Hits
Cochrane Libraries October 12, 2021		
#1	MeSH descriptor: [Gambling] explode all trees	349
#2	(gambl*):ti,ab,kw	992
#3	#1 OR #2	992
#4	(disorder* OR patholog* OR addict* OR compuls* OR problem*):ti,ab,kw	287,258
#5	#3 AND #4	675
#6	MeSH descriptor: [Psychotherapy] explode all trees	25,511
#7	(treat* OR therap* OR psychotherapy* OR intervention OR counsel* OR "self-help" OR "self-guid*"):ti,ab,kw	1,286,926
#8	#6 OR #7	1,287,857
#9	#5 AND #8	549 (545 trials)
Embase (via Elsevier) October 12, 2021		
#1	'gambling'/exp	3,985
#2	gambl*:ti,ab,kw	13,079
#3	#1 OR #2	13,462
#4	'pathological gambling'/exp	6,550
#5	disorder*	1,735,819
#6	patholog*:ti,ab,kw	1,266,798
#7	addict*:ti,ab,kw	105,074
#8	compulsi*:ti,ab,kw	36,431
#9	problem*:ti,ab,kw	1,437,593
#10	#4 OR #5 OR #6 OR #7 OR #8 OR #9	4,204,578
#11	#3 AND #10	9,146
#12	'psychotherapy'/exp	287,914
#13	treat*:ti,ab,kw	8,299,317
#14	therap*:ti,ab,kw	4,533,965
#15	psychotherapy*:ti,ab,kw	70,209
#16	intervention:ti,ab,kw	969,586
#17	'self-help':ti,ab,kw	9,397
#18	'self-guid*':ti,ab,kw	1,055
#19	counsel*:ti,ab,kw	176,114
#20	#12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19	10,991,717
#21	#11 AND #20	4,009
#22	'randomized controlled trial'/exp	679,547
#23	trial*:ti,ab,kw	1,645,507
#24	random*:ti,ab,kw	1,711,061
#25	control*:ti,ab,kw	5,471,451
#26	compar*:ti,ab,kw	7,895,566
#27	evaluat*:ti,ab,kw	5,436,273
#28	ret:ti,ab,kw	46,176
#29	#22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28	14,678,849
#30	#21 AND #29	2,562
#31	#21 AND #29 AND ([danish]/lim OR [english]/lim OR [norwegian]/lim OR [swedish]/lim)	2,417
#32	#31 AND 'conference abstract'/it	645
#33	#31 NOT #32	1,776
PsycINFO (via ProQuest), October 12, 2021		
#1	noft(gambl*)	15,879

Table S1 – Outline of database searches and additional search steps

#2	noft(disorder* OR pathology* OR addict* OR compuls* OR problem*)	1,949,964
#3	noft(gambl*) AND noft(disorder* OR pathology* OR addict* OR compuls* OR problem*)	11,199
#4	noft(treat* OR therap* OR psychotherapy* OR intervention OR counsel* OR "self-help" OR "self-guid*")	1,695,349
#5	(noft(gambl*) AND noft(disorder* OR pathology* OR addict* OR compuls* OR problem*)) AND noft(treat* OR therap* OR psychotherapy* OR intervention OR counsel* OR "self-help" OR "self-guid*")	5,514
#6	noft(trial* OR control* OR random* OR rct OR compar* OR evaluat*)	2,009,579
#7	((noft(gambl*) AND noft(disorder* OR pathology* OR addict* OR compuls* OR problem*)) AND noft(treat* OR therap* OR psychotherapy* OR intervention OR counsel* OR "self-help" OR "self-guid*")) AND noft(trial* OR control* OR random* OR rct OR compar* OR evaluat*)	3,326
#8	((noft(gambl*) AND noft(disorder* OR pathology* OR addict* OR compuls* OR problem*)) AND noft(treat* OR therap* OR psychotherapy* OR intervention OR counsel* OR "self-help" OR "self-guid*")) AND noft(trial* OR control* OR random* OR rct OR compar* OR evaluat*) <i>Limits applied (peer reviewed)</i>	2,819
#9	((noft(gambl*) AND noft(disorder* OR pathology* OR addict* OR compuls* OR problem*)) AND noft(treat* OR therap* OR psychotherapy* OR intervention OR counsel* OR "self-help" OR "self-guid*")) AND noft(trial* OR control* OR random* OR rct OR compar* OR evaluat*) <i>Limits applied (Language: English, Norwegian)</i>	2,646
PubMed, October 12, 2021		
#1	"Gambling"[Mesh]	6,120
#2	gambl*[Title/Abstract]	10,566
#3	("Gambling"[Mesh]) OR (gambl*[Title/Abstract])	11,310
#4	disorder*[Title/Abstract] OR pathology*[Title/Abstract] OR addict*[Title/Abstract] OR compuls*[Title/Abstract] OR problem*[Title/Abstract]	3,154,163
#5	((("Gambling"[Mesh]) OR (gambl*[Title/Abstract])) AND (disorder*[Title/Abstract] OR pathology*[Title/Abstract] OR addict*[Title/Abstract] OR compuls*[Title/Abstract] OR problem*[Title/Abstract]))	6,558
#6	"Psychotherapy"[Mesh]	205,914
#7	treat*[Title/Abstract] OR therap*[Title/Abstract] OR psychotherapy*[Title/Abstract] OR intervention[Title/Abstract] OR counsel*[Title/Abstract] OR "self-help"[Title/Abstract] OR "self-guid*"[Title/Abstract]	7,954,547
#8	("Psychotherapy"[Mesh]) OR (treat*[Title/Abstract] OR therap*[Title/Abstract] OR psychotherapy*[Title/Abstract] OR intervention[Title/Abstract] OR counsel*[Title/Abstract] OR "self-help"[Title/Abstract] OR "self-guid*"[Title/Abstract])	8,027,702
#9	((("Gambling"[Mesh]) OR (gambl*[Title/Abstract])) AND (disorder*[Title/Abstract] OR pathology*[Title/Abstract] OR addict*[Title/Abstract] OR compuls*[Title/Abstract] OR problem*[Title/Abstract])) AND ((("Psychotherapy"[Mesh]) OR (treat*[Title/Abstract] OR therap*[Title/Abstract] OR psychotherapy*[Title/Abstract] OR intervention[Title/Abstract] OR counsel*[Title/Abstract] OR "self-help"[Title/Abstract] OR "self-guid*"[Title/Abstract]))	3,840
#10	"Randomized Controlled Trial"[Publication Type]	547,258
#11	trial*[Title/Abstract] OR control*[Title/Abstract] OR compar*[Title/Abstract] OR rct[Title/Abstract] OR random*[Title/Abstract] OR evaluat*[Title/Abstract]	11,129,321
#12	("Randomized Controlled Trial"[Publication Type]) OR (trial*[Title/Abstract] OR control*[Title/Abstract] OR compar*[Title/Abstract] OR rct[Title/Abstract] OR random*[Title/Abstract] OR evaluat*[Title/Abstract])	11,168,010
#13	((("Gambling"[Mesh]) OR (gambl*[Title/Abstract])) AND (disorder*[Title/Abstract] OR pathology*[Title/Abstract] OR addict*[Title/Abstract] OR compuls*[Title/Abstract] OR problem*[Title/Abstract])) AND ((("Psychotherapy"[Mesh]) OR (treat*[Title/Abstract] OR therap*[Title/Abstract] OR psychotherapy*[Title/Abstract] OR intervention[Title/Abstract] OR counsel*[Title/Abstract] OR "self-help"[Title/Abstract] OR "self-guid*"[Title/Abstract])) AND ((("Randomized Controlled Trial"[Publication Type]) OR (trial*[Title/Abstract] OR control*[Title/Abstract] OR compar*[Title/Abstract] OR rct[Title/Abstract] OR random*[Title/Abstract] OR evaluat*[Title/Abstract]))	1,767

Table S1 – Outline of database searches and additional search steps

#14	(((("Gambling"[Mesh]) OR (gambl*[Title/Abstract])) AND (disorder*[Title/Abstract] OR pathology*[Title/Abstract] OR addict*[Title/Abstract] OR compuls*[Title/Abstract] OR problem*[Title/Abstract])) AND (("Psychotherapy"[Mesh]) OR (treat*[Title/Abstract] OR therap*[Title/Abstract] OR psychotherap*[Title/Abstract] OR intervention[Title/Abstract] OR counsel*[Title/Abstract] OR "self-help"[Title/Abstract] OR "self-guid*[Title/Abstract])))) AND (("Randomized Controlled Trial"[Publication Type]) OR (trial*[Title/Abstract] OR control*[Title/Abstract] OR compar*[Title/Abstract] OR rct[Title/Abstract] OR random*[Title/Abstract] OR evaluat*[Title/Abstract])) Filters: Danish, English, Norwegian, Swedish	1,686
Scopus (via Elsevier), October 12, 2021		
#1	TITLE-ABS-KEY (gambl*)	24,683
#2	TITLE-ABS-KEY (disorder* OR pathology* OR addict* OR compuls* OR problem*)	11,158,330
#3	(TITLE-ABS-KEY (gambl*)) AND (TITLE-ABS-KEY (disorder* OR pathology* OR addict* OR compuls* OR problem*))	13,166
#4	TITLE-ABS-KEY (treat* OR therap* OR psychotherap* OR intervention OR counsel* OR "self-help" OR "self-guid*")	14,073,076
#5	((TITLE-ABS-KEY (gambl*)) AND (TITLE-ABS-KEY (disorder* OR pathology* OR addict* OR compuls* OR problem*))) AND (TITLE-ABS-KEY (treat* OR therap* OR psychotherap* OR intervention OR counsel* OR "self-help" OR "self-guid*"))	5,245
#6	TITLE-ABS-KEY (trial* OR control* OR random* OR rct OR evaluat* OR compar*)	30,699,201
#7	(((TITLE-ABS-KEY (gambl*)) AND (TITLE-ABS-KEY (disorder* OR pathology* OR addict* OR compuls* OR problem*))) AND (TITLE-ABS-KEY (treat* OR therap* OR psychotherap* OR intervention OR counsel* OR "self-help" OR "self-guid*"))) AND (TITLE-ABS-KEY (trial* OR control* OR random* OR rct OR evaluat* OR compar*))	3,464
#8	(((TITLE-ABS-KEY (gambl*)) AND (TITLE-ABS-KEY (disorder* OR pathology* OR addict* OR compuls* OR problem*))) AND (TITLE-ABS-KEY (treat* OR therap* OR psychotherap* OR intervention OR counsel* OR "self-help" OR "self-guid*"))) AND (TITLE-ABS-KEY (trial* OR control* OR random* OR rct OR evaluat* OR compar*)) AND (LIMIT-TO (SRCTYPE , "j"))	3,327
#9	(((TITLE-ABS-KEY (gambl*)) AND (TITLE-ABS-KEY (disorder* OR pathology* OR addict* OR compuls* OR problem*))) AND (TITLE-ABS-KEY (treat* OR therap* OR psychotherap* OR intervention OR counsel* OR "self-help" OR "self-guid*"))) AND (TITLE-ABS-KEY (trial* OR control* OR random* OR rct OR evaluat* OR compar*)) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (LANGUAGE , "English") OR LIMIT-TO (LANGUAGE , "Norwegian") OR LIMIT-TO (LANGUAGE , "Swedish"))	3,104
Web Of Science, October 12, 2021		
<i>including: Science Citation Index Expanded (SCI-EXPANDED)—1900-present; Social Sciences Citation Index (SSCI)—1956-present; Arts & Humanities Citation Index (AHCI)—1975-present; Conference Proceedings Citation Index – Science (CPCI-S)—1990-present; Conference Proceeding Citation Index – Social Science & Humanities (CPCI-SSH)—1990-present; Emerging Sources Citation Index (ESCI)—2015-present</i>		
#1	TS=(gambl*)	20,427
#2	TS=(disorder* OR pathology* OR addict* OR compuls* OR problem*)	6,069,273
#3	(#1) AND #2	9,675
#4	TS=(treat* OR therap* OR psychotherapy* OR intervention OR counsel* OR "self-help" OR "self-guid*")	9,332,357
#5	(#3) AND #4	3,756
#6	TS=(trial* OR control* OR compar* OR random* OR rct OR evaluat*)	19,924,798
#7	(#5) AND #6	2,338
#8	(#5) AND #6 and English (language)	2,225
Total number of records identified across databases during on October 12, 2021: 11,982 Removal of duplicates through EndNote and Covidence October 13, 2021 results in 7,245 excluded records Total number of records remaining post removal of duplicates: 4,728 Title/abstract screening by AF and JWE starting on October 13, 2021 ending by consensus negotiation on November 10, 2021. Total number of records progressing to full text screen equals 89. Thus 4,639 records were excluded during title/abstract screening. Total number of records included for synthesis December 1, 2021: 34 Total number of eligible records identified via backwards (snowball) search finished the December 28, 2021: 0 Reference lists from all 34 included studies as well as 12 previously published reviews were screened for potentially eligible studies, that our search had not detected. We found no eligible titles that had not already been imported to our Covidence database.		

Table S1 – Outline of database searches and additional search steps

Total number of records identified via citation search on January 18, 2022: 4217

Citation search was conducted in Web of Science and Scopus on all records included in our final sample of studies (45). This resulted in 4,217 of which 3,617 records were duplicates according to our existing Endnote and Covidence databases. Therefore 600 new records were screened by title and abstract. None of these were included for synthesis.

Total number of records identified through repeating our search strings on July 8, 2022 restricted to a date range post October 12, 2021: 491

This resulted in 213 new records to screen post removal of duplicates and zero additional studies for inclusion in our review. This screening was done by JWE and MWP.

Total number of records identified through repeating our search strings once again on February 3, 2023 restricted to a date range post July 8, 2022: 472

This resulted in 298 new records to screen post removal of duplicates and zero additional studies for inclusion in our review. This screening was done by JWE and AWS.

Table S2 – All studies included (including those where data were not available for meta-analysis)

Author, year	Country	N ^s	% w. GD	% female	age mean	Intervention groups	Control groups	Primary outcomes	Secondary outcomes	Pre- post (weeks)	FU ^b (months)	RoB	Reason for exclusion from meta-analysis
Sylvain et al., 1997	Canada	40	100	0.0	40.2	1) CBT face-to-face, individually	1) WL	DSM-III SOGS	-	6	6 12	High	Data not available in report or from authors
Hodgins et al., 2001	Canada	102	-	52.0	46.0	1) CBT self-help, no therapist guidance 2) MI phone + CBT self-help	1) WL	SOGS	-	4	3 24	High	
Ladouceur et al., 2001	Canada	88	100	19.3	41.7	1) CBT face-to-face, individually	1) WL	DSM-IV SOGS	-	12	6 12	High	
Ladouceur et al., 2003	Canada	71	100	22.0	43.3	1) CBT face-to-face, group	1) WL	DSM-IV	-	16	6 12 24	High	
Melville et al., 2004 (1)	USA	13	100	61.5	-	1) CBT face-to-face, group 2) CBT (extended) face-to-face, group	1) WL	DSM-IV	-	8	8	High	
Melville et al., 2004 (2)	USA	19	100	84.2	-	1) CBT face-to-face, group	1) WL	DSM-IV	BAI BDI-II	8	8	High	
Petry et al., 2006	USA	231	100	45.0	44.9	1) CBT self-help, no therapist guidance (GA referral) 2) CBT face-to-face, individually (GA referral)	1) AO	SOGS DSM-IV ASI-G	-	8	6 12	High	
Dowling et al., 2007	Australia	56	100	100	43.6	1) CBT face-to-face, individually 2) CBT face-to-face, group	1) WL	DSM-IV	STAI-T STAI-S BDI-II	12	6	High	
Carlbring and Smit, 2008	Sweden	66	100	6.0	31.9	1) MI/CBT self-help, no therapist guidance	1) WL	NODS	HADS-A HADS-D	12	6 18 36	High	
Korman et al., 2008	Canada	42	100	14.3	47.6	1) DBT face-to-face, individually	1) TAU	PGSI	-	14	6.5	SC	
Petry et al., 2008	USA	180	52.8	40.0	43.5	1) MI face-to-face, individually 2) MI / CBT face-to-face, individually	1) AO 2) PFI	SOGS ASI-G	-	6	9	High	

Table S2 – All studies included (including those where data were not available for meta-analysis)

Author, year	Country	N ^s	% w. GD	% female	age mean	Intervention groups	Control groups	Primary outcomes	Secondary outcomes	Pre- post (weeks)	FU ^b (months)	RoB	Reason for exclusion from meta-analysis
Grant et al., 2009	USA	68	100	38.2	48.7	1) CBT / MI face-to-face, individually	1) GA referral	PG-YBOCS G-SAS	HAM-A HAM-D	8	6	High	Data not available in report or from authors
Hodgins et al., 2009	Canada	314	88.9	55.4	-	1) MI phone + CBT self-help 2) MI phone + CBT self-help and phone 3) CBT self-help, no therapist guidance	1) WL	NODS PGSI	-	6	12	High	
Myrseth et al., 2009	Norway	14	100	21.4	37.4	1) CBT face-to-face, individually	1) WL	DSM-IV	BAI MADRS	7	4.75	High	
Petry et al., 2009	USA	117	-	15.4	20.4	1) MI face-to-face, individually 2) MI / CBT face-to-face, individually	1) AO 2) PFI	SOGS	-	6	9	High	Data not available in report or from authors
Carlbring et al., 2010	Sweden	150	-	16.5	40.5	1) CBT face-to-face, group 2) MI face-to-face, individually	1) WL	NODS	BAI BDI-II	9	-	High	
Larimer et al., 2011	USA	147	10.2	34.7	21.2	1) MI face-to-face, individually 2) CBT face-to-face, group	1) AO	NODS	-	24	-	High	
Marceaux and Melville, 2011	USA	49	100	65.3	47.8	1) 12-step (TSF) face-to-face, group 2) CBT face-to-face, group	1) WL	DSM-IV SOGS	BAI BDI-II	8	6	High	Data not available in report or from authors
Lee and Awosoga, 2015	Canada	18	100	34.0	49.3	1) CCT face-to-face, couple	1) AO	G-SAS	DAS	12	5	High	
Wong et al., 2015	China	40	83.9	0.0	-	1) CBT face-to-face, group	1) AO	SOGS	DASS-21 A DASS-21 D	10	-	High	
Luquiens et al., 2016	France	1122	8.0	7.9	34.7	1) CBT self-help, no therapist guidance 2) CBT self-help, therapist guidance	1) WL	PGSI	-	6	3	High	Data not available in report or from authors
McIntosh et al., 2016	Australia	77	98.7	28.6	38.5	1) CBT (and MBCT) face-to-face, individually 2) CBT (and MBCT) face-to-face, individually	1) TAU	DSM-5 SOGS	-	13	6.25 9.25	High	

Table S2 – All studies included (including those where data were not available for meta-analysis)

Author, year	Country	N ^s	% w. GD	% female	age mean	Intervention groups	Control groups	Primary outcomes	Secondary outcomes	Pre- post (weeks)	FU ^b (months)	RoB	Reason for exclusion from meta-analysis
Petry et al., 2016	USA	217	86.2	31.3	42.0	1) MI / CBT face-to-face, individually	1) WL, AC 2) PFI	SOGS	-	8	5 8 12 16 20 24	High	
Abbott et al., 2017	New Zealand	462	95.0	52.6	39.2	1) MI phone 2) MI phone + CBT self-help 3) MI phone + CBT self-help/phone	1) TAU	PGSI	-	12	6 12 36	Low	
Boudreault et al., 2017	Canada	62	82.3	38.7	51.5	1) MI phone + CBT self-help	1) WL, AC	DSM-5	BAI BDI-II	11	3.75 8.75 14.75	High	
Casey et al., 2017	Australia	174	100	59.2	44.4	1) CBT internet program, no therapist guidance 2) MFS internet program, therapist guidance	1) WL	SOGS G-SAS	DASS-21 A DASS-21 D	6	-	High	
Oei et al., 2017	Australia	110	-	50.9	49.4	1) CBT self-help, no therapist guidance	1) WL	CPGI	DASS-21 A DASS-21 D	6	-	High	
Cunningham et al., 2019	Canada / USA	321	58.6	55.1	36.5	1) CBT internet program, no therapist guidance	1) WL, AC	NODS G-SAS	-	6	6	SC	
Hodgins et al., 2019	Canada	187	89.0	47.1	46.8	1) CBT internet program, no therapist guidance	1) PFI	NODS PGSI	-	12	6 12	Low	
Jonas et al., 2020	Germany	167	98.2	28.1	33.5	1) Solution focused/self- regulation/MI internet program, therapist guidance 2) Solution focused/self- regulation/MI, no therapist guidance	1) WL	PGSI	-	12	6 12	High	
McAfee et al., 2020	USA	255	15.3	38.0	22.2	1) PFI/CBT text messages	1) AO 2) PFI	PGSI/CPG I	-	4	6	High	
So et al., 2020	Japan	254	-	20.8	36.3	1) CBT text messages	1) AO	PGSI G-SAS	-	4	-	Low	

Table S2 – All studies included (including those where data were not available for meta-analysis)

Author, year	Country	N ^s	% w. GD	% female	age mean	Intervention groups	Control groups	Primary outcomes	Secondary outcomes	Pre- post (weeks)	FU ^b (months)	RoB	Reason for exclusion from meta-analysis
Bücker et al., 2021	Germany	156	99.3	32.7	35.0	1) CBT (third wave elements) internet program unguided (TAU allowed)	1) WL	SOGS PG- YBOCS	PHQ-9	8	-	SC	
Yakovenko and Hodgins, 2021	Canada	201	-	41.0	41.8	1) CBT internet program, no therapist guidance	1) TAU	PGSI	-	12	-	SC	Data not available in report or from authors

Author in bold marks that the study was included for meta-analysis. Abbreviations: AO, assessment only; AC, attention control; ASI-G, Addiction Severity Index for Gambling; BAI, Beck Anxiety Inventory; BDI, Beck Depression Inventory; BDI-II, Beck Depression Inventory II; CBT, cognitive behavioral therapy; CPGL, Canadian Problem Gambling Index; DAS, Dyadic Adjustment Scale; DASS-21, Depression, Anxiety and Stress Scale 21; DBT, dialectical behavior therapy; GA, Gambler Anonymous; GAD-7, Generalised Anxiety Disorder Questionnaire 7; G-SAS, Gambling Symptom Assessment Scale; HADS-A, Hospital Anxiety and Depression Scale-Anxiety; HADS-D, Hospital Anxiety and Depression Scale-Depression; HAM-A, Hamilton Anxiety Rating Scale; HAM-D, Hamilton Depression Rating Scale; MADRS, Montgomery & Åsberg Depression Rating Scale; MFS, monitoring, feedback and support; MI, motivational intervention; NODS, NORC Diagnostic Screen for Gambling Problems; PFI, personalized feedback intervention; PGSI, Problem Gambling Severity Index; PG-YBOCS, Yale Brown Obsessive Compulsive Scale adapted for Pathological Gambling; PHQ-9, Patient Health Questionnaire 9; RAS-G, Relation Assessment Scale Generic; SC, some concerns; SOGS, South Oaks Gambling Screen; STAI-S, State-Trait Anxiety Inventory, State-anxiety; STAI-T, State-Trait Anxiety Inventory, Trait-anxiety; TAU, treatment as usual; TSF, Twelve-step Facilitated therapy; VGS, Victorian Gambling Screen; WL, waiting list; WSAS, Work and Social Adjustment Scale, a) number of participants randomized, b) in a majority of studies, follow-up data were only available for the intervention group, and no comparisons were possible.

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
McConaghy, 1983	Comparing the efficacy of aversive therapy and imaginal desensitization for compulsive gambling.	Wrong population. No screening for gambling disorder.	Controlled comparison of aversive therapy and imaginal desensitization in compulsive gambling.
Dickerson, 1990	Investigating the efficacy of a self-help manual for individuals who wanted to reduce or stop gambling.	Wrong population. No info on study sample severity of gambling problems	Minimal treatments and problem gamblers: A preliminary investigation.
McConaghy , 1991	Comparing the efficacy of imaginal desensitization with other behavioral treatments of pathological gambling.	No outcome on remission or gambling disorder symptom severity	Comparison of imaginal desensitisation with other behavioural treatments of pathological gambling.
Johnson, 1992*	Comparing gambling behavior among compulsive gamblers participating in Gamblers Anonymous with and without spouses.	Full text not available. Lack of access.	Does spousal participation in Gamblers Anonymous benefit compulsive gamblers?
Echeburúa, 1994*	Exploring the effectiveness of several therapeutic approaches in psychological treatment of pathological gambling	Full text not available.	Differential effectiveness of several therapeutic approaches in the psychological treatment of pathological gambling.
Echeburúa, 1996	Compared the effectiveness of three therapeutic modalities in the psychological treatment of pathological gambling	No outcome on remission or gambling disorder symptom severity.	Comparative Effectiveness of Three Therapeutic Modalities in the Psychological Treatment of Pathological Gambling: Long-Term Outcome.

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
Henry, 1996	Explored the treatment efficacy of Eye Movement Desensitization / reprocessing.	Not RCT. Patients were allocated according to status as having experiences trauma or not.	Pathological gambling: Etiologic considerations and treatment efficacy of eye movement desensitization/reprocessing.
Tolchard, 2000*	Evaluates an in-patient program for problem gamblers.	Full text not available.	Evaluation of the intensive therapy service for problem gamblers an in-patient program.
Milton, 2002	to test the hypothesis that the addition of compliance improving interventions to the cognitive-behavioural treatment for pathological gambling will result in significantly higher treatment completion levels. to identify factors that may predict treatment compliance and treatment outcome.	Multiple intervention groups, no control group.	The effect of compliance-improving interventions on the cognitive-behavioral treatment of pathological gambling
Blaszczynski, 2005	Evaluates the effects of a home-based imaginal desensitization for gambling disorder.	Full text not available.	Home-based imaginal desensitisation in pathological gambling: Short-term outcomes.
Jiménez-Murcia, 2005	Exploring the efficacy of two cognitive behavioral group treatment for gambling disorder.	Not RCT. The study examined the two group therapies as one cohort.	Analysis of the effectiveness of two types of group cognitive-behavioral treatment of pathological gambling.
Hollander , 2006*	Examining the efficacy of lithium on gambling disorder for a woman with cyclothymic disorder.	Full text not available.	The red and the black: Integrated treatment of pathological gambling.

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
Jiménez-Murcia , 2007	Investigating the effectiveness of a group cognitive behavioral therapy for gambling disorder and analyzing predictors of therapy outcome.	Not RCT. The study was a cohort design with prospective follow-up.	Cognitive-behavioral group treatment for pathological gambling: Analysis of effectiveness and predictors of therapy outcome.
Savron, 2007	Examining group therapy for gambling disorder.	Full text not available.	Group therapy with Pathological Gamblers: Results after 6,12 and 18 months of treatment.
Cunningham, 2009	Compared a personalized feedback intervention to a waiting list control group.	Wrong intervention. Personalized feedback interventions we categorized as an active control condition in the present review.	Pilot Study of a Personalized Feedback Intervention for Problem Gamblers.
Diskin, 2009	Tested the efficacy of a single face-to-face motivational intervention compared with a control interview for reducing gambling behaviours in individuals who expressed concerns about their gambling.	Multiple intervention groups, no control group.	A randomized controlled trial of a single session motivational intervention for concerned gamblers
Toneatto, 2009	To evaluate whether a treatment specifically targeting cognitive distortions yielded better outcomes than alternative, but empirically effective, treatments for problem gambling that do not explicitly address cognitive distortions (ie., behavioral, motivational).	Multiple intervention groups, no control group.	Does the treatment of cognitive distortions improve clinical outcomes for problem gambling?

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
Oei , 2010	Evaluating the effectiveness of group and individual formats of a combined motivational interviewing and cognitive behavioral treatment program for problem gambling.	Wrong population. No info on diagnosis or proportion of individuals above clinical cut-points for gambling disorder.	Effectiveness of group and individual formats of a combined motivational interviewing and cognitive behavioral treatment program for problem gambling: A randomized controlled trial.
Zermatten, 2010	Examining an internet based treatment for gambling disorder.	Other language.	Treating addiction to gambling and money: An internet program.
Myrseth, 2011	Comparing the efficacy of cognitive behavioral therapy with and without the addition of escitalopram	Wrong intervention. Pharmacotherapy combined to CBT.	A pilot study of CBT versus escitalopram combined with CBT in the treatment of pathological gamblers.
Sharma, 2011	Explored the effect of astro-psychotherapeutic techniques on pathological gamblers.	Not RCT. No info on group allocation.	Astro-psychotherapeutic effect on pathological gamblers.
Cunningham, 2012	Evaluated the effectiveness, and the sustained efficacy, of personalized feedback intervention for problem gamblers.	Wrong intervention. Personalized feedback interventions we categorized as an active control condition in the present review.	A randomized controlled trial of a personalized feedback intervention for problem gamblers.

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
Jiménez-Murcia, 2012	Evaluating cognitive behavioral group therapy with and without exposure and response prevention.	Not RCT. Quasi-experimental design without random assignment.	Does exposure and response prevention improve the results of group cognitive-behavioural therapy for male slot machine pathological gamblers?
Labrie, 2012	Evaluated the efficacy of a self-help toolkit for problem gambling.	No outcome on remission or gambling disorder symptom severity	A Brief Self-Help Toolkit Intervention for Gambling Problems: A Randomized Multisite Trial.
Tse, 2013	Compared the effectiveness of telephone and face-to-face counseling in influencing problematic gambling beliefs and behaviors	No outcome on remission or gambling disorder symptom severity	Face-to-Face and Telephone Counseling for Problem Gambling: A Pragmatic Multisite Randomized Study.
Lloret, 2014	Evaluated the effect of self-hypnosis in cognitive behavioral treatment for gambling disorder.	Not RCT. The study utilized pseudo-randomization (sequential randomization)	Waking self-hypnosis efficacy in cognitive-behavioral treatment for pathological gambling: An effectiveness clinical assay.
Morefield, 2014	Investigating the effectiveness of an inpatient treatment program for gambling disorder based on cognitive behavioral therapy and graded exposure therapy.	Not RCT. The study was a single group pre-post intervention design (repeated measure).	An Inpatient Treatment Program for People with Gambling Problems: Synopsis and Early Outcomes.

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
Toneatto, 2014	Comparing a mindfulness intervention that was integrated into a cognitive behavioral psychological intervention with a waitlist control group	Not RCT. The study utilized pseudo-randomization (sequential randomization)	Mindfulness-Enhanced Cognitive Behavior Therapy for Problem Gambling: A Controlled Pilot Study.
Luquiens, 2015*	Exploring the efficacy of online interventions for gambling problems and gambling disorder.	No full text available.	Efficacy of online psychotherapies in poker gambling disorder: an online randomized clinical trial.
Martens, 2015	Examined the efficacy of a personalized feedback only intervention among at-risk college student gamblers.	Wrong intervention. Personalized feedback interventions we categorized as an active control condition in the present review.	The efficacy of a personalized feedback-only intervention for at-risk college gamblers.
Neighbors, 2015	Evaluated a computer-delivered PNF intervention for problem gambling college students.	Wrong intervention. Personalized normative feedback interventions we categorized as an active control condition in the present review.	Efficacy of personalized normative feedback as a brief intervention for college student gambling: A randomized controlled trial.
Smith, 2015	To evaluate differential efficacy of cognitive therapy and exposure therapy for adult problem gamblers at a South Australian gambling therapy service.	Multiple intervention groups, no control group.	Cognitive versus exposure therapy for problem gambling: randomized controlled trial.

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
Stea, 2015	Investigates how patient treatment goal influences the efficacy of brief motivational treatment for gambling disorder. Secondary analysis on former RCT.	No outcome on remission or gambling disorder symptom severity	Abstinence versus moderation goals in brief motivational treatment for pathological gambling.
Campos, 2016	To test a self-help manual for gambling problems while isolating minimal therapist guidance as a factor in self-help outcomes for gambling problems using a two-group design with random assignment.	Multiple intervention groups, no control group.	A self-help manual for problem gamblers: the impact of minimal therapist guidance on outcome.
Harris, 2016	Comparing group cognitive behavioral therapy for internet gamblers to a waitlist control group.	Not RCT. The study utilized pseudo-randomization (sequential randomization)	Cognitive behavioural group therapy for problem gamblers who gamble over the internet: A controlled study.
Myrseth, 2016*	Evaluation of an internet based treatment program for gambling disorder	Full text not available.	Description and pre-post evaluation of an internet based treatment program for pathological gambling in Norway – A pilot study.
Robillard, 2016*	Exploring the efficacy of cognitive behavioral therapy with virtual reality exposure exercises	Other. Conference abstract.	Effectiveness of a revised virtual reality program for pathological gambling.
Bouchard, 2017	To provide pilot data on increasing the use of virtual reality to four sessions	Multiple intervention groups, no control groups.	Using Virtual reality in the Treatment of gambling Disorder: The Development of a new Tool for cognitive Behavior Therapy.
Jiménez-Murcia, 2017	Comparing CBT treatment as usual with and without the involvement of concerned significant others.	Not RCT. Non-randomized design according to authors.	The Involvement of a Concerned Significant Other in Gambling Disorder Treatment Outcome.

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
Linnet, 2017	Investigates the relevance of depression on treatment of gambling disorder	Not RCT. Single group study.	Treatment of gambling disorder patients with comorbid depression.
Bucker, 2018	Examined the acceptance and efficacy of an online-intervention for depression in a sample of problematic and pathological slot-machine gamblers	Wrong intervention. Treating depression and measuring effects on gambling disorder.	Effects of a depression-focused internet intervention in slot machine gamblers: A randomized controlled trial.
Luquiens, 2018*	Presenting results of an online randomized controlled trial exploring the efficacy of online CBT intervention.	Other. Conference abstract.	Big data to track and treat? Proposing online therapy to problem gamblers: a randomized clinical trial.
Nilsson, 2018	To investigate whether the involvement of CSOs in treatment would affect treatment response among problem gamblers in an Internet-delivered pilot study comparing two conditions: Behavioural couples therapy involving both the gambler and a CSO versus CBT for the gambler only	Multiple intervention groups, no control group.	The development of an internet-based treatment for problem gamblers and concerned significant others: a pilot randomized controlled trial
Rodda , 2018	Explores the feasibility of SMS for people with problem gambling accessing an e-mental health service	Wrong population. No info on diagnosis or proportion of individuals above clinical cut-points for gambling disorder.	Does SMS improve gambling outcomes over and above access to other e-mental health supports? A feasibility study.

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
Smith, 2018	Explored how treatment efficacy from an RCT study (Cognitive behavioral therapy) compares to results from routine practice.	Not RCT. Comparing results from an RCT to naturalistic settings.	How does routinely delivered cognitive-behavioural therapy for gambling disorder compare to “gold standard” clinical trial?
Cunningham, 2019	Tested whether there was benefit to providing an online gambling intervention and a separate self-help mental health intervention for anxiety and depression compared to an intervention focusing exclusively on gambling among people with co-occurring gambling problems and mental health distress.	Multiple intervention groups, no control group.	Randomized controlled trial of an Internet intervention for problem gambling provided with or without access to an Internet intervention for co-occurring mental health distress
Broussard, 2019	Compared an accelerator intervention (brief debiasing intervention) to brief motivational interviewing and a control condition.	No outcome on remission or gambling disorder symptom severity.	Debiasing of gambling beliefs and behaviors using a digital gambling accelerator.
Wu, 2019*	Exploring the efficacy of an Expressive Arts-based programme in reducing gambling desires and actual behaviours, enhancing gambling-related self-efficacy, self-control, and managing stress among people with gambling problems.	Full text not available.	Evaluating the efficacy of Expressive Arts-based intervention on Rehabilitation for people with Gambling problem in Hong Kong: a Randomized-controlled Trial.

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
Cunningham, 2020	To establish whether adding a brief online intervention for unhealthy alcohol use to an online problem gambling intervention would lead to improvements in gambling and drinking among those with both of these concerns.	Multiple intervention groups, no control group.	Online interventions for problem gamblers with and without co-occurring unhealthy alcohol use: Randomized controlled trial
Ede, 2020	Evaluates the efficacy of a group cognitive behavioral therapy in reducing pathological gambling.	Wrong population. Unclear as to whether any disordered gamblers existed within the study sample.	Assessment of the Effectiveness of Group Cognitive Behavioural Therapy in Reducing Pathological Gambling.
Nilsson, 2020	To compare treatment response in terms of gambling, mental health, relationship satisfaction and adherence to treatment of problem gamblers in two internet CBT conditions: BCT involving both the gambler and a CSO and CBT involving only the gambler.	Multiple intervention groups, no control group.	Behavioral couples therapy versus cognitive behavioral therapy for problem gambling: a randomized controlled trial
Rosen, 2020	Examined the efficacy of a brief online gambling intervention for ex-offenders.	Wrong intervention. Personalized feedback interventions we categorized as an active control condition in the present review.	A Randomized Clinical Trial Exploring Gambling Attitudes, Barriers to Treatment, and Efficacy of a Brief Motivational Intervention Among Ex-Offenders with Disordered Gambling.
Shead, 2020	Explored whether repeated practice of a contemporary mindfulness-based meditation intervention could change gambling cravings and/or delay discounting.	No outcome on remission or gambling disorder symptom severity	Effect of a Brief Meditation Intervention on Gambling Cravings and Rates of Delay Discounting.

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
Dowling, 2021	To compare the effectiveness of an online self-directed cognitivebehavioural gambling program (GAMBLINGLESS) with and without therapist-delivered guidance.	Multiple intervention groups, no control group.	GamblingLess: A randomized trial comparing guided and unguided internet-based gambling interventions
Granero, 2020	Explored the impact of patients' adherence to guidelines concerning money control on the effectiveness and outcomes of a CBT program.	Not RCT. Single group study.	Does Money Control Enhance the Effectiveness of CBT for Gambling Disorder?
Lee, 2022 (a)	Tested the effectiveness of a systemic congruence couple therapy against a treatment-as-usual control group on addiction patients with psychiatric comorbidity.	Wrong population. Only 95% of patients in the sample were addicted to alcohol, only 5% (n=1) of patients in the analysis suffered from GD.	Congruence couple therapy for alcohol use and gambling disorders with comorbidities (part I): Outcomes from a randomized controlled trial.
Lee, 2022 (b)	Secondary analysis of the data from Lee, 2022 (a).	Wrong population. Only 95% of patients in the sample were addicted to alcohol, only 5% (n=1) of patients in the analysis suffered from GD.	Congruence couple therapy for alcohol use and gambling disorders with comorbidities (part II): Targeted areas and mechanisms of change.
Mena-Moreno, 2022	To analyze the efficacy of a CBT intervention with and without an additional emotion regulation game based intervention.	Multiple intervention groups, no control group. Comparator group received protocol based psychological intervention.	e-Estesia: A Serious Game for Reducing Arousal, Improving Emotional Regulation and Increasing Wellbeing in Individuals with Gambling Disorder.
Schaub, 2022*	Examination of the efficacy of a web-based self-help intervention, relative to an active evidence-based control condition with a self-help manual, at reducing problem gambling.	Other. This record describes an upcoming conference presentation of results	Efficacy of a web-based self-help tool to reduce problem gambling: results of a two-armed randomised controlled trial

Table S3 – All studies excluded during full text screening

Author Year published	Study aim	Main reason for exclusion	Study title
Tremblay, 2022	Assess the efficacy of integrative couple treatment for pathological gambling (ICT-PG) in comparison to treatment provided in an individual approach	Multiple intervention groups, no control group. Comparator group received protocol based psychological intervention.	Efficacy of a randomized controlled trial of integrative couple treatment for pathological gambling (ICT-PG): 10-month follow-up.

CBT, cognitive behavioral therapy; CSO, concerned significant others; PNF, personalized normative feedback; RCT, Randomized controlled trial; Other language (1), other (3), wrong population (7), No outcome (7), Wrong intervention (7), Full text not available (9), Multiple intervention groups, no control group (13), Not RCT (13), *) Record is not listed in the references section.

Table S4 – Pooled estimates of effect for mode of delivery and format within modalities

Outcome	K	Effect Size [95% CI]	<i>p</i>	<i>I</i> ²	[95% PI]	NNT [95% CI]	Effect size _{adj} [95% CI]	<i>K_i</i> <i>mp</i>
Gambling severity								
<i>Mode of delivery and format within modality</i>		Hedges' <i>g</i>					Hedges' <i>g_{adj}</i>	
CBT								
Face-to-face	10	-1.45 [-2.23; -0.67]	0.0003	90.2	[-4.23; 1.32]	1.4 [1.1; 2.7]	-	-
Individually	4	-1.46 [-2.89; -0.02]	0.0469	95.39	[-8.33; 5.42]	1.4 [1.0; 87.9]	-	-
In groups	6	-1.46 [-2.43; -0.48]	0.0036	81.37	[-4.66; 1.75]	1.4 [1.1; 3.8]	-	-
Remote	9	-0.23 [-0.58; 0.12]	0.1940	87.19	[-1.44; 0.98]	-	-	-
Unguided	8	-0.25 [-0.63; 0.12]	0.1886	88.82	[-1.57; 1.06]	-	-	-
Internet program	4	-0.15 [-0.68; 0.38]	0.5791	89.22	[-2.60; 2.30]	-	-	-
MI/CBT								
Face-to-face	4	-0.37 [-0.83; 0.09]	0.1135	65.58	[-2.28; 1.54]	-	-	-
Remote - Therapist guided	3	-0.75 [-1.52; 0.02]	0.0574	87.15	[-10.26; 8.76]	-	-	-
Remission								
<i>Mode of delivery and format within modality</i>		Odds Ratio					Odds Ratio_{adj}	
CBT								
Face-to-face	6	0.22 [0.05; 0.90]	0.0347	82.89	[0.00; 22.73]	2.8 [1.8; 38.7]	-	-
In groups	4	0.09 [0.01; 0.75]	0.0266	76.13	[0.00; 852.66]	2.0 [1.6; 14.8]	-	-
Remote	4	0.85 [0.58; 1.24]	0.4030	0.00	[0.37; 1.96]	-	-	-
Unguided	3	0.80 [0.52; 1.22]	0.2906	0.00	[0.05; 12.38]	-	-	-
Depressive symptoms								
<i>Mode of delivery and format within modality</i>		Hedges' <i>g</i>					Hedges' <i>g_{adj}</i>	
CBT								
Face-to-face	3	-0.66 [-1.32; 0.00]	0.0511	49.24	[-7.39; 6.08]	-	-	-
In groups	3	-0.69 [-1.31; -0.06]	0.0311	50.22	[-7.10; 5.72]	2.7 [1.5; 28.4]	-	-
Remote - Unguided	3	-0.27 [-0.66; 0.12]	0.1797	53.45	[-4.37; 3.83]	-	-	-
Anxiety								
<i>Mode of delivery and format within modality</i>		Hedges' <i>g</i>					Hedges' <i>g_{adj}</i>	
CBT								
Face-to-face	3	-0.65 [-1.1; -0.19]	0.0054	0.00	[-3.62; 2.32]	2.8 [1.8; 9.3]	-	-
In groups	3	-0.62 [-1.04; -0.19]	0.0043	0.00	[-3.36; 2.13]	3.0 [1.9; 9.2]	-	-

Bold p-values are statistically significant (<0.05), abbreviations: K, number of comparisons; CBT, cognitive behavioral therapy; MI, motivational intervention; PI, prediction interval; Effect size_{adj}, effect size adjusted for publication bias, K_{imp}, number of studies imputed to adjust for publication bias using trim and fill; NNT, number-needed-to-treat, *) for estimates generated on only few comparisons, heterogeneity and random variance is not possible to outline, leading to large confidence intervals on tau². Thus, I² becomes biased towards homogeneity (I²=0) (Higgins, Thompson, Deeks, & Altman, 2003), a) NNT was calculated only for estimates of effect that were statistically significant.

Table S5 – Pooled estimates on short follow up (3 – 6 months)

Outcome	K	Effect Size [95% CI]	p	I ² *	[95% PI]	NNT ^a [95% CI]	Effect size _{adj} [95% CI]	K _{imp}
Gambling severity		Hedges' g					Hedges' g_{adj}	
<i>All comparisons</i>	11	-0.27 [-0.52; -0.02]	0.0382	64.38	[-1.04; 0.50]	6.6 [3.5; 121.1]	-	-
<i>Modality</i>								
CBT	7	-0.07 [-0.24; 0.11]	0.4684	22.96	[-0.44; 0.31]	-	-	-
<i>Mode of delivery and format</i>								
Face-to-face	6	-0.57 [-0.93; -0.20]	0.0022	55.76	[-1.59; 0.46]	3.2 [2.1; 8.7]	-	-
Individual	5	-0.58 [-0.98; -0.19]	0.0038	66.64	[-1.88; 0.71]	3.1 [2.0; 9.5]	-	-
Remote	6	0.04 [-0.10; 0.19]	0.5657	0.00	[-0.16; 0.25]	-	-	-
Therapist guided	3	-0.14 [-0.45; 0.19]	0.4011	0.00	[-2.31; 2.02]	-	-	-
Unguided	4	0.07 [-0.09; 0.23]	0.3693	0.00	[-0.27; 0.41]	-	-	-
<i>Mode of delivery and format within modality</i>								
CBT								
Face-to-face	3	0.32 [-0.60; -0.04]	0.0230	5.70	[-2.31; 1.66]	5.6 [3.0; 39.9]	-	-
Remote	5	0.04 [-0.10; 0.19]	0.5594	0.00	[-0.20; 0.28]	-	-	-
Unguided	4	0.07 [-0.09; 0.23]	0.3693	0.00	[-0.27; 0.41]	-	-	-
Remission		Odds ratio					Odds ratio_{adj}	
<i>All comparisons</i>	5	1.04 [0.75; 1.43]	0.8239	0.00	[0.62; 1.74]	-	-	-
<i>Modality</i>								
CBT	4	1.12 [0.74; 1.69]	0.5867	0.00	[0.46; 2.76]	-	-	-
<i>Mode of delivery and format</i>								
Remote	3	1.08 [0.78; 1.50]	0.6520	0.00	[0.13; 8.99]	-	-	-
Depression	-	-	-	-	-	-	-	-
Anxiety	-	-	-	-	-	-	-	-

Bold p-values are statistically significant (<0.05), abbreviations: K, number of comparisons; CBT, cognitive behavioral therapy; PI, prediction interval; Effect size_{adj}, Effect size adjusted for publication bias, K_{imp}, number of studies imputed to adjust for publication bias using trim and fill; NNT, number-needed-to-treat, *) for estimates generated on only few comparisons, heterogeneity and random variance is not possible to outline, leading to large confidence intervals on tau². Thus, I² becomes biased towards homogeneity (I²=0)(Higgins et al., 2003), a) NNT was calculated only for estimates of effect that were statistically significant.

Table S6 – Pooled estimates on long follow up (9 – 15 months)

Outcome	K	Effect Size [95% CI]	p	I²	[95% PI]	NNT^a [95% CI]	Effect size_{adj} [95% CI]	K_{imp}
Gambling severity		Hedges' g					Hedges' g_{adj}	
<i>All comparisons</i>	6	-0.07 [-0.25; 0.12]	0.4990	0.00	[-0.33; 0.20]	-	-	-
<i>Modality</i>								
MI	3	-0.02 [-0.29; 0.24]	0.8563	5.11	[-1.89; 1.84]	-	-	-
CBT/MI	4	-0.20 [-0.44; 0.05]	0.1144	0.00	[-0.73; 0.34]	-	-	-
<i>Mode of delivery and format</i>								
Face-to-face - Individual	4	-0.20 [-0.44; 0.04]	0.1012	0.00	[-0.72; 0.32]	-	-	-
Remote	3	0.04 [-0.17; 0.25]	0.7024	0.00	[-1.31; 1.40]	-	-	-
<i>Mode of delivery and format within modality</i>								
CBT/MI								
Face-to-face, individual	3	-0.23 [-0.54; 0.08]	0.1383	0.00	[-2.24; 1.77]	-	-	-
Remission	-	-	-	-	-	-	-	-
Depression	-	-	-	-	-	-	-	-
Anxiety	-	-	-	-	-	-	-	-

Bold p-values are statistically significant (<0.05), abbreviations: K, number of comparisons; CBT, cognitive behavioral therapy; MI, motivational intervention; PI, prediction interval; Effect size_{adj}, Effect size adjusted for publication bias, K_{imp}, number of studies imputed to adjust for publication bias using trim and fill; NNT, number-needed-to-treat, *) for estimates generated on only few comparisons, heterogeneity and random variance is not possible to outline, leading to large confidence intervals on tau². Thus, I² becomes biased towards homogeneity (I²=0) (Higgins et al., 2003), a) NNT was calculated only for estimates of effect that were statistically significant.

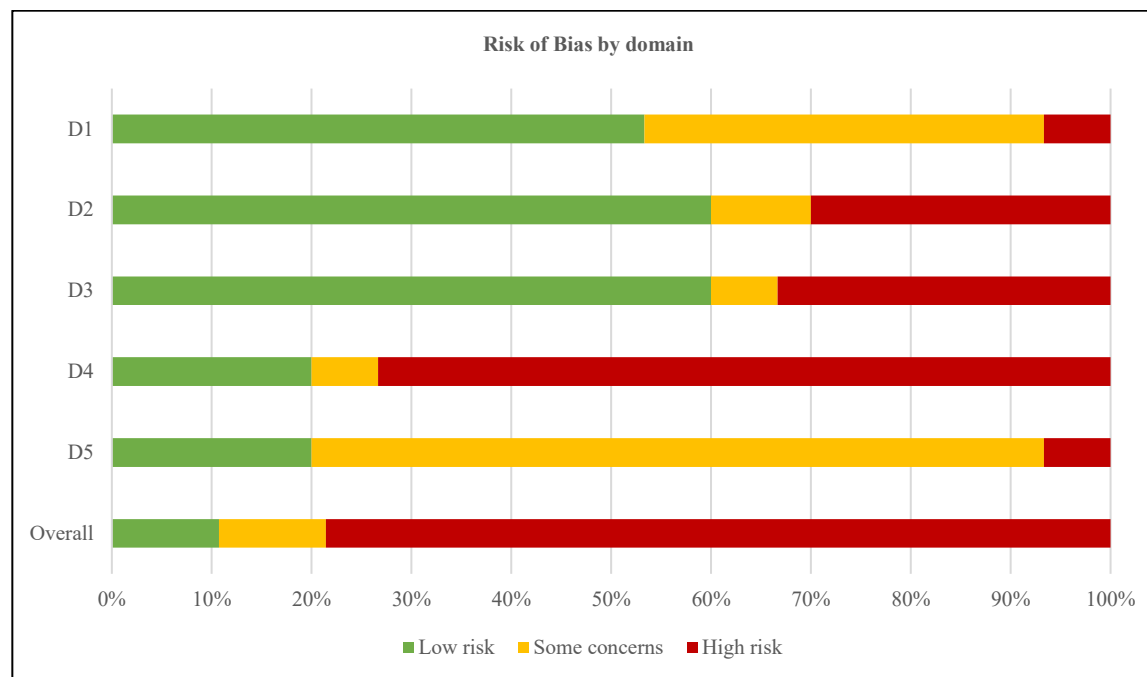
Table S7 – Risk of Bias ratings for each study and domain

Low risk  Some concerns  High risk 

First author (year)	D1	D2	D3	D4	D5	Overall
Sylvain (1997)	High risk	High risk	High risk	High risk	High risk	High risk
Ladouceur (2001)	High risk	High risk	High risk	High risk	High risk	High risk
Ladouceur (2003)	High risk	High risk	High risk	High risk	High risk	High risk
Melville (2004) 1	High risk	High risk	High risk	High risk	High risk	High risk
Melville (2004) 2	High risk	High risk	High risk	High risk	High risk	High risk
Petry (2006)	Some concerns	Some concerns	Some concerns	High risk	High risk	High risk
Dowling (2007)	High risk	Some concerns	High risk	High risk	High risk	High risk
Carlbring (2008)	Some concerns	Some concerns	Some concerns	High risk	High risk	High risk
Korman (2008)	Some concerns	Some concerns	Some concerns	Some concerns	High risk	High risk
(Petry 2008)	Some concerns	Some concerns	Some concerns	High risk	High risk	High risk
Grant (2009)	Some concerns	Some concerns	Some concerns	High risk	High risk	High risk
Myrseth (2009)	High risk	High risk	Some concerns	High risk	High risk	High risk
Petry (2009)	Some concerns	Some concerns	Some concerns	High risk	High risk	High risk
Larimer (2011)	High risk	High risk	Some concerns	High risk	High risk	High risk
Marceaux (2011)	High risk	Some concerns	Some concerns	High risk	High risk	High risk
Lee (2015)	Some concerns	High risk	High risk	High risk	High risk	High risk
Wong (2015)	High risk	High risk	High risk	High risk	High risk	High risk
Luquiens (2016)	Some concerns	Some concerns	High risk	High risk	Some concerns	High risk
McIntosh (2016)	High risk	Some concerns	High risk	Some concerns	High risk	High risk
Petry (2016)	Some concerns	Some concerns	Some concerns	Some concerns	High risk	High risk
Abbott (2017)	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns
Boudrealt (2017)	Some concerns	Some concerns	Some concerns	High risk	High risk	High risk
Casey (2017)	Some concerns	Some concerns	Some concerns	High risk	High risk	High risk
Oei (2017)	High risk	High risk	High risk	High risk	High risk	High risk
Cunningham (2019)	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns
Hodgins (2019)	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns
Jonas (2020)	Some concerns	Some concerns	Some concerns	High risk	Some concerns	High risk
McAfee (2020)	High risk	Some concerns	Some concerns	High risk	High risk	High risk
So (2020)	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns
Bücker (2021)	Some concerns	Some concerns	Some concerns	High risk	High risk	High risk

According to the revised Cochrane risk-of-bias assessment tool for randomized trials (RoB2) (Sterne et al., 2019): Domain 1 (D1), randomization; Domain 2 (D2), deviation from intervention; Domain 3 (D3), missing outcome; Domain 4 (D4), measurement of the outcome; Domain 5 (D5), selective reporting; Overall, overall risk of bias.

Figure S1 – Risk of Bias ratings: proportion by domain



According to the revised Cochrane risk-of-bias assessment tool for randomized trials (RoB2) (Sterne et al., 2019): Domain 1 (D1), randomization; Domain 2 (D2), deviation from intervention; Domain 3 (D3), missing outcome; Domain 4 (D4), measurement of the outcome; Domain 5 (D5), selective reporting; Overall, overall risk of bias.

Table S8-S11 – Quality of evidence assessments (GRADE)

Table S8

Efficacy of psychological intervention overall											
Outcome	Certainty of findings						Summary of findings				
	Ns	Design	RoB	Inconsistency	Indirectedness	Imprecision	Np		Effect		Certainty
							IG	CG	Relative (95% CI)	Absolute (95% CI)	
Gambling severity	28	RCT	very serious	serious	not serious	not serious	1701	1474	-	SMD -0.71 (-1.03, -0.39)	very low
Remission	12	RCT	very serious	serious	not serious	not serious	355/820	294/610	OR 0.47 (0.25, 0.88)	178 fewer per 1000 (293 fewer, 32 fewer)	very low
Depressive symptoms	8	RCT	very serious	not serious	not serious	not serious	196	140	-	SMD -0.46 (-0.77, -0.15)	low
Anxiety	7	RCT	very serious	not serious	not serious	not serious	165	106	-	SMD -0.56 (-0.78, -0.35)	low
Abbreviations: CG, control groups; CI, confidence interval; IG, intervention groups; N _p , number of patients; N _s , number of studies; OR, odds ratio; RCT, randomized controlled trial; RoB, risk of bias; SMD; standardized mean difference (in this case Hedges' g).											

Table S9

Efficacy of face-to-face psychological intervention											
Outcome	Certainty of findings						Summary of findings				
	Ns	Design	RoB	Inconsistency	Indirectedness	Imprecision	Np		Effect		Certainty
							IG	CG	Relative (95% CI)	Absolute (95% CI)	
Gambling severity	16	RCT	very serious	serious	not serious	not serious	564	551	-	SMD -1.03 (-1.54, -0.53)	low
Remission	7	RCT	very serious	serious	not serious	serious	63/224	86/151	OR 0.24 (0.08, 0.73)	329 fewer per 1000 (474 fewer, 78 fewer)	very low
Depressive symptoms	4	RCT	very serious	not serious	not serious	serious	88	86	-	SMD -0.63 (-0.97, -0.30)	very low
Anxiety	4	RCT	very serious	not serious	not serious	serious	88	86	-	SMD -0.68 (-1.02, -0.35)	very low
Abbreviations: CG, control groups; CI, confidence interval; IG, intervention groups; N _p , number of patients; N _s , number of studies; OR, odds ratio; RCT, randomized controlled trial; RoB, risk of bias; SMD; standardized mean difference (in this case Hedges' g).											

Table S10

Efficacy of remotely delivered psychological intervention											
Outcome	Certainty of findings						Summary of findings				
	Ns	Design	RoB	Inconsistency	Indirectedness	Imprecision	Np		Effect		Certainty
							IG	CG	Relative (95% CI)	Absolute (95% CI)	
Gambling severity	13	RCT	serious	serious	not serious	not serious	1137	986	-	SMD -0.36 (-0.65, -0.06)	low
Remission	6	RCT	serious	not serious	not serious	serious	292/569	233/507	OR 0.87 (0.63, 1.20)	34 fewer per 1000 (111 fewer, 45 more)	low
Depressive symptoms	4	RCT	very serious	not serious	not serious	very serious	207	153	-	SMD -0.32 (-0.77, 0.12)	very low
Anxiety	3	RCT	very serious	not serious	not serious	very serious	176	119	-	SMD -0.48 (-0.77, -0.19)	very low
Abbreviations: CG, control groups; CI, confidence interval; IG, intervention groups; N _p , number of patients; N _s , number of studies; OR, odds ratio; RCT, randomized controlled trial; RoB, risk of bias; SMD; standardized mean difference (in this case Hedges' g).											

Table S11

Efficacy of CBT psychological intervention across formats and modes of delivery											
Outcome	Certainty of findings						Summary of findings				
	Ns	Design	RoB	Inconsistency	Indirectedness	Imprecision	Np		Effect		Certainty
							IG	CG	Relative (95% CI)	Absolute (95% CI)	
Gambling severity	18	RCT	very serious	serious	not serious	not serious	925	918	-	SMD -0.85 (-1.36, -0.34)	low
Remission	9	RCT	very serious	not serious	not serious	not serious	218/508	226/469	OR 0.45 (0.19, 1.04)	187 fewer per 1000 (332 fewer, 10 more)	low
Depressive symptoms	6	RCT	very serious	not serious	not serious	serious	169	172	-	SMD -0.40 (-0.74, -0.06)	very low
Anxiety	5	RCT	very serious	not serious	not serious	serious	138	138	-	SMD -0.60 (-0.86, -0.35)	very low
Abbreviations: CBT, cognitive behavioral therapy; CG, control groups; CI, confidence interval; IG, intervention groups; N _p , number of patients; N _s , number of studies; OR, odds ratio; RCT, randomized controlled trial; RoB, risk of bias; SMD; standardized mean difference (in this case Hedges' g).											

Figure S2-S30 – Forest plots

Figure S2 – Forest plot Remission: all studies included

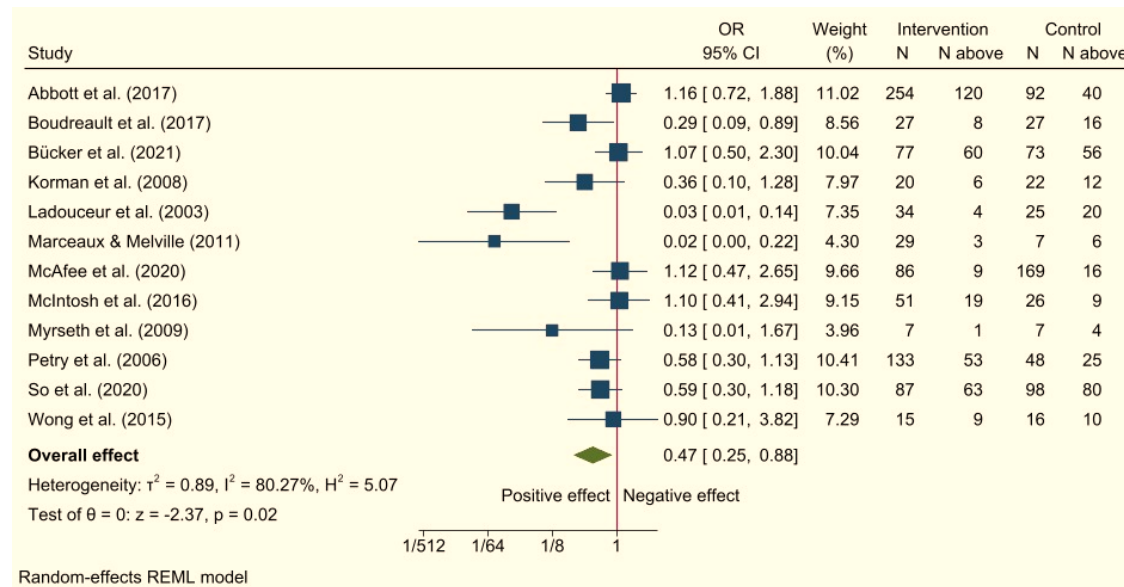


Figure S3 – Forest plot Depressive symptoms: all studies included

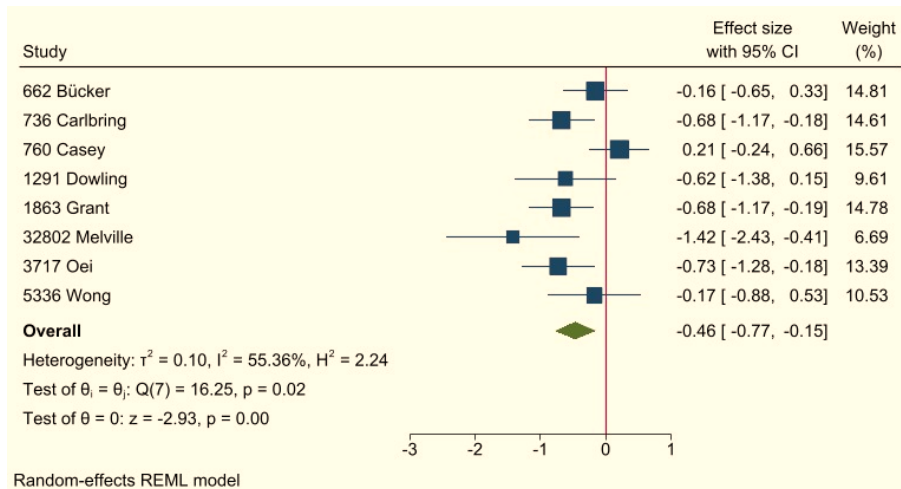


Figure S4 – Forest plot Anxiety: all studies included

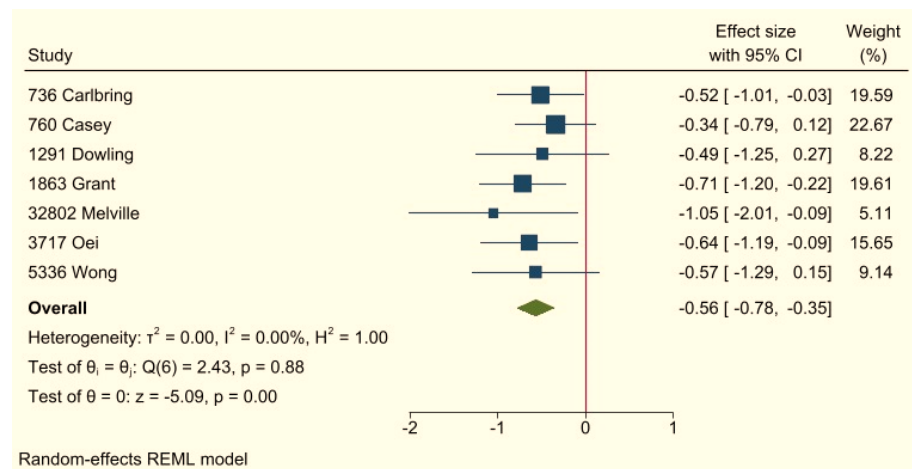


Figure S5 – Forest plot Gambling Severity: CBT

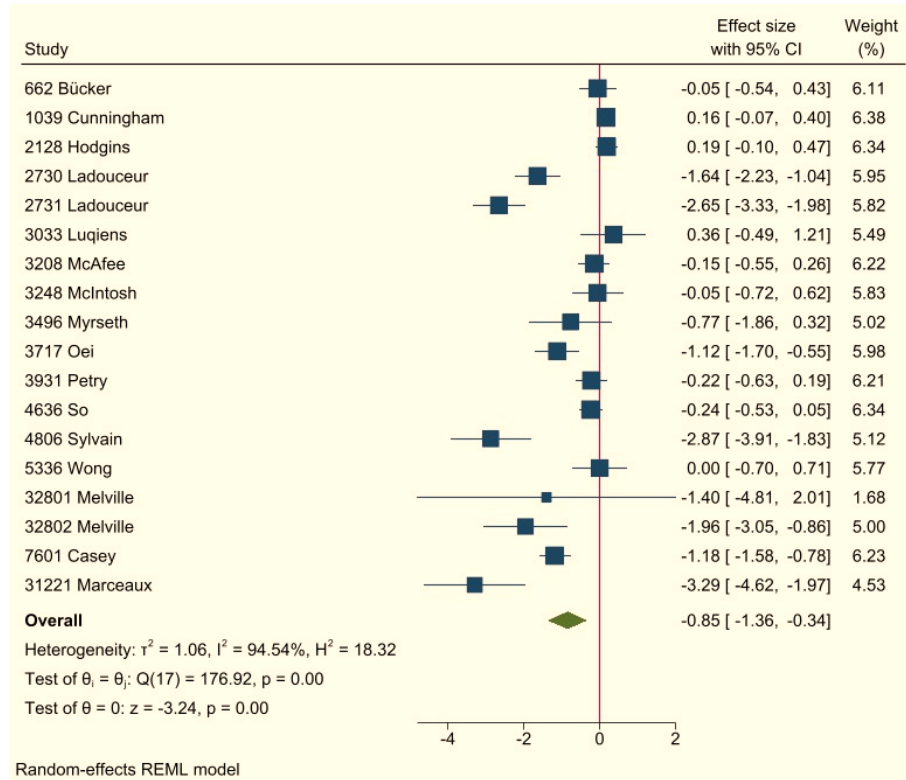


Figure S6 – Forest plot Remission: CBT

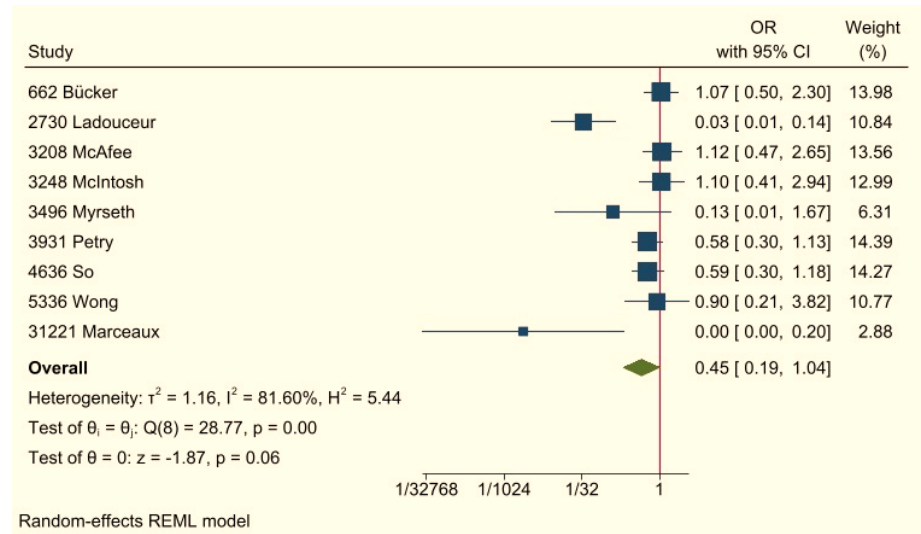


Figure S7 – Forest plot Depressive symptoms: CBT

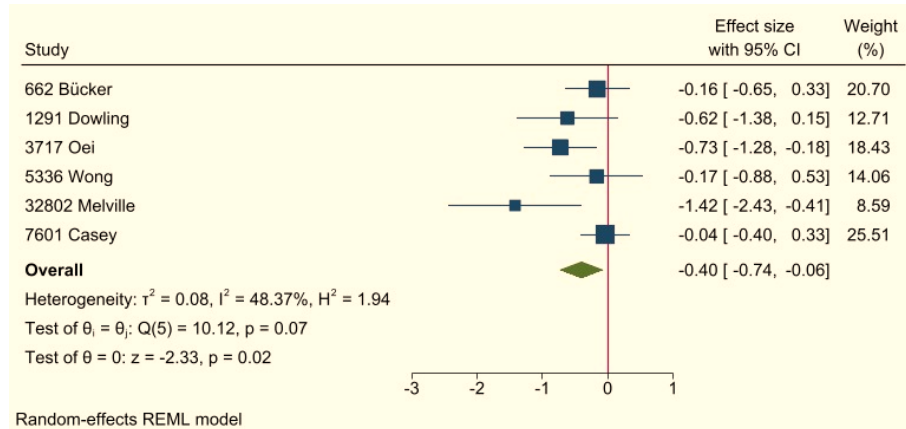


Figure S8 – Forest plot Anxiety: CBT

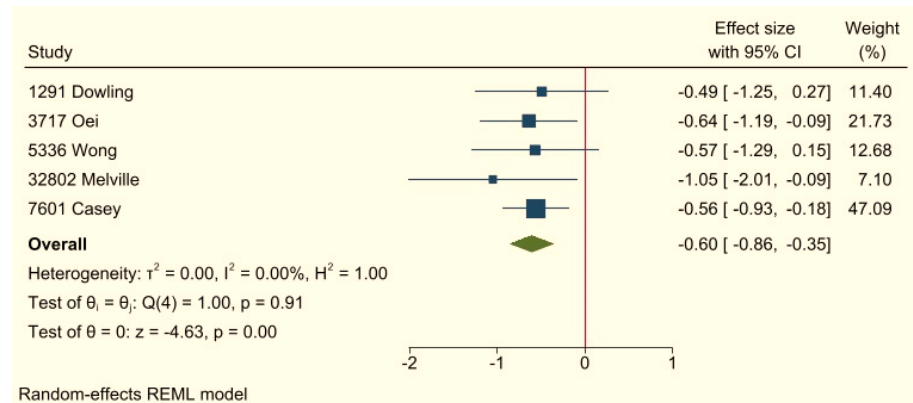


Figure S9 – Forest plot Gambling Severity: MI

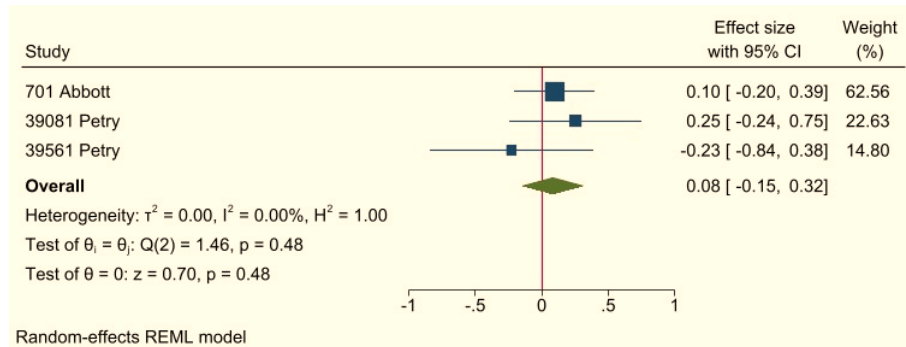


Figure S10 – Forest plot Gambling Severity: MI/CBT

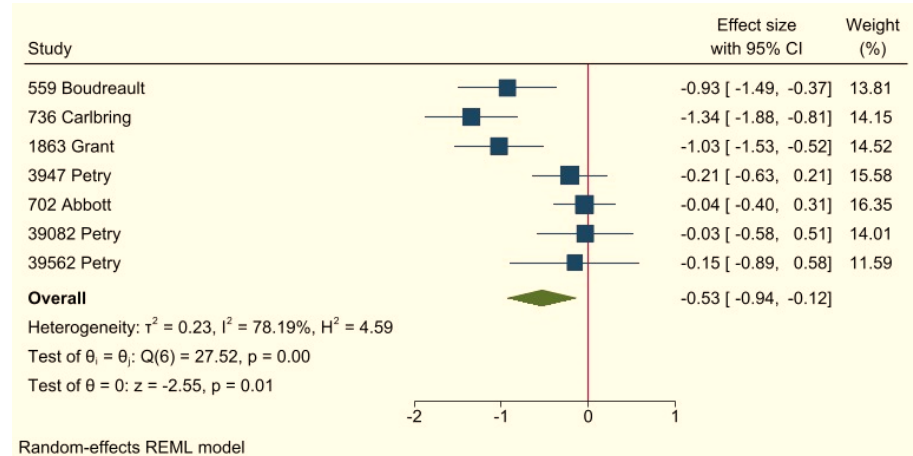


Figure S11 – Forest plot Gambling Severity: other

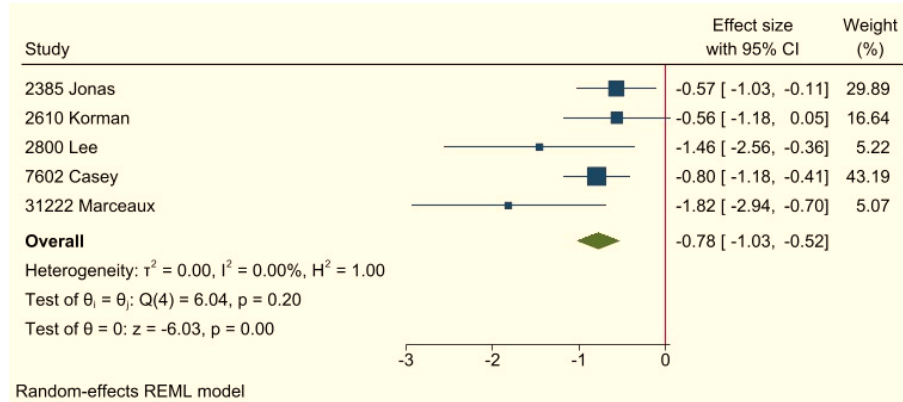


Figure S13 – Forest plot Remission: Face-to-face

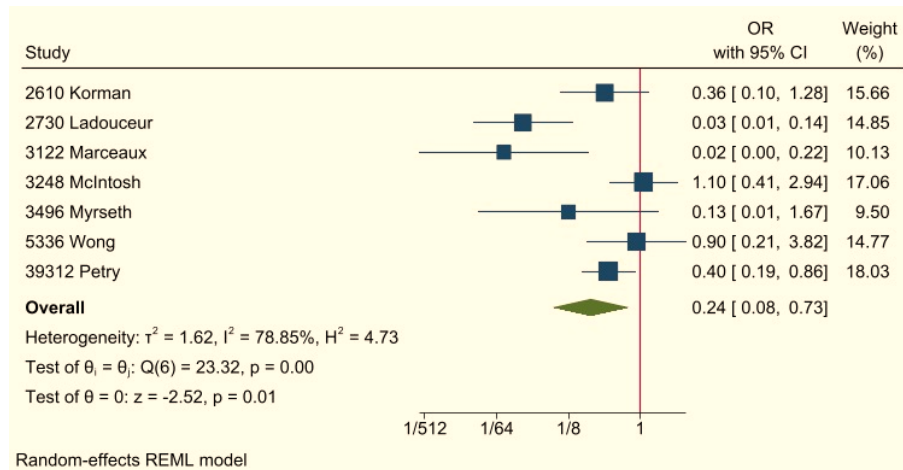


Figure S12 – Forest plot Gambling Severity: Face-to-face

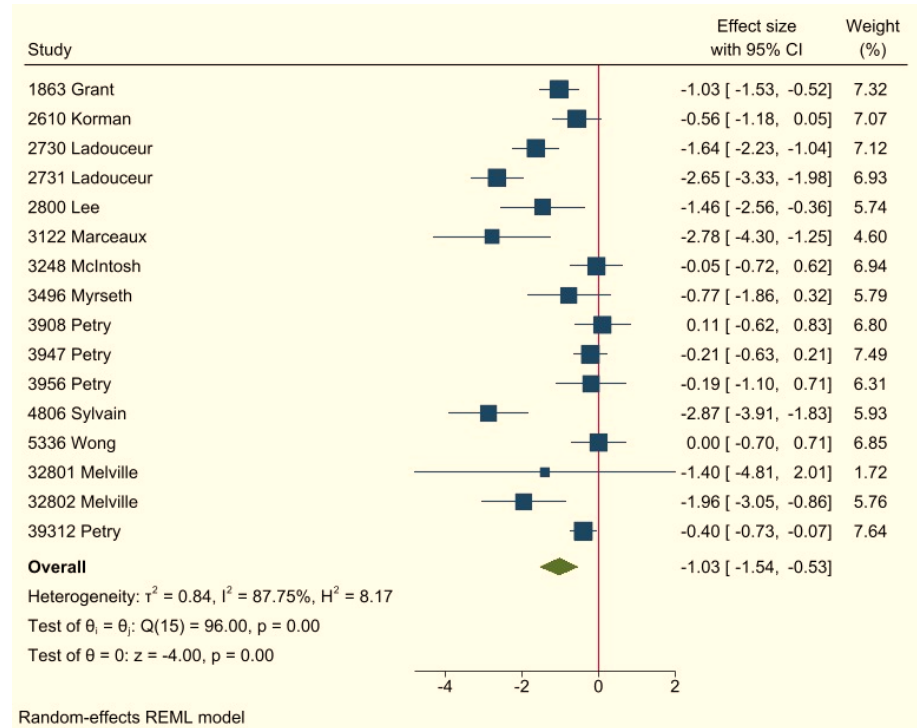


Figure S14 – Forest plot Depressive symptoms: Face-to-face

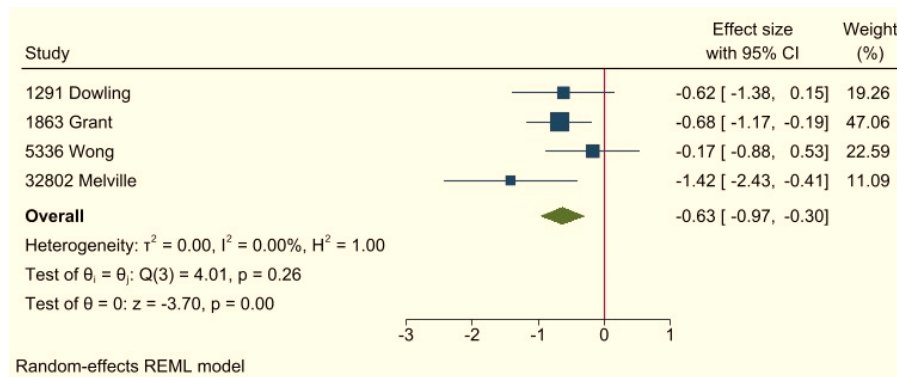


Figure S15 – Forest plot Anxiety: Face-to-face

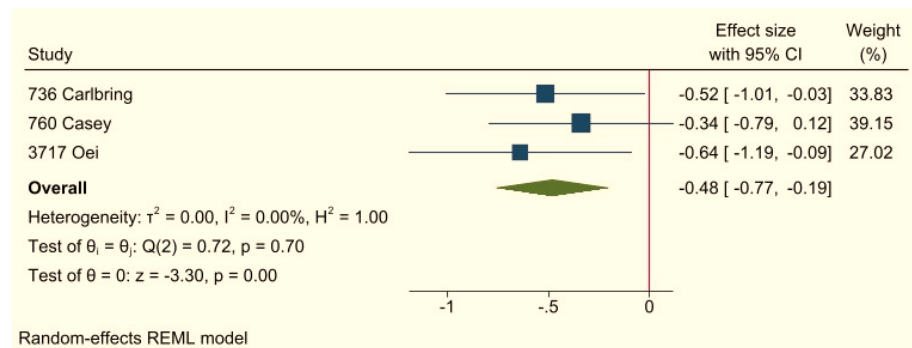


Figure S16 – Forest plot Gambling Severity: Face-to-face individual format

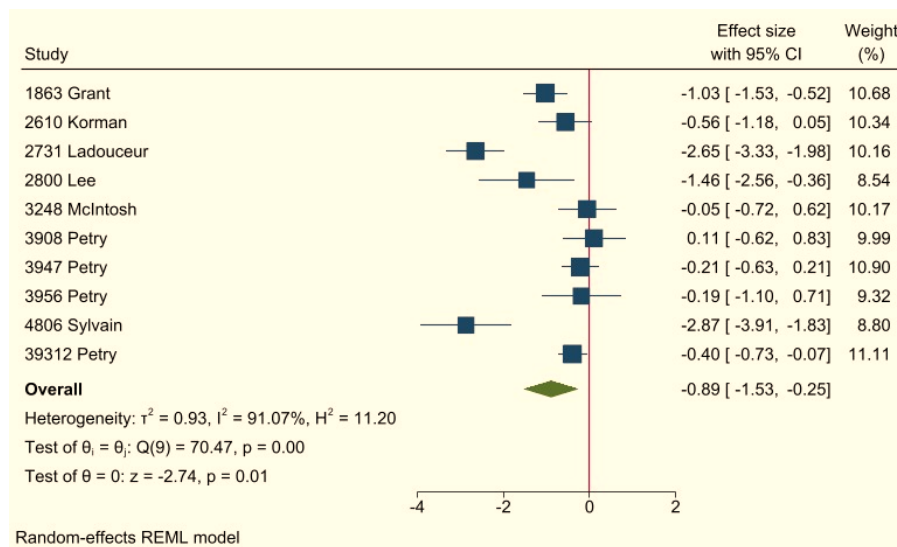


Figure S17 – Forest plot Remission: Face-to-face individual format

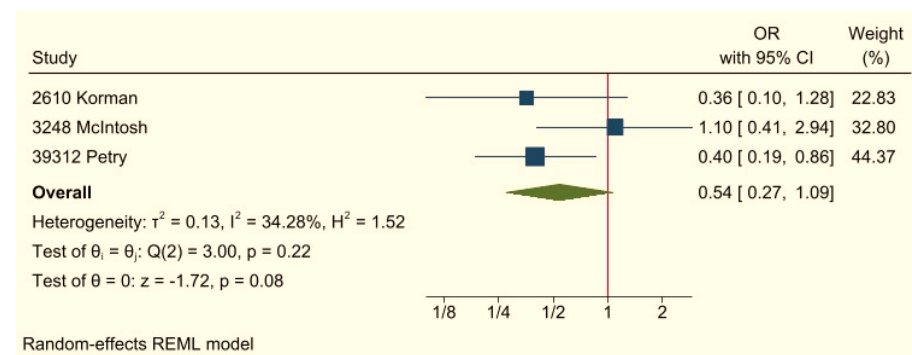


Figure S18 – Forest plot Gambling Severity: Face-to-face group format

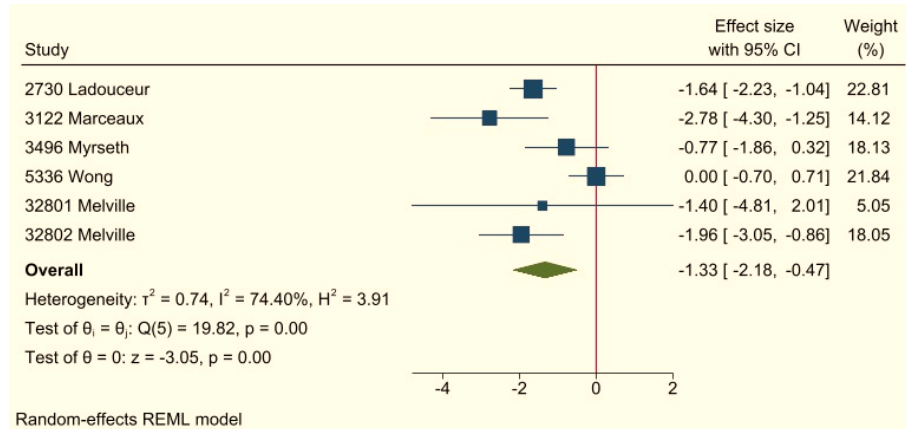


Figure S20 – Forest plot Depressive symptoms: Face-to-face group format

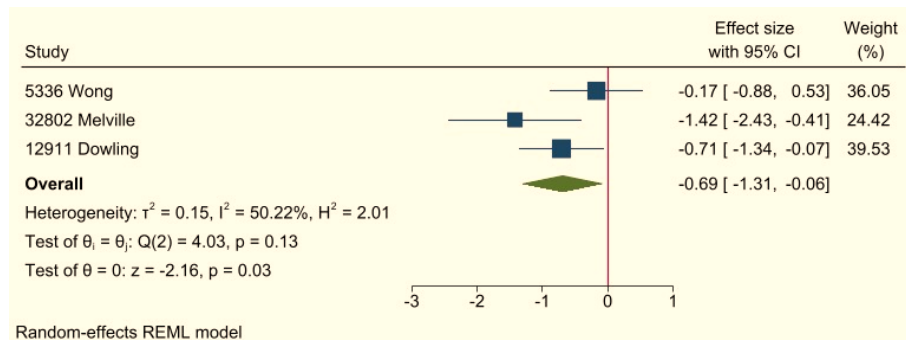


Figure S19 – Forest plot Remission: Face-to-face group format

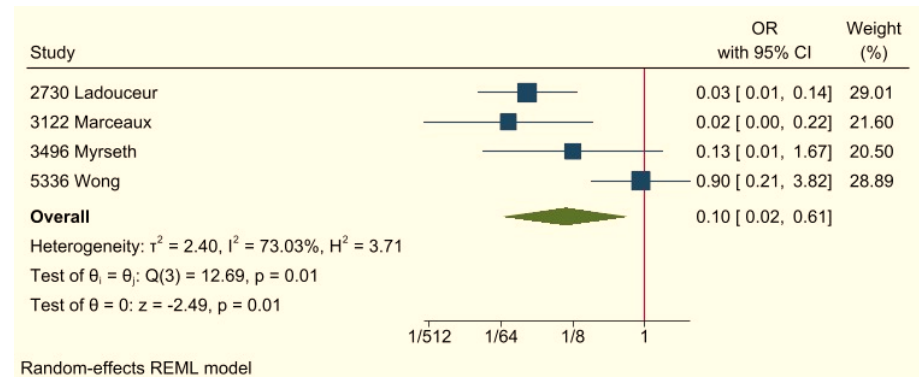


Figure S21 – Forest plot Anxiety: Face-to-face group format

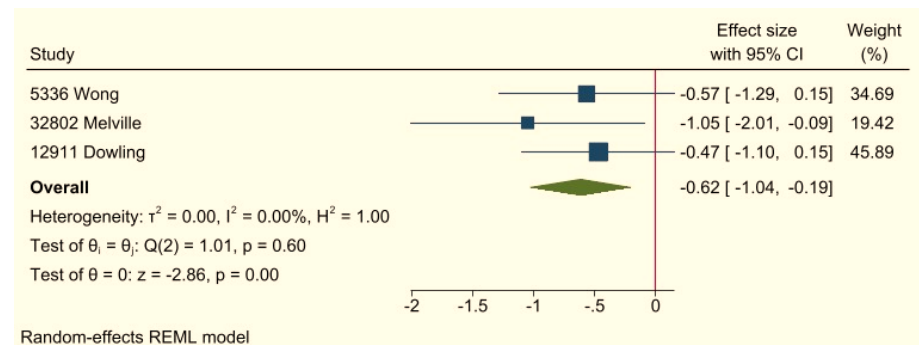


Figure S22 – Forest plot Gambling Severity: Remote intervention

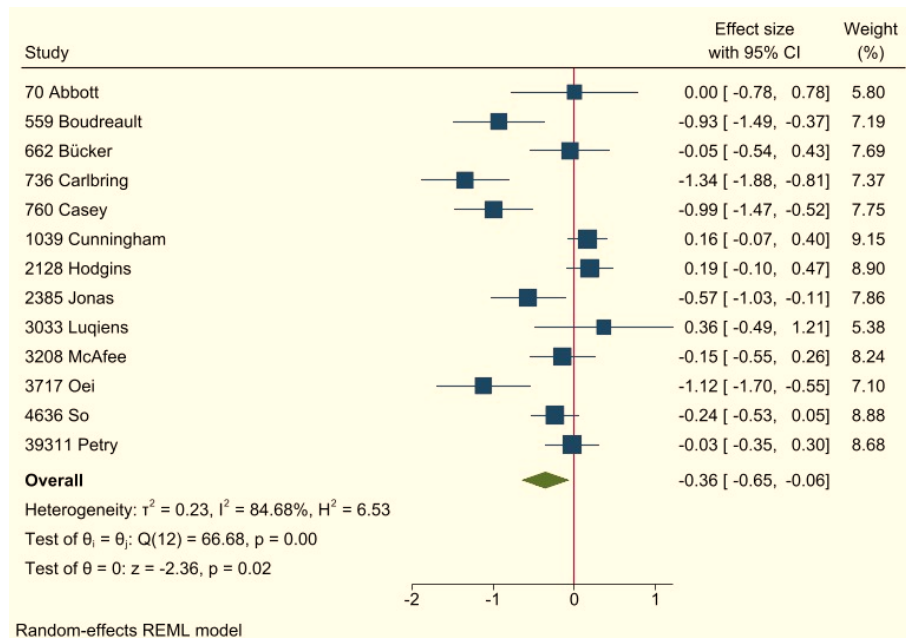


Figure S24 – Forest plot Depressive symptoms: Remote intervention

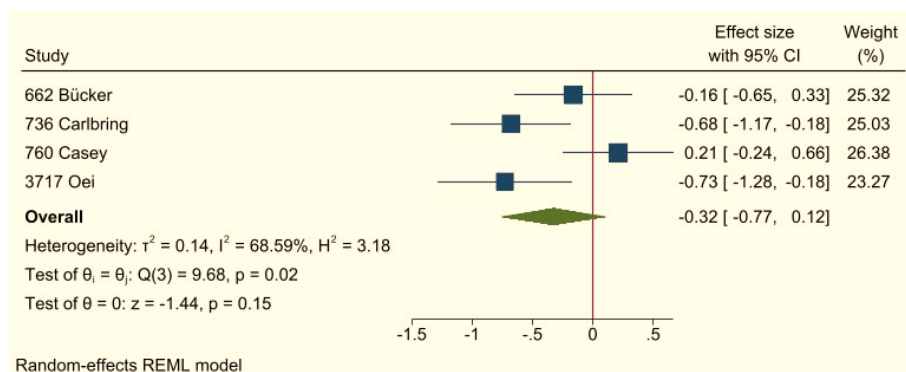


Figure S23 – Forest plot Remission: Remote intervention

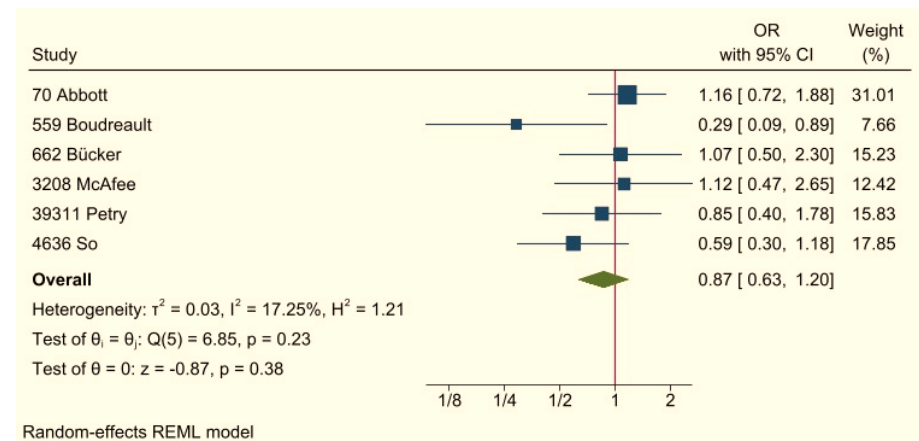


Figure S25 – Forest plot Anxiety: Remote intervention

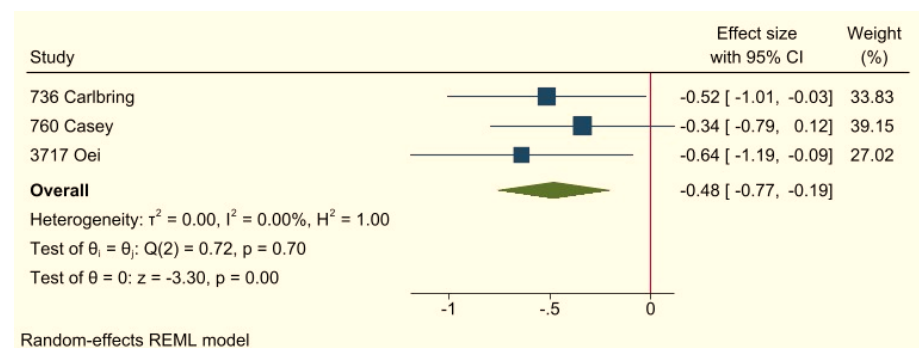


Figure S26 – Forest plot Gambling Severity: Remote intervention therapist-guided

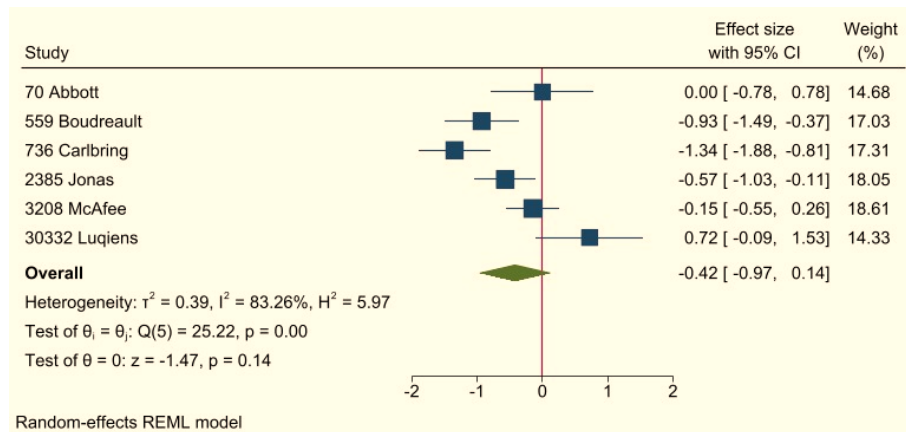


Figure S28 – Forest plot Gambling Severity: Remote intervention no therapist-guidance

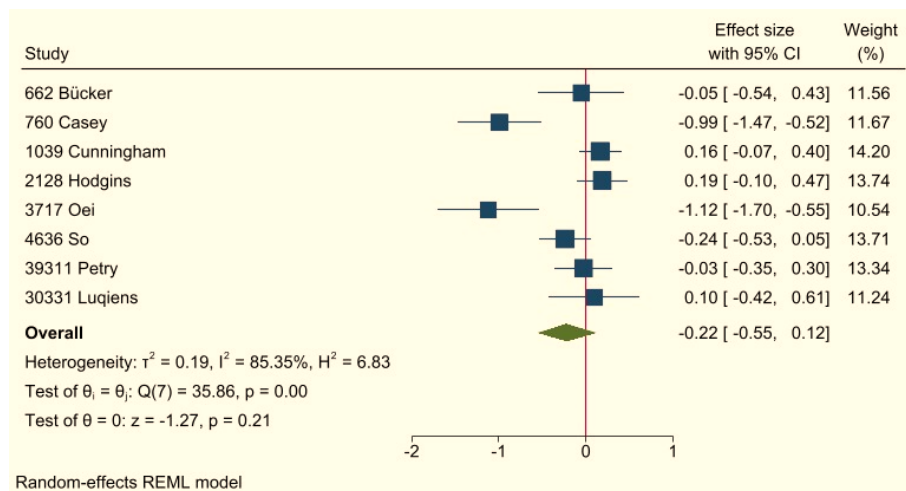


Figure S27 – Forest plot Remission: Remote intervention therapist-guided

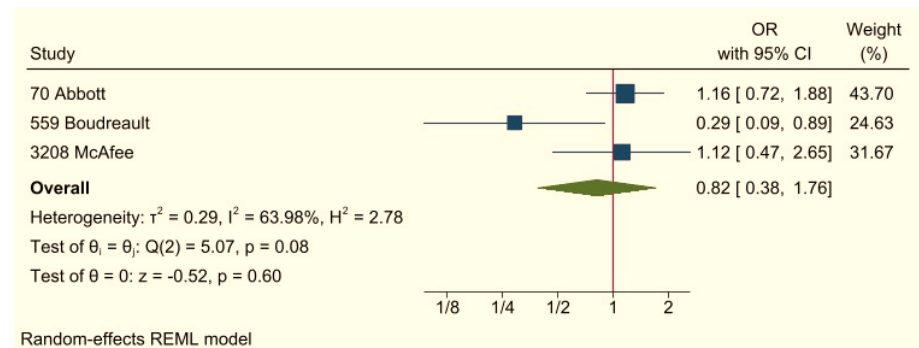


Figure S29 – Forest plot Remission: Remote intervention no therapist-guidance

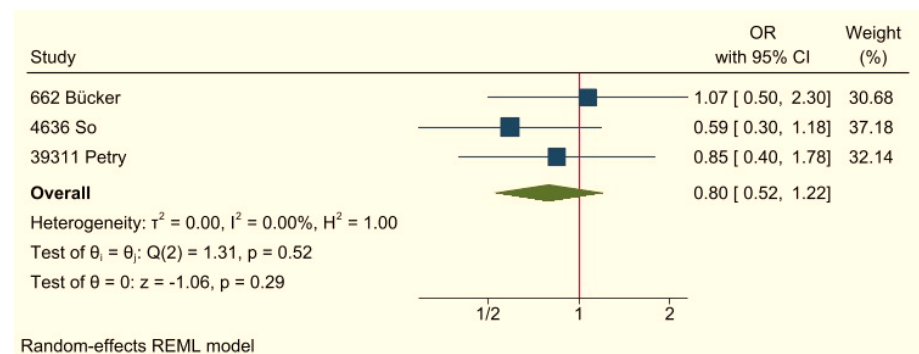


Figure S30 – Forest plot Depressive symptoms: Remote intervention no therapist-guidance

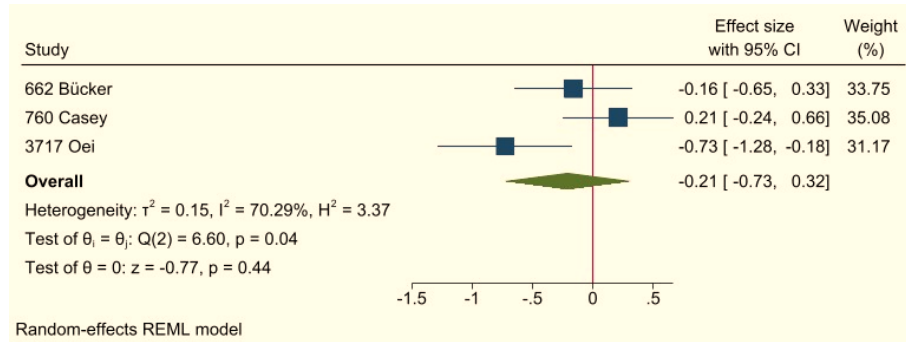


Figure S31-S60 – Funnel plots

Figure S31 – Funnel plot Gambling Severity: all studies included

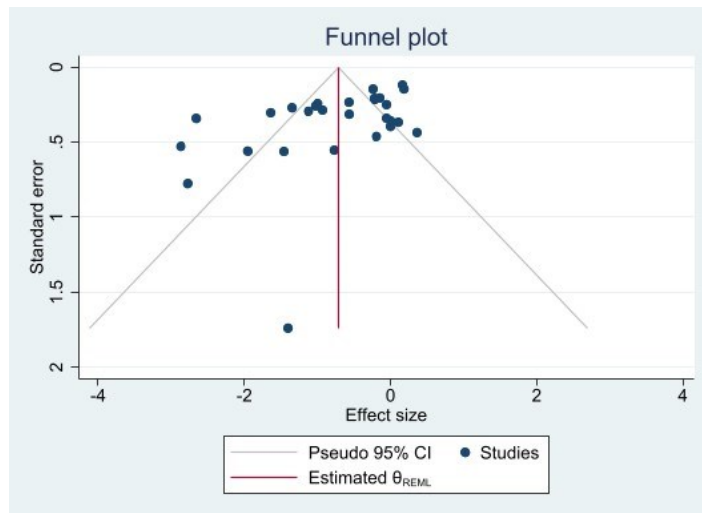


Figure S32 – Funnel plot Remission: all studies included

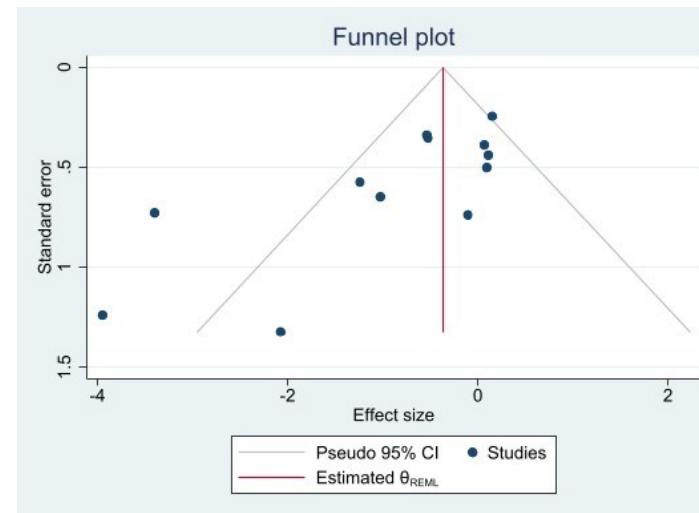


Figure S33 – Funnel plot Depressive symptoms: all studies included

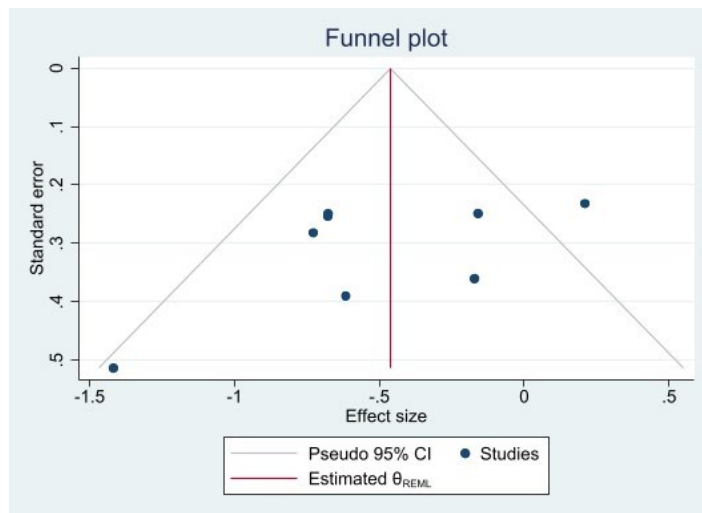


Figure S34 – Funnel plot Anxiety: all studies included

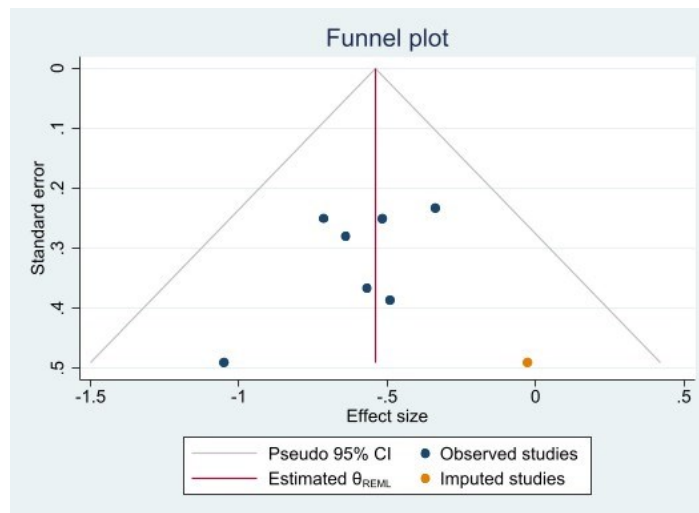


Figure S35 – Funnel plot Gambling Severity: CBT

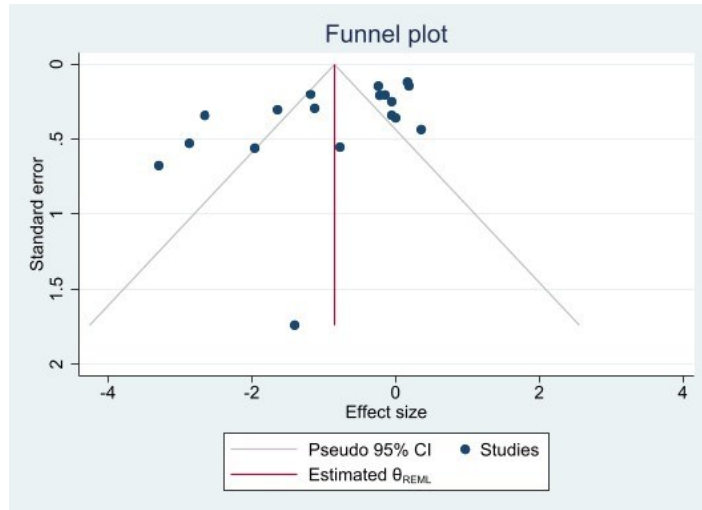


Figure S36 – Funnel plot Remission: CBT

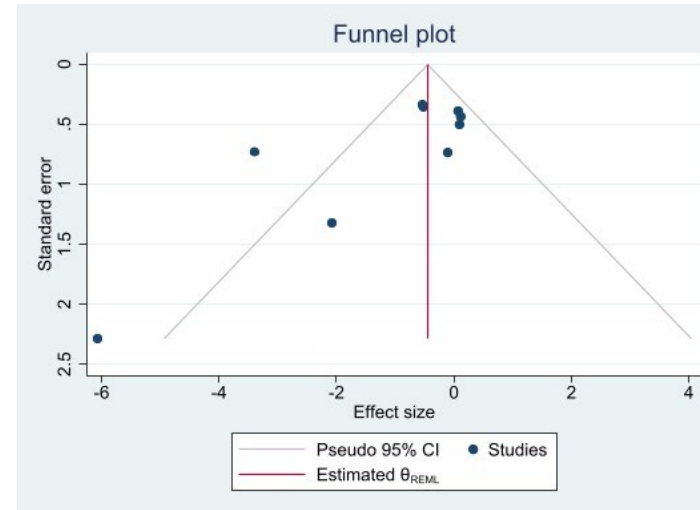


Figure S37 – Funnel plot Depressive symptoms: CBT

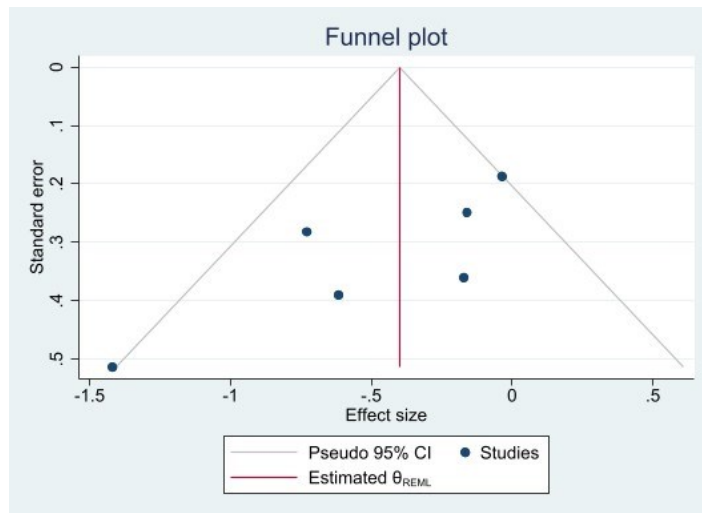


Figure S38 – Funnel plot Anxiety: CBT

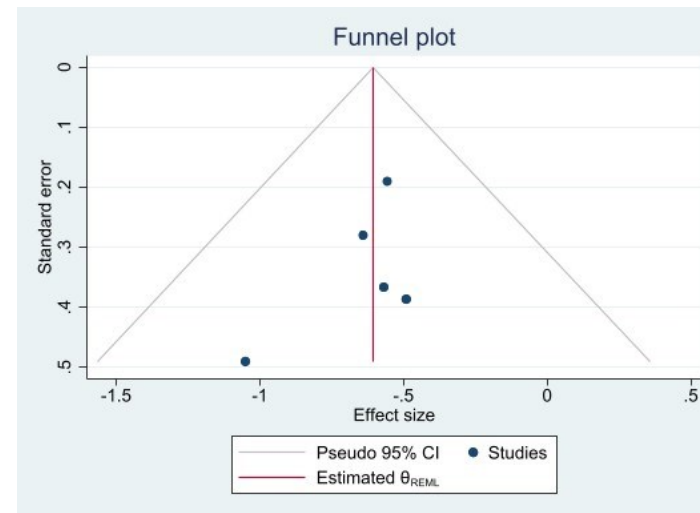


Figure S39 – Funnel plot Gambling Severity: MI

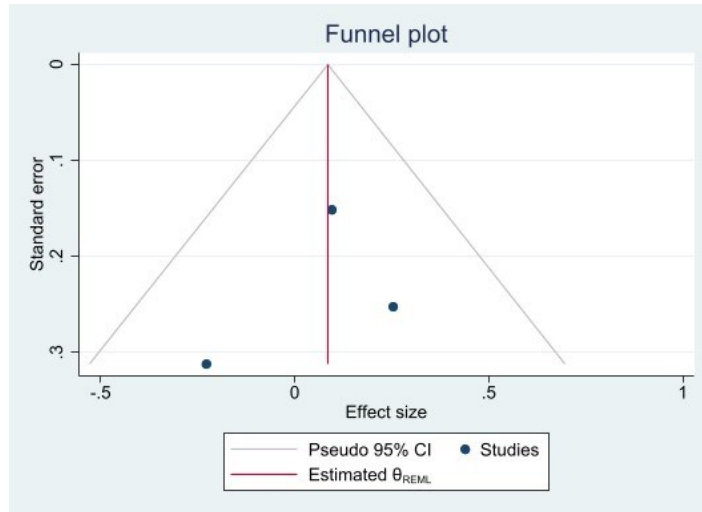


Figure S40 – Funnel plot Gambling Severity: MI/CBT

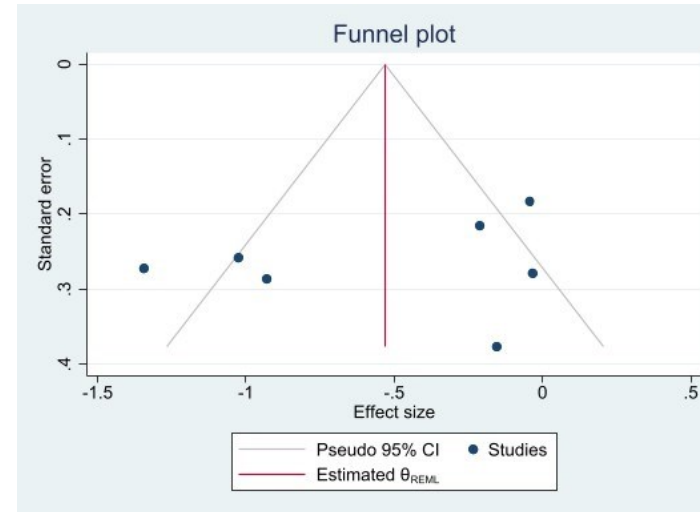


Figure S41 – Funnel plot Gambling Severity: other

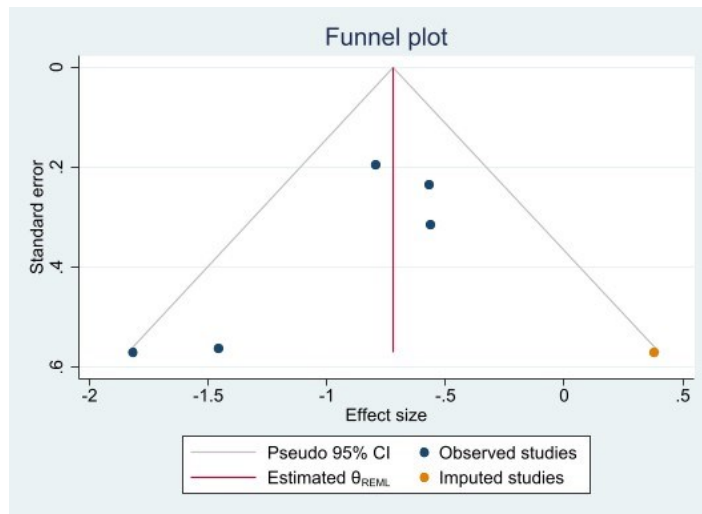


Figure S42 – Funnel plot Gambling Severity: Face-to-face

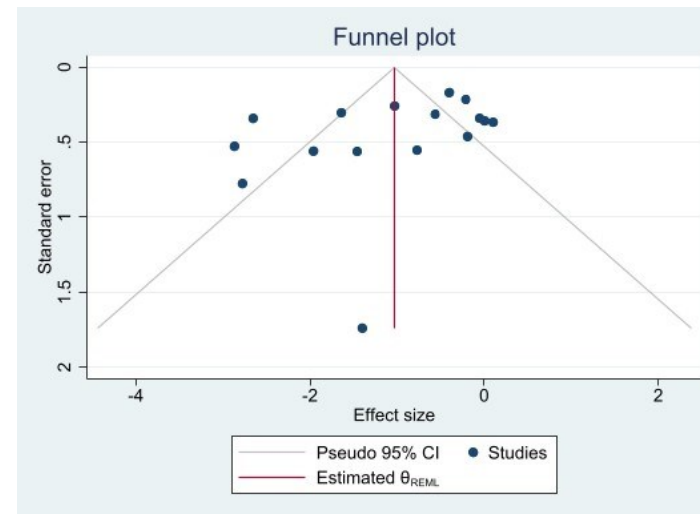


Figure S43 – Funnel plot Remission: Face-to-face

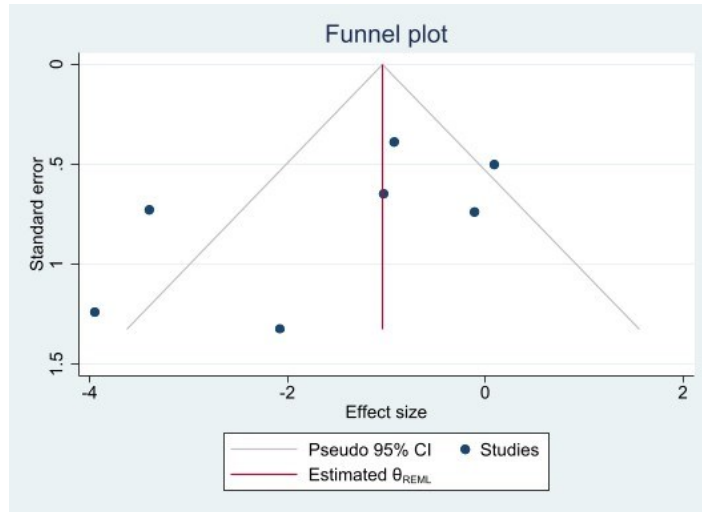


Figure S44 – Funnel plot Depressive symptoms: Face-to-face

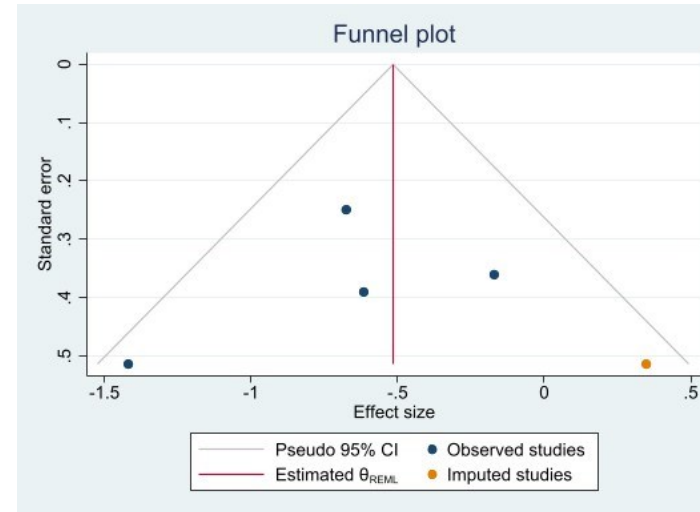


Figure S45 – Funnel plot Anxiety: Face-to-face

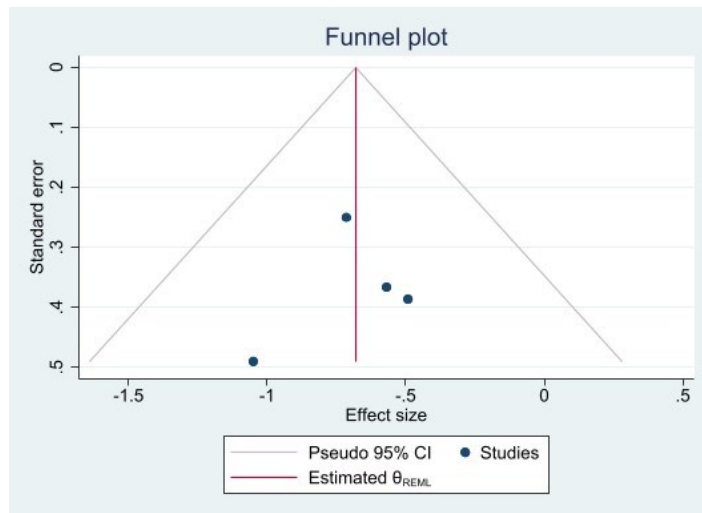


Figure S46 – Funnel plot Gambling Severity: Face-to-face individual format

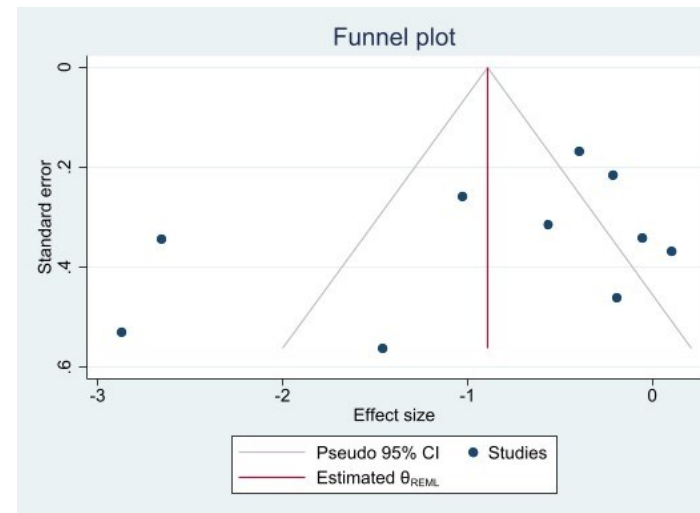


Figure S47 – Funnel plot Remission: Face-to-face individual format

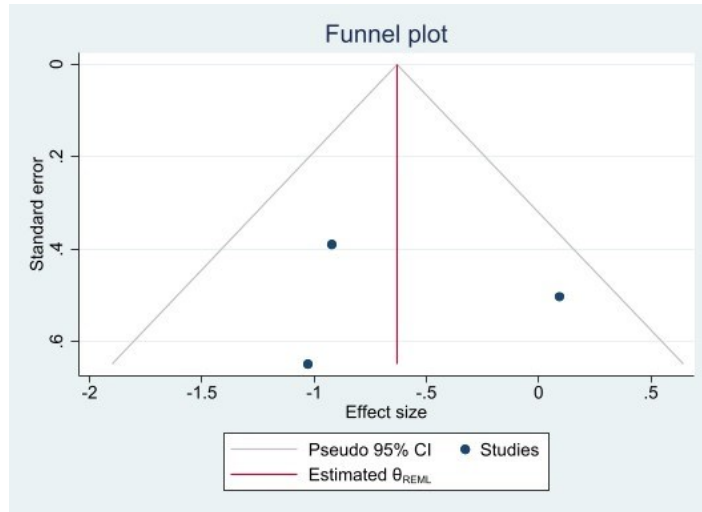


Figure S48 – Funnel plot Gambling Severity: Face-to-face group format

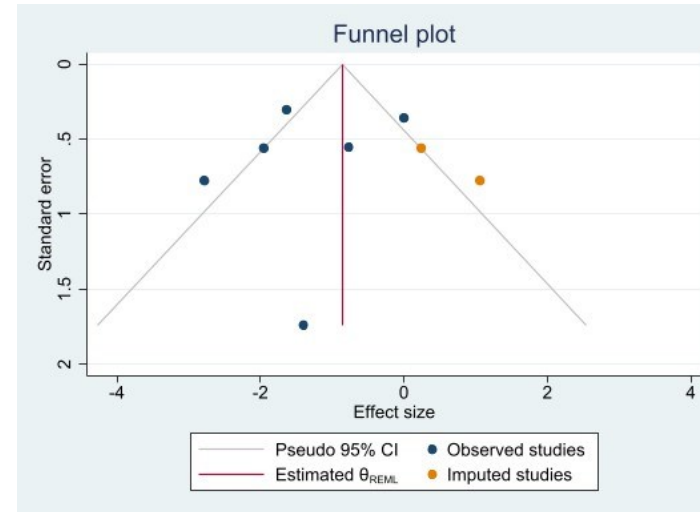


Figure S49 – Funnel plot Remission: Face-to-face group format

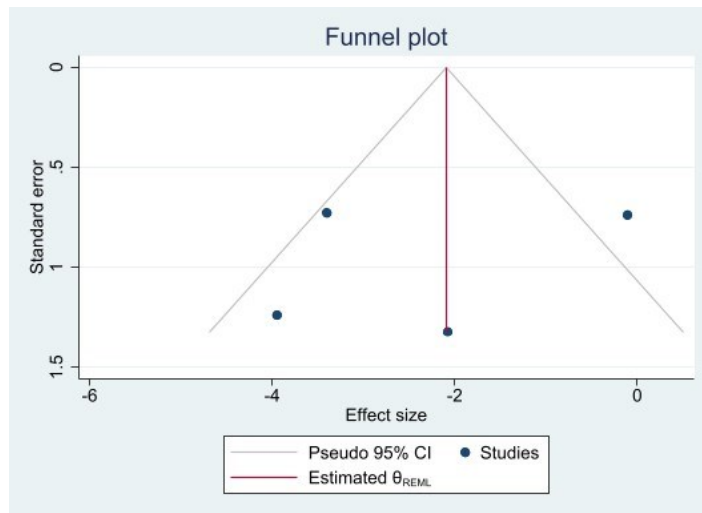


Figure S50 – Funnel plot Depressive symptoms: Face-to-face group format

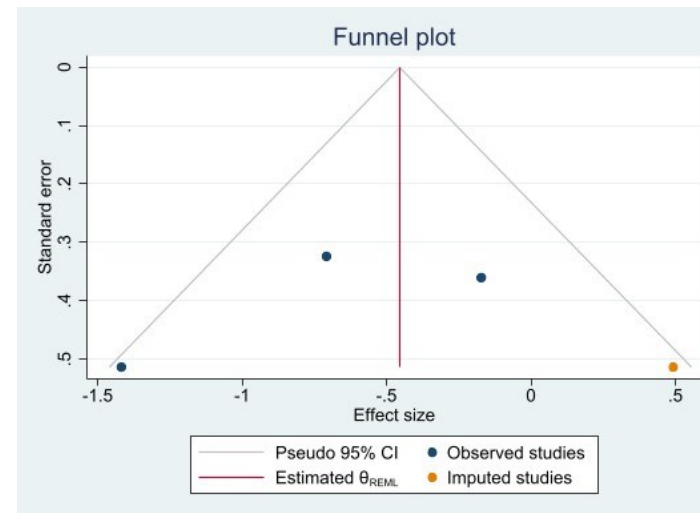


Figure S51 – Funnel plot Anxiety: Face-to-face group format

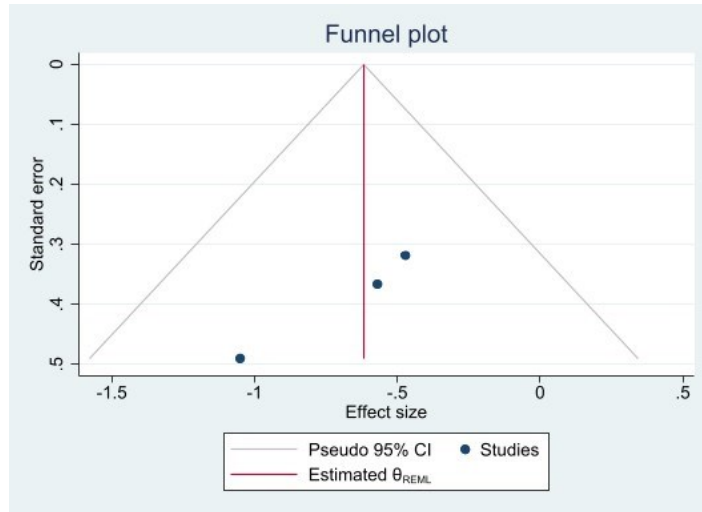


Figure S52 – Funnel plot Gambling Severity: Remote intervention

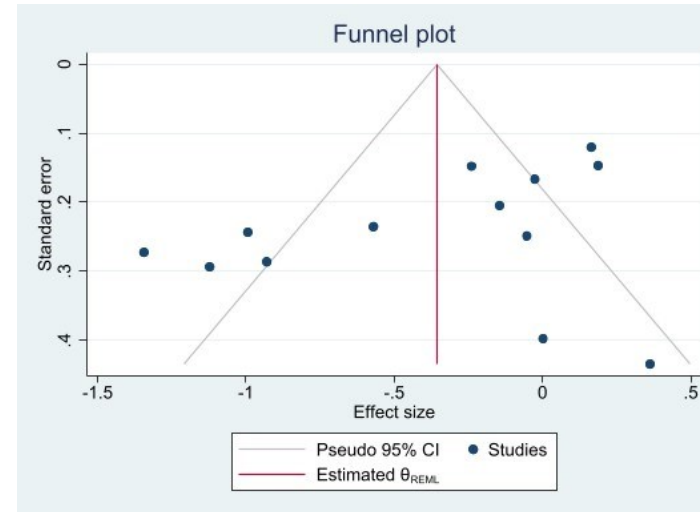


Figure S53 – Funnel plot Remission: Remote intervention

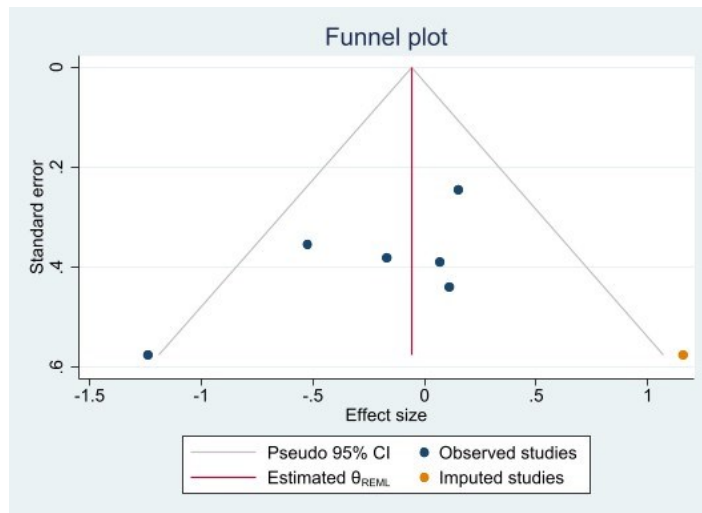


Figure S54 – Funnel plot Depressive symptoms: Remote intervention

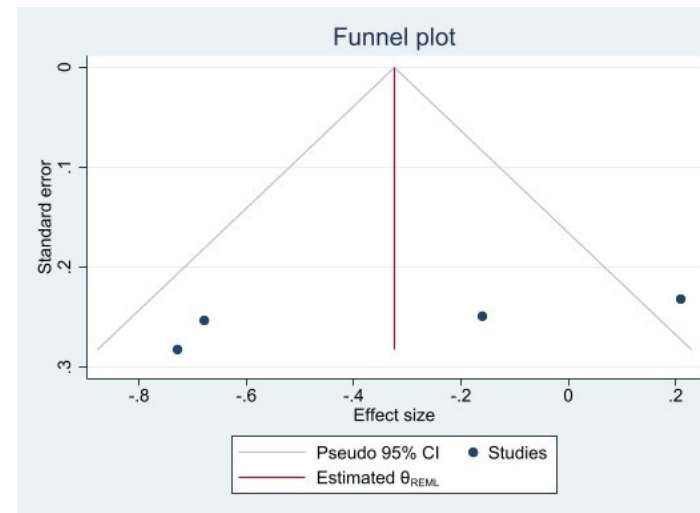


Figure S55 – Funnel plot Anxiety: Remote intervention

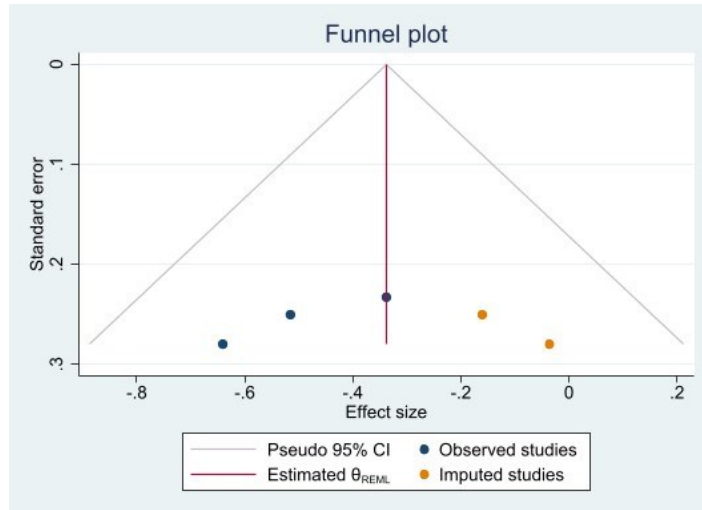


Figure S56 – Forest plot Gambling Severity: Remote intervention therapist-guided

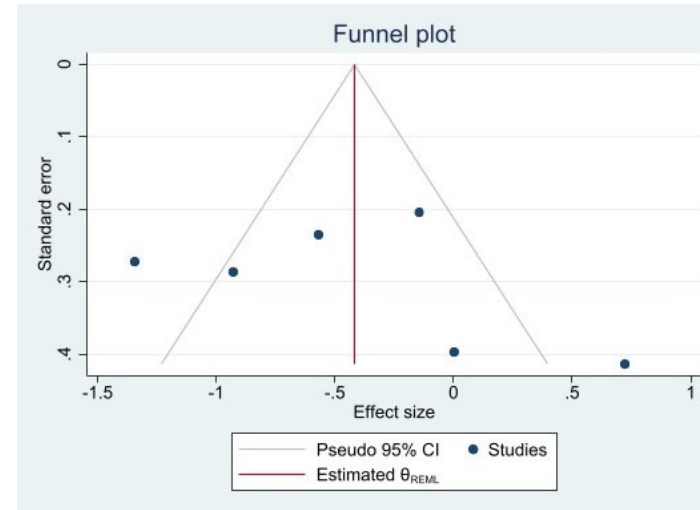


Figure S57 – Funnel plot Remission: Remote intervention therapist-guided

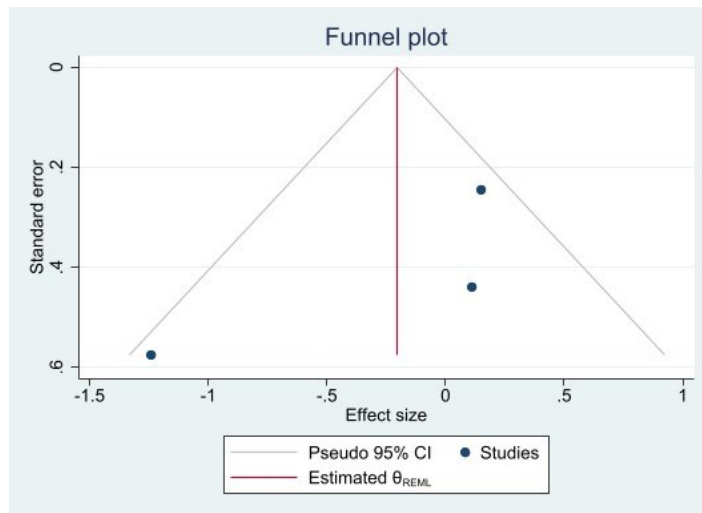


Figure S58 – Funnel plot Gambling Severity: Remote intervention no therapist-guidance

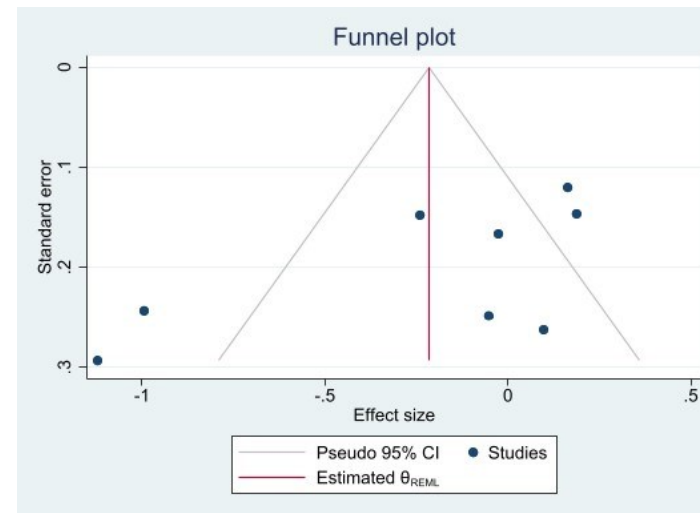


Figure S59 – Funnel plot Remission: Remote intervention no therapist-guidance

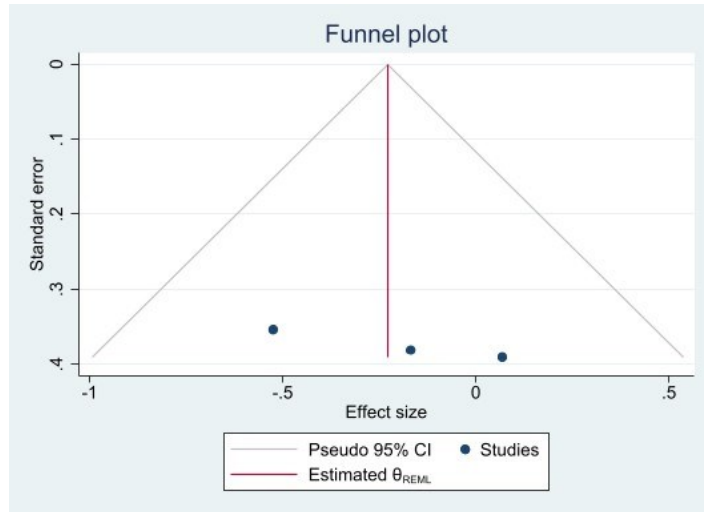
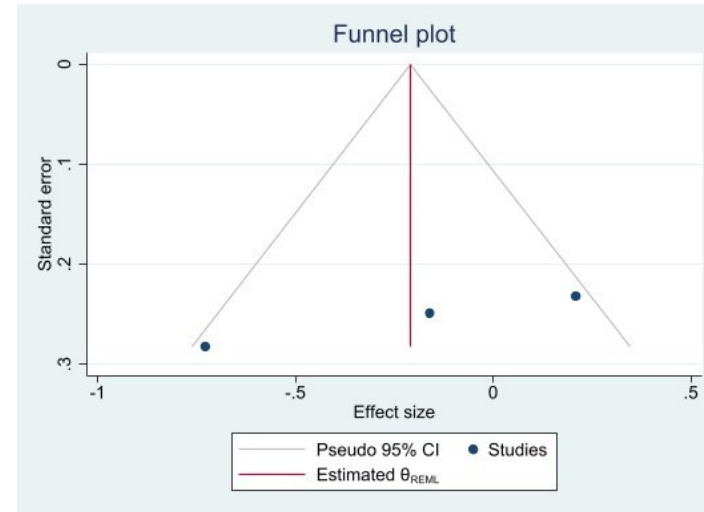


Figure S60 – Funnel plot Depressive symptoms: Remote intervention no therapist-guidance



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