Bilaga 1.

Table 1a. Treatment of gambling problems and pathological gambling with psychological methods

Author Country	Study design Setting Population Inclusion criteria Follow up time	Intervention Participants Dropout from assessment	Comparison Participants Dropout rate	Results	Attendance rate Fidelity Training of therapists Comments
Abbott 2012 New Zealand	*Study design* RCT *Recruitment and setting* National Helpline Center *Population* n=1298 help seeking problematic gamblers assessed by the help line counsellors, n=391 excluded and n=445 not consenting; n=462 randomised *Inclusion criteria* Age ≥ 18 years Individuals who were considered psychotic or to require immediate crisis or police intervention were excluded	*Intervention 1* Telephone MI, app 30 min n=112 *Intervention 2* Telephone MI + workbook sent after the MI session n=118 *Intervention 3* MI + workbook + 4 booster sessions, 10–15 min each, reinforcing the messages from the workbook, 7 days, 1 month, 3 month and 6 months after MI n=116	*Comparison* Helpline TAU (brief screening, problem identification and referral or suggestions for self-care) n=116 *Nb participating in assessment at 6 months* n=92 (79%)	*Median days gambled per month* Decreased significantly in all groups (from 6–7,5 days to 1,0–2,0 at 6 months) No significant difference between groups *Percent Gambling-quit or improved* 72–75 % in TAU, MI and MI + WB; 87 % in MI + WB + B at 6 months (ns) The same pattern was seen for PGSI score, control over gambling behavior and psychological distress Substance abuse was not affected	*Retention* 81 % for all groups *Attendance rate* 34 % received all four boosters; 14 % none *Therapist qualifications* Helpline counsellors, received training on and performed all four interventions; trained by a MI-specialist *Fidelity* High. Measured and independently assessed (MITI) *Comments* Attrition 31–41 % at 12 month assessment

	Follow up time Posttest, 3, 6 and 12 months	*Nb participating in assessment at 6 months* I1: n=78 (70 %) I2: n=88 (75 %) I3: n=82 (71 %)			MI + WB + B group had less females (45 % vs 53–59 %)
Carlbring 2008 Sweden	*Study design* RCT *Recruitment* advertisements *Population* Pathological gamblers; n = 224 assessed n = 66 included mean age: 32 years (18 – 57 years) gender: 94 % male *Inclusion criteria* Fulfil DSM-IV criteria for PG MADRS < 21 (<4 on suicide item) ≥18 years Gambling ≥ 1 times last 30 days *Follow up time* Posttest for both groups; up to 36 months for CBT	*Intervention* CBT delivered via Internet and with phone support (once weekly, 15 minutes) n=34 *Extent* 4 modules had a MI focus, 4 modules based on CBT. Participants required to post a message per module in an online discussion group + homework assignments *nb participating in assessments* n=32 post test n=28 (36 months)	*Comparison* Wait list n=32 *Nb participating in assessment* n=28 posttest. No follow up measurement	*Posttest* *NODS (adapted, gambling last 30 days),* Cohen's d: 1,36 (p<0,001) *HADS- D, HADS-A and QOLI* CBT significantly better than wait list *Proportion not having gambled the past month (wait list and CBT together)* 6 months: 68 % 18 months: 62 % 36 months: 56 %	*Retention* 68 % completed the modules within 6 months *Therapist qualifications* Social workers with 2 years training in CBT and MI *Fidelity* NA *Comments* All diagnoses made over the phone; no personal meetings

Cunningham 2012 Canada	*Study design* RCT *Recruitment* Telephone survey, random digit dialing *Population* n=8015 respondents to a survey who were spending more than $100 on gambling the previous year; n = 766 were eligible and n = 209 consented *Inclusion criteria* PGSI≥3 Age: ≥ 18 years *Follow up time* 3, 6 and 12 months	*Intervention 1* PNF n=70 *Intervention 2* Partial feedback (without normative component) n=70 *Nb participating in assessment* 6 months: 75 % of the total sample, no significant differences between groups 12 months: 70 %, no sign difference between groups	*Comparison* Asked to tell what they thought should be included in self-help materials. n=69	*Mean dollars spent on betting past 30 days* All groups improved significantly, no difference between groups *Number of days gambling past 30 days* Partial feedback improved at 12 months (p<0,02 for comparison between groups)	*Retention* NR *Attendance rate* NA *Fidelity* NA *Comments* Screening question was whether the gamblers would be interested in helping to develop and evaluate self-help materials Remuneration $60 for three assessments
Diskin 2009	*Study design* RCT, stratified for gender, age and gambling severity *Setting* One university clinic *Population* n=136 concerned gamblers responding	*Intervention* MI n=42 *Extent* 75.8 (SD 19.4) min *Nb participants in assessment* n=39 at 12 month follow up	*Comparison* Control interview based on SCID –II n=39 *Extent* 54.4 (SD 13.8) min *Nb participants in assessment* n=30 at 12 month follow up	*Mean dollars spent per month (6 months)* MI significantly better than control *Mean gambling days/month (6 months)* MI significantly better than control *Mean SOGS and PGSI (12 months)*	*Retention* 100 % *Attendance rate* 100 % *Fidelity* High, as rated by two blinded raters who watched 20 % of audiotaped sessions.

	to advertisements; n=97 randomized *Inclusion criteria* Age > 17 years PGSI-CPGI > 3 Gambled in the 2 preceding months *Follow up time* 1, 3, 6, 12 months post interventions			No difference between groups	No difference between therapists *Therapist qualifications* 2 doctoral students intensively trained in the methods *Comments* Participants were remunerated (20 $ + 30 $) Drop outs had gambled more and had higher scores on NODS
Echeburua 2000 Spain	*Study design* Uncontrolled treatment followed by RCT for responders. Aim to prevent relapse *Recruitment method* Screening of individuals seeking treatment at a Pathological Gambling Center *Population* n=104 seeking treatment at the	*Interventions* Step 1: stimulus control and gradual in-vivo exposure with response prevention. Step 2a. Individual relapse prevention n=23 *Nb participating in assessments* 19 (82,4%)	*Comparison* Step 1: stimulus control and gradual in-vivo exposure with response prevention Step 2: no prevention n=21 *Nb participating in assessment* n=12	*Proportion not relapsing at 12 months* Individual: 82,6 % Group: 78,3 % C: 52 % p<0,05	*Retention rate* NR *Attendance rate* NR *Fidelity* NR *Therapist qualifications* 1 clinical psychologist with 5 years' experience of CBT for gambling *Comments*

	center; n=69 (13 % F) with mean age 36 years and average SOGS=10,5 (SD 2,5) fulfilled criteria *Inclusion criteria* Step 1. Pathological gambling (DSM-IV) SOGS>4 No other psychopathological disorder Step 2. Total abstinence from gambling; n=69 *Follow up time* Step 2: 1,3,6,12 months	Step 2b. Group relapse prevention (4-7 persons). Same content as 2a. n=23 *Extent* 2 hr sessions *nb participants in assessment* 18 (78,3 %)			The interventions are described in a Spanish language manual (Fernandez-Montalvo & Echeburua, 1997)
Grant 2009 Grant 2011 USA	*Study design* RCT *Recruitment* Newspaper advertisement and referral for psychosocial treatment *Population*	*Intervention* IDMI (CBT, MI and imaginal desensitization) n=33 *Extent* 6 sessions, 1 hour each, in 8 weeks + homework, 3 times/day	*Comparison* GA, n = 35 followed by IDMI for non-responders after 8 weeks n=27 *Extent* 8 weeks. Provision of a list of meeting times and locations	*Proportion abstainers past 30 days at 8 weeks* IDMI: 21/33 GA: 7/35 Fisher's exact test <0,001 *Abstainers at 6 months (both groups had received IDMI)*	*Retention rate* IDMI: 25 /33 (76 %) GA: 30/35 (86 %) *Attendance rate* GA: 26/35 attended at least one meeting *Fidelity* Independent rating of audiotapes for 12

	PG *Inclusion criteria* Age: 18–75 years PG measured by CSI-PG Gambled >1 weekly the past 2 months No substance abuse no psychotropic medication *Follow up time* Post treatment and 6 months where all had received IDMI	*Nb participating in assessment* NR, LVCF used for ITT-analysis	and were encouraged to keep a diary *Nb participating in assessment* NR, LVCF used for ITT-analysis	27/35 of those responding to IDMI=77 %	subjects; score 43 out of 49 *Therapist qualifications* Two doctoral level therapists, receiving continuous supervision and training *Comments* Daily smoking was associated with higher risk for relapse
Hodgins 2009 Canada	*Study design* RCT, stratified for age, gender and problem severity *Recruitment* Advertisement throughout Canada *Population* n=604 concerned gamblers responded; n=314 were randomized (45 % M), 89 % fulfilled criteria for PG	*Interventions* 1. BT: MI + written notes from the MI +WB based on CBT. Materials were mailed. n=83 2. BBT: BT + phone support on 6 occasions n=84 *Extent* BT: MI mean 33,7 min BBT: MI mean 33,9 min + phone	*Comparisons* 1. WB by mail after assessment n=82 2. WL (WB after six weeks) n=65 *Nb participating in assessment at 6 weeks* WB: 61/82 WL: 59/65	*Gambling days and dollars lost gambling* *Posttest* BT and BBT significantly better than workbook only *12 months* BT, BBT and WB improved compared to baseline but no significant differences between groups	*Retention rate* BT: 79/83 BBT: 79/84 WB: 82/82 WL: 65/65 *Attendance rate* *Fidelity* Random check of audiotapes, mean rating score 12,9/15 *Therapist qualifications*

	Inclusion criteria Age>17 years PGSI-CPGI>2 Gambled past month No current treatment *Follow up time* Posttest at 6 weeks, 12, 24, 36, 52 weeks	support (mean 16,3 min each) *Nb participating in assessment at 6 weeks* BT: 70/79 BBT: 58/79 *Nb participating in assessment at 36 weeks* BT: 57/79 BBT: 47/79	*Nb participating in assessment at 36 weeks* WB: 60/82 WL: 51/65		8 therapists, trained and supervised on at least 2 interviews *Comments* Gambling days and dollars lost gambling was not reported for the wait-list control at posttest
Hodgins 2007	*Study design* RCT *Recruitment* Advertisement in media + through a helpline followed by phone screening *Population* n=450 enquiries from CSOs ; n=186 were randomized (82 % F, mean age 45 years; 96% of partners PG) *Inclusion criteria* Age≥18 years	*Interventions* I1: self-help workbook (CRAFT) n=61 I2: I1 + telephone support *Extent* Two support calls, 4 weeks apart, 30-40 min each n=65 *Nb participating in outcome assessments* 3 months: 146 (all groups, i.e. 78 %)	*Comparison* Information package of treatment resources n=60 *Nb participating in outcome assessments* Not reported separately	*Nb days gambled last month at 3 months* I1 and I2 significantly improved compared with control *Dollars spent gambling* All groups improved from baseline to 6 months; no significant differences between groups *Nb partners entering treatment at 3 months* 14–17 %, no difference between groups	*Retention* *Attention rate* Telephone support: 55 % received both calls and 22 % each one and no calls Written material: C: 75 % read it completely I1+ I2: 66 % had read it and 22 % used it regularly *Fidelity* *Therapist qualifications* Certified problem gambling counsellors,

	≥3 days weekly contact with the gambler Gambler resistant to enter treatment *Follow up time* 3 and 6 months	6 months: 145 (all groups); no difference between groups			undergraduate university degree, and experience at least 4 years. *Comment* Pre-treatment differences; I2 was gambling less
Korman 2008	*Study design* RCT *Recruitment* Community outpatient clinics and local newspapers *Population* n=163 treatment seeking individuals phone screened; n=42 randomized Mean age 47,6 years (20–70 years); half met criteria for drug dependence *Inclusion criteria* PGSI ≥8 Anger score> 60th percentile compared to adult norms	*Intervention* A&A; modified DBT combined with a skill set to address anger and addiction problems n=20 (10 % F) *Extent* 14 individual sessions, 1 hour each *Nb participating in assessment* Post treatment: n=19 3 months: n=15	*Comparison* TAU, non-manualized CBT relapse prevention strategies n=22 (18 % F) *Extent* Individual sessions of variable duration and frequency, ≈ 1 hour each *Nb participating in assessment* Post treatment; n=20 3 months: n=17	*PGSI score, at 3 months* significant decrease vs TAU *Nb not meeting diagnostic criteria for pathologic gambling at 3 months* I: 20/20 C: 7/22 (32 %) p=0,001 *Income spent gambling* both groups improved, no significant difference between groups	*Retention* NR *Attendance rate* A&A: 9,8 sessions (70 %) TAU: 5,9 sessions *Fidelity* A&A: 90 % TAU *Therapist qualifications* Clinicians with ≈ 5 years' training and several years' experience in drug dependence or anger treatment *Comments* TAU therapists had longer experience in

	No severe mental illness *Follow up time* post treatment, 3 months				treating gamblers (4,25 vs 0,25 years)
La Brie 2012 USA	*Study design* RCT *Recruitment* Advertisement and screening in two states *Population* n=411 concerned gamblers were screened; study sample: n=315 (42 % F); mean age app 45 years; app 70 % were PG *Inclusion criteria* Age >17 years Not currently in treatment or self-help *Follow up time* Posttest, 3 months	*Intervention 1* Self-help WB based on inoculation theory, stage change and relapse prevention n=59 *Extent* Brief intervention, should be completed within 1 month *Intervention 2* WB + 5 min scripted telephone conversation n=55 *Nb participating in 3 month assessment* I1:51 I2: 44	*Comparison* WL, received the toolkit after 3 months FU *Extent* *Participants* n=56 *Nb participating in assessment* n=45	*Abstaining from gambling last 30 days* Improvement in all groups, no sign difference between groups *Days gambled past month* Improvement in all groups, no sign difference between groups	*Retention* NR *Attendance rate* NR *Fidelity* NA *Therapist qualifications* NA
Lee 2015	*Study design*	*Intervention*	*Comparison*	*Gambling symptoms, G-SAS*	*Retention rate* CCT: 89 %

Canada	Pilot RCT, mainly to inform a full scale RCT *Recruitment* Advertisements and screening *Population* Couples where at least one was a PG 66 % male; mean age 49 years; mean 18 years married *Inclusion criteria* Age ≥18 years Gambled in the past 2 months DSM-IV-TR criteria for PG *Follow up* Posttest and 8 weeks later	CCT to increase attending, awareness, acknowledgement and alignment with self and the partner, n=9 couples *Extent* 12 sessions *Nb participating in assessments* n=8 (89 %)	self-care plans, counselling without CCT, n = 9 couples *Nb participating in assessments* n=7 (78 %)	CCT significantly better than comparison at posttest and follow up	Comparison: 78 % *Attendance rate* 12,6 sessions *Fidelity* NR *Therapist qualifications* 4 counsellors, two B Sc and two M Sc , mean 23 years clinical experience + one of the authors, clinical fellow; 16 years' experience
Luquiens 2016 France	*Study design* RCT *Recruitment* Automatic e-mail when opening a gambling session *Population*	*Intervention 1* PNF via e-mail n=293 *Intervention 2* CBT self-help book via e-mail n=264	*Comparison* Waiting list n=264 *Nb participating in PGSI at 12 w* n=45 (17 %)	*Total losses, total stakes, number of gambling sessions, compulsivity* No difference between groups *PGSI*	*Retention* Not measured; 98 % of guided CBT dropped out *Attention rate* Not measured *Fidelity*

	Gamblers at an online poker website; n=14 261; n=2 563 fulfilled criteria and n=1 122 consented; ;> 90 % men; mean age 34,7 years *Inclusion criteria* Age ≥ 18 years Registered ≥ 30 days at the website PGSI ≥ 5 *Follow up time* 6 weeks and 12 weeks	*Intervention 3* Weekly e-mailed CBT with guidance n=301 *Nb participating in PGSI at 12 w follow up* PNF: n=41 (14 %) Self-help: n=19 (7 %) Guided CBT: n=8 (2 %)		Improvement, $\Delta \approx 1$, for all groups	*NA* *Therapist qualifications* NA *Comments* Anonymous data on gambling frequency, stakes and losses were retrieved automatically from the website; i.e. 100 % coverage
Makarchuk 2002 Canada	*Study design* RCT, stratified for gender *Recruitment* advertisement *Population* n=70 CSO:s responded n=31 eligible *Inclusion criteria* Age > 17 years (Gambler and CSO) No ongoing treatment for gambler and CSO	*Intervention* Self-help manual based on CRAFT + treatment resource package n=15 (95 % F); mean age: 49, 6 years *Nb assessing gambling at FU* 11/15	*Comparison* Treatment resource package n=16 (81 % F); mean age 40,6 years *Nb assessing gambling at FUs* 11/16	*Proportion reducing gambling > 50 % (SCO rating)* I: 47 % C: 19 %	*Retention* 58% used the strategies regularly and 42 % occasionally *Attendance rate* Read whole manual: 77 % Read sections: 23 % *Fidelity* NA *Therapist qualifications* NA *Comments*

	Gambler treatment resistant CSO and gambler had regular contact > twice/week *Follow up time* 3 months				
Myrseth 2011 Norway	*Study design* RCT *Recruitment method* Advertisements and referrals *Population* Pathological gamblers n=49 individuals eligible n=30 randomised (87 % male) mean age: 32,8 years (SD 9,9 years) *Inclusion criteria* ≥18 years Fulfilled DSM-IV TR diagnosis measured by SCID-I and II and NODS No concurrent alcohol or drug dependency	*Intervention* Individual CBT for 8 weeks n=19; n=4 never started and were excluded *Extent* 8 weekly sessions, 50 min each and with separate patient and therapist manuals *Nb participating in outcome assessments* n=11/15 (8 weeks) n=7/15 (3 months)	*Comparison* ESC for 8 weeks followed by ESC + individual CBT for 8 weeks n=16; n=1 never started and was excluded *Extent* Dose titration for 2 weeks up to 20 mg/day for 14 weeks. 10 min meeting with therapist to report any adverse effects *Nb participating in outcome assessments* n=13/15 (8 weeks) n=10/15 (3 months)	*CBT vs ESC (8 weeks)* Both groups improved significantly without differences between groups for G-SAS, net loss money gambled. BDI-II was not affected *Recovery, 3 months* CBT: 26 % ESC + CBT: 40 % ns *No improvement, 3 months* CBT: 46,7 % CBT + ESC: 26,7 % ns	*Retention* CBT: n=11 (8 weeks) ESC: n=13 (8 weeks) *Attendance rate* CBT: mean 6,8 sessions (15 patients) ESC + CBT: mean 6,9 sessions (10 patients) ESC (compliance): 73 % *Adverse effects ESC* n=1 withdrew due to mania *Fidelity* Not reported *Therapist qualifications* 1 therapist with degree in clinical psychology and trained in CBT and MI. Supervised by

	Follow up time up to 6 months after randomisation				a clinical psychologist with extensive experience with CBT *Comments* Recovery defined as G-SAS ≤ 7
Petry 2006 USA	*Study design* RCT, stratified for gender, lifetime SOGS, age, ethnicity and prior treatments; allocated 3:4:4 *Recruitment* Newspaper advertisements *Population* n=357 fulfilled telephone screen for PG; n=231 were randomised *Inclusion criteria* Age ≥18 years DSM-IV diagnosis (SCID) SOGS ≥5 Gambled during past 2 months *Follow up time*	*Intervention 1* Referral to GA and workbook based on CBT n=84 (43 % females); mean age 44 years *Extent* One chapter a week for 8 weeks *Nb participating in outcome assessments* n=65 (posttest) n=45 (6 months) *Intervention 2* Referral to GA and individual CBT n=84 (42 % females); mean age 46 years *Extent*	*Comparison* Referral to GA n=63 (52 % females); mean age 44 years *Nb participating in outcome assessments* n=48 (posttest) n=45 (6 months)	*Posttest* Days gambled, dollars gambled, SOGS: All groups improved by time. Significant differences between CBT (WB and therapy) and GA only. Change in ASI-G between groups not significant *12 month follow up* Time effects still significant. CBT (WB and therapy) significantly better than GA only for ASI-G and SOGS. *Proportion SOGS <5 past month, posttest* CBT (WB and therapy): 69 % GA: 47 % p<0,02	*Retention* WB: 71 % CBT: 93 % *Attendance rate* Workbook: 37 % finished at least 6 chapters CBT: 60,7 % participated in at least 6 sessions p<0,001 *Fidelity* Independent evaluation of audiotapes; rated "good" (4,3/7) *Therapist qualifications* 13 master or doctoral level therapists receiving training and supervision of at least one case

	Up to 12 months past baseline	1 hour/week for 8 weeks + homework *Nb participating in outcome assessments* n=68 (posttest) n=76 (6 months)		*proportion abstinent at 12 month follow up* no difference between groups; all reported some gambling	*Comments*
Petry 2008 USA	*Study design* RCT *Recruitment* screening at abuse clinics and advertisements *Population* Problem and pathological gamblers. n=2 136 persons screened; n = 180 randomised *Inclusion criteria* Age ≥18 years SOGS ≥3 Wagering: ≥100 $ Gambled ≥ 4 times in two preceding months *Follow up time* 6 weeks and 9 months	*Intervention 1* Brief Advice n=37 (51 % females); mean age 43,5 years *Extent* 10 minutes *Nb participating in outcome assessments* n=35 (6 weeks) n=31 (9 months) *Intervention 2* MET n=55 (36 % females); mean age 45 years *Extent* 1 session, 50 min	*Comparison* Assessment only *Participants* n=48 (31 % females); mean age: 41 years *Nb participating in outcome assessments* n=47 (6 weeks) n=42 (9 months)	ASI-G and dollars wagered improved significantly with time in all groups. *Recovery at six weeks* Comparison: 4,7 % BI: 20 % MET: 11,5 % CBT+ MET: 2,6% BI vs comparison significant *Recovery at 9 months* Comparison: 14,3 % BI: 25,8 % MET: 14,6 % CBT + MET: 20,6 % BI vs comparison significant	*Retention* BI: 100 % MET: 94,5 % MET + CBT: 87,5 % *Attendance rate* MET + CBT: 32,5 % attended all four sessions *Fidelity* Independent rating; high *Therapist qualifications* Nine therapists, 2 bachelors and 7 master. They received continuous supervision *Comments*

		Nb participating in outcome assessments n=52 (6 weeks) n=48 (9 months) *Intervention 3* MET + CBT n=40 *Extent* MET 50 min + three sessions CBT *Nb participating in outcome assessments* n=38 (6 weeks) n=34 (9 months)			
Petry 2009 USA	*Study design* RCT *Recruitment* Screening at six college campus public areas and flyers *Population* n=1 539 screened n=117 randomised *Inclusion criteria* Age ≥18 years	*Intervention 1* Brief advice, 10–15 min n=32 (78 % male); mean age 20,2 years *Nb participating in outcome assessments* n=32 (6 weeks) n=32 (9 months) *Intervention 2*	*Comparison* Assessment only *Participants* n=34 (85 % male); mean age 20,5 years *Nb participating in outcome assessments* n=34 (6 weeks) n=33 (9 months)	*ASI-G, 9 months* All conditions improved significantly over time compared to assessment only *Days gambled* Significant improvement over time for all groups, no difference between groups *Dollars wagered*	*Retention* Brief advice: 100 % MET: 100 % CBT+MET: 95 % *Attendance rate* CBT+ MET: 33,3 % attended all four sessions *Fidelity* Independent evaluation of audiotapes; high

	SOGS ≥3 Wagering: ≥100 $ Gambled ≥ 4 times in two preceding months *Follow up time* 6 weeks and 9 months	MET, 1 session, 50 min n=30 (87 % male); mean age 20,5 years *Nb participating in outcome assessments* n=30 (6 weeks) n=29 (9 months) *Intervention 3* MET + 3 weekly individual sessions CBT n=21 (91 % male); mean age 20,1 years *Nb participating in outcome assessments* n=18 (6 weeks) n=19 (9 months)		Significant improvement over time for all groups; MET significantly better than assessment only *Substantially improved (wagering <10,5 % of income)* Comparison: 36,4 % Brief advice: 47 % MET: 62,1 % CBT + MET: 53 %	*Therapist qualifications* Six therapists (one bachelors level, two masters level, two clinical psychology doctoral students and one PhD psychologist) *Comments*
Rychtarik 2006 USA	*Study design* Pilot RCT *Recruitment* Media advertisements *Population*	*Intervention* Coping skills training, CST n=12 *Extent* 10 weekly individual sessions	*Comparison* WL n=11 *Nb participating in outcome assessment* NR separately	*Partner non-gambling days and loss per gambling day (partner estimates)* Small and non-significant differences	*Retention* *Mean attendance rate* 8,25/10 sessions *Fidelity* All sessions videotaped and

	n=23 CSO responded; 21 eligible (83 % F); mean age 43 years *Inclusion criteria* Partner gambling last 3 months SOGS ≥ 5 (partner) No treatment (gambler and CSO) preceding 3 months SOGS <5 (CSO) AUDIT < 9 (CSO) and no SUD *Follow up time* Posttest (10 weeks)	+ homework assignments *Nb participating in outcome assessment* 91 % reported percent non gambling days and 78 % loss per gambling day (total sample)			checked with compliance form; compliance was 88 % *Therapist qualifications* 3 master level counsellors trained in the manual *Comment*
Smith 2015 Australia	*Study design* RCT stratified for age, gender, gambling severity *Recruitment* Consecutively, at a gambling therapy center *Population* n=151 help seeking problem gamblers n=99 eligible and consenting; 95 % PG *Inclusion criteria*	*Intervention* CT *Extent* Average 12 weekly individual sessions, 60 min each + home work *Randomized* n=50; n=43 first appointment (50 % F); mean age 47,4 years	*Comparison* ET *Extent* Average 12 weekly individual sessions, 60 min each + home work *Randomized* n=49; n=43 first appointment (50 % F); mean age 45,5 years *Nb participating in outcome assessments*	Both groups improved by time without any significant differences (VGS, K-10, overall disability, time spent gambling and amount spent in previous month)	*Retention* CT:29/50 ET: 21/49 *Attendance rate* *Fidelity* All sessions videotaped and 20 % assessed; mean fidelity > 98 % *Therapist qualifications* 4 experienced CBT therapists, trained in the methods and

	Age ≥18 years SOGS ≥5 Gambling with EGMs No gambling treatment preceding year Not psychotic, suicidal or manic *Follow up time* Post treatment, 1, 3, 6 months later	*Nb participating in outcome assessments* Posttest: 31 6 months: 22	Posttest: 25 6 months: 18		supervised by the authors *Comments* Participants were remunerated
Toneatto 2016 Canada	*Study design* RCT *Recruitment* Advertisement in local newspapers and initially screened over the phone *Population* n=239 Problematic gamblers screened, n=99 were randomized (73 % M), mean age 47,5 years *Inclusion criteria* ≥ 1 symptom from DSM-IV criteria for PaG the last year	*Interventions* I1. CT n=25 I2. BT n=24 I3. Motivational therapy n=22 *Extent* 6 individual sessions, one hour each, over 8–10 weeks *Nb participating in outcome assessments posttest and 12 months* I1: 22 and 18	*Comparison* BI *Extent* One session 90 min where assessment findings were shared, practical advice and a summarizing booklet n=28 *Nb participating in outcome assessments* 27 and 23	*Gambling frequency* Significant TIME effect up to 12 months but no difference between groups; mean from 4 days to 2 days out of 10. *Expenditures per gambling* Significant TIME effect up to 12 months but no difference between groups; 50% reduction in expenditure posttest *Gambling severity (nb symptoms DSM-IV)* Significant TIME effect up to 12 months	*Retention* 79 (80%) completed the treatment; 45 (46 %) attended 6 lessons *Attendance rate (mean)* I1: 4,96 sessions I2: 3,71 sessions I3: 4,23 sessions ns *Fidelity* Not measured formally *Therapist qualifications* Two masters and two PhD-level therapists with 3-15 years’

	Not on treatment for gambling No severe psychiatric or psychosocial crisis *Follow up time* Posttest and 12 months	I2: 24 and 17 I3: 19 and 15		but no difference between groups	experience in CBT for addictive behavior *Comments*
Toneatto 2014 Canada	*Study design* Pilot RCT *Recruitment* Advertisement in local newspapers *Population* n=18 pathological gamblers *Inclusion criteria* Current diagnosis of PG Substance abuses and concurrent treatment was excluded *Follow up time*, 2 weeks posttreatment	*Intervention* M-CBT (mindfulness-enhanced CBT) n=9 (44 % M); mean age 41,6 years; 89 % PG at baseline *Extent* 5 sessions, 45 min each: CBT + 15 min CD-guided mindfulness instructions + practice session 30 min; Homework: mindfulness 30 min daily *Nb participating in posttest assessment* n=9 (100 %)	*Comparison* Wait-list n=9 (67 % M); mean age 46,5 years; 100 % PG at baseline *Nb participating in posttest* n=9 (100%)	*Gambling urges, psychiatric symptoms at posttest* Significant reductions in the M-CBT group compared with the WL-group	*Retention* 100 % *Attendance rate* NR *Fidelity* NR *Therapist qualifications* NR (the lead scientist) *Comments* Gender and proportion PG different between groups at baseline

Wulfert 2006 USA	*Study design* Pilot, one experimental group and a concurrent "historical control" *Recruitment* Referral to treatment *Population* Experimental: n=13 referred and n=9 (all M); mean age 43,8 years consenting Control: n=12 (all M), mean age 44,3 years consented; referred at days without recruitment service and not included in the study *Inclusion criteria* ≥7 /10 symptoms in DSM-IV criteria for PG SOGS ≥9 *Follow up time* Posttest (up to 12 months for the M-CBT only)	*Intervention* M-CBT, motivational enhancement CBT *Extent* Motivational enhancement 2-3 sessions, CBT and two sessions relapse prevention during 4 weeks *Nb participating in posttest assessment* n=9	*Comparison* TAU (12-step, insight-based or eclectic orientation) *Number participating in posttest assessment* 8 (67 %)	*SOGS (completer analysis)* Significant reduction in both groups; larger reduction in M-CBT group (p<0,05) *DSM-IV symptoms (completer analysis)* Significant reduction in both groups; larger reduction in M-CBT group (p<0,05) Results in the M-CBT group was maintained up to one year posttest	*Retention* 100 % for M-CBT; 67 % for TAU (p=0,005) *Attention rate* *Fidelity* Audiotaped sessions independently evaluated; 100 % fidelity *Therapists qualifications* I. Two licensed clinical psychologists with > 10 years' experience C: master's level therapists with > 7 years' experience *Comments*

Table 1b. Pharmaceutical treatment of pathological gambling (all studies are RCT)

Author Country	Study design Recruitment Population Inclusion criteria Follow up time	Intervention Dose Drop-out rate	Comparison Dose Drop-out rate	Results	Withdrawals due to side effects Side effects Comments
Berlin 2013 USA	*Recruitment* Advertisements in community and in casinos *Population* N = 60 assessed; n = 42 randomized *Inclusion criteria* PG according to DSM-IV TR SOGS ≥ 5 CGI-S ≥4 No other Axis 1 or personality disorders MADRS <24 YMRS < 16 *Follow up time* posttest	*Intervention* Topiramate n = 20 (40 % F); mean age 50, 5 years *Dose* Titration up to max 300 mg/d during 6 weeks, continued for 8 weeks Mean dose 222,5 mg/d *Lost to follow-up* n = 1 (5 %)	*Comparison* Placebo n = 22 (65 % F) mean age 45 years *Dose* As for topiramate Mean dose 252,3 mg/d *Lost to follow- up* n = 5 (23 %)	*PG-YBOCS* No difference between groups	*Completers* Topiramate:14 Placebo: 13 *Withdrawals due to side effects* Topiramate: n = 2 Placebo: n = 1 *Side effects* *Comments* A sample size of 120 subjects was required
Dannon 2011	*Recruitment* Referred from ambulatory services	*Intervention* Baclofen n = 9	*Comparison* Acamprosate n = 8	*Abstain from gambling at follow up* no patients stopped gambling	*Side effects* Mild, no patients stopped treatment because of side effects

Israel	throughout the country *Population* Mean age 29,6 years (SD 16,5) Average SOGS: 7,4 + 2,8 *Inclusion criteria* PG according to DSM-IV-TR SOGS >5 No axis 1 comorbidity No alcohol and substance abuse No psychiatric medications last month *Follow up time* 6 months	*Dose* Escalation from 10 mg/day up to 30 mg/day for 8 days, average dose 30 mg (SD 7,5); some patients received 50 mg/day *Drop- out rate* none	*Dose* Escalation from 333 mg/day to 999 mg/day during 11 days: average dose 666 mg(SD 174) *Drop-out rate* none		
Dannon 2005 Israel	*Recruitment* Patients at the clinic *Population* Mean age 29,1 (SD 17,3) years All men *Inclusion criteria* PG according to DSM-IV SOGS ≥ 5	*Intervention* Bupropion SR n = 17 *Dose* 150 mg/d for 1 w; increase to 300 mg/d, divided in 2 doses; after 3 w 14/17 PR increased to 450 g/d; 3/17	*Comparison* Naltrexone n = 19 *Dose* 25 mg/d for 4 d; increased to 100 mg/d in two divided doses. After 3 w 6/19 PR were	*Proportion full responders at 12 w* Bupropion SR: 9/12 (75 %); remaining were PR Naltrexone: 10/13 (76 %); remaining were PR	*Withdrawal due to side effects* Bupropion SR: 4 Naltrexone:6

	Age 18-65 years No axis 1 or axis 2 comorbidities *Follow up time* 12 weeks	remained on 300 mg/d *Drop-out rate* 29 %	increased to a total daily dose of 150 g/d *Drop-out rate* 32 %		
Fong 2008 USA	*Recruitment* Treatment seeking after advertisement *Population* n = 59 treatment seeking individuals with PG *Inclusion criteria* Age 18 to 65 years PG according to structured clinical interview Video poker gamblers No axis 1 disorder No current prescription of psychotropic drugs *Follow up time* Posttest	*Intervention* Olanzapine n = 12; mean age 43,6 years; 50 % F; SOGS mean 13,6 *Dose* 2,5 mg week 1, 5 mg week 2, 7,5 mg week 3 and 10 mg weeks 4-7 *Drop-out rate* Total drop-out 2/23	*Comparison* Placebo N = 9; mean age 46,6 years; 4/9 F SOGS mean 15,3 *Drop-out rate* See intervention	*Gambling related cravings, gambling frequency, money and time spent gambling, mood and anxiety disorders* Improvement in both groups with time but no difference between groups *CGI* No changes with time; no difference between groups	*Side effects* No serious medical och psychiatric adverse event for completers. Two patients included but dropped out due to sedation and fatigue; unclear group *Comments* Patients were given a completion bonus, equal to the sum of initial and weekly payments
Grant 2010	*Recruitment* Newspaper advertisements; 25 outpatient centres	*Interventions* Nalmefene 20 mg/d: n = 77	*Comparison* Placebo n = 74	*PG-YBOCS, ITT* All groups improved without difference between groups	*Withdrawal due to adverse events* Nalmefene 20 mg/d: 10,6 %

USA	*Population* n = 233 were randomized; mean afe 46,5 years; 41,6 % F *Inclusion criteria* Age 18-70 years PG-YBOCS ≥ 21; those with PG-YBOCS ≥ 15 after one week placebo lead-in were randomized At least one item of SDS ≥ 5 Gambling within the prior month No current Axis 1 disorder No current treatment for PG *Follow up time* posttest	Nalmefene 40 mg/d: n = 82; *Dose* 5 mg/d week 1, 20 mg/d week 2; thereafter patients were randomized to 20 mg/d or 40 mg/d *Drop-out rate* 20 mg/d: 44/77 40 mg/d: 36/82 (not used in analysis of efficacy)	*Drop-out rate* 46/74	*PG-YBOCS, patients that received full dose at least for one week* nalmefene 40 mg/d was superior to placebo	Nalmefene 40 mg/d: 11,5 % Placebo: 9,4 % *Side effects*
Grant 2008 USA	*Recruitment* Newspaper advertisements for treatment *Population* n = 112 consented; n = 83 entered placebo lead-in;	*Intervention* Naltrexone, 50, 100 or 150 mg/d after one week placebo lead-in n = 58 (64 % F); mean age 47,8 years; 93 % higher education	*Comparison* Placebo after one week placebo lead in n = 19 (52 % F); mean age 44.7years; 84 % higher education *Drop-out rate*	*PG-Y-BOCS, G-SAS, CGI-S, HAM-D, HAM-A, SDS* No dose response; the naltrexone groups were combined Naltrexone was superior to placebo	*Withdrawal due to adverse events* n = 5 in total (no difference between groups) *Side effects*

	Inclusion criteria Age 18-75 years PG according to SCI-PG G-SAS≥2 SOGS ≥5 Gambling last two weeks No lifetime BP I or II, dementia, psychotic disorders No current substance abuse HAM-D and HAM-A <26 *Follow up time* posttest	*Dose* 25 mg/d for two days; 50 mg/d up to 3 weeks; randomization to 50, 100 or 150 mg/d up to 18 weeks *Drop-out rate* n = 22 (38 %)	n = 6 (32 %)	*Abstain from gambling at least one month* Naltrexone: 39,7 % Placebo: 10,5 %	No differences between naltrexone and placebo
Hollander 2005 USA	*Recruitment* Newspaper advertisement *Population* n = 88 subjects screened *Inclusion criteria* Age 18-65 years PG according to DSM-IV BP II or BP NOD BP I excluded No previous treatment with lithium	*Intervention* Sustained release lithium, mean dose 1150 mg n = 18 randomized; n = 6 withdrawn mean age 40 years, 50 % F *Dose* 300 mg/d po 4 days, 2 x 300 mg/d po 4 days, 1 x 300 + 1 x 600 mg for 6 days, thereafter individualized	*Comparison* Placebo, mean dose 1165 mg lithium equivalents n = 22 mean age 47,7, 33 % F *Drop-out rate* n = 17 (77 %)	*PG-YBOCS total score* Lithium > placebo *CGI-PG improvement* Lithium >placebo *Time and money lost on gambling* No differences between groups *HAM-D, HAM-A* No differences between groups	*Tolerability* Lithium: 66 % Placebo: 77 % *Side effects* No subjects dropped out due to adverse events. No difference in side effects between groups

	No schizophrenia, psychosis or substance abuse *Follow up time* Posttest 10 weeks	dose. Non-tolerant patients were withdrawn *Drop-out rate* n = 12 (67 %)			
Kim 2002 USA	*Recruitment* Newspaper advertisement and referrals for treatment *Population* n = 133 were screened; n = 86 appointed for interview; n = 53 met inclusion criteria and completed 1 week placebo lead in phase. n = 45 were randomized *Inclusion criteria* PG according to DSM-IV SOGS≥5 No other axis 1 disorder HAM-D, HAM-A ≤18 *Follow up time* Posttest after 8 weeks	*Intervention* Paroxetine n = 23 (56 % F); mean age 49 years *Dose* Starting dose 20 mg/day could be increased to max 60 mg/day; Mean daily dose 51,7 mg/d (S 13,1 mg) *Drop-out rate* 13 %	*Comparison* Placebo n = 22 (77 % F); mean age 49 years *Drop-out rate* 9 %	*Clinical status (G-SAS)* Paroxetine > placebo *Self-rated improvement (PG-CGI)* Paroxetine > placebo *Proportion stopped gambling* Paroxetine: 48 % Placebo: 4,5 % *Money lost gambling* Paroxetine: 20 % Placebo: 12 % ns	*Withdrawals due to side effects* 1 patient each from paroxetine and placebo *Comments* The ITT-analysis was based on patients that completed at least one post baseline measure

Kim 2001 USA	*Recruitment* Newspaper advertisement *Population* N = 89 were screened and n = 83 were randomized. After 1 week placebo lead in, n = 27 were excluded *Inclusion criteria* Age: 18-75 years PG according to DSM-IV No other current Axis 1 or personality disorder SOGS ≥ 5 HDRS ≤ 16 *Follow up time* Posttest	*Intervention* Naltrexone n = 20 (65 % F) mean age: 48 years *Dose* Titration up to max 250 mg/d Mean dose 187,5 mg/d *Drop-out rate* n = 6 (30 %)	*Comparison* Placebo n = 25 (60 % F) mean age: 49 years *Dose* As for naltrexone Mean dose 243 mg/d *Drop-out rate* n = 3 (12 %)	*Improvement (PG-CGI)* Naltrexone: Very much and improved 75 % Placebo: Very much and much improved 24 %	*Not analyzed* n = 6 (lost to follow up at early stage) n = 2 (noncompliance to the protocol) n = 1 (pregnant) n = 2 (side effects of naltrexone) *Side effects* Nausea, dry mouth and vivid dreams were more common in the naltrexone group
Kovanen 2016 Finland	*Recruitment* Advertisements in newspapers and gambling related websites *Population* N = 236 were screened; n = 101 eligible, 32 % F, mean	*Intervention* Naltrexone, 20 weeks, + psychosocial support n = 50 *Dose* 50 mg as needed, i.e. when planning	*Comparison* Placebo, 20 weeks + psychosocial support n = 51 *Drop-out rate* 27 %	*Severity of gambling (PG-YBOCS), gambling frequency, highest daily expenditure* Both groups improved with time but no differences between groups	*Withdrawal due to side effects* Naltrexone: n = 2 *Side effects* 62 % for naltrexone and 80 % for placebo reported no adverse events

	age 46 years (20-72 years); 52 % smokers; 46 % hazardous alcohol consumption *Inclusion criteria* PG according to DSM-IV SOGS ≥5 No severe depression or bipolar disorder *Follow up time* Posttest, 20 weeks	to gamble or experiencing an urge to gamble *Drop-out rate* 36 %		*Social functioning (RAND 36)* Neither of the groups improved	
Pallanti 2002 Italy	*Recruitment* Media advertisements *Population* 73 subjects were assessed and 42 were included (25 % F); mean age 31,6 years *Inclusion criteria* PG according to DSM-IV No drug abuse, BP, schizophrenia or schizoaffective disorder *Follow up time* Posttest	*Intervention* Lithium n = 23 *Dose* 600 mg/d for 4 days, 900 mg/d for days 5 to 9, titration to 1200 mg/d according to tolerability; mean dose 795 mg/d *Drop- out rate* 34,8 % (n = 8)	*Comparison* Valproate n = 19 *Dose* 600 mg/d for days 1-5, titration to 1 500 mg/d according to tolerability; mean dose 874 mg/d *Drop- out rate* 15,8 % (n = 3)	*Mean percentage improvement on PG-YBOCS total score* Lithium: 30,1 % Valproate: 35,9 % ns *Proportion responders at 14 w* Lithium: 60,9 % Valproate: 68,4% ns	*Withdrawal due to side effects* Lithium: n =2 Valproate: n = 1

Thomas 2010 Italy	*Study design* RCT with cross over *Recruitment* Sample drawn from a cohort of 1 096 patients at one clinic for movement disorders *Population* n = 17 with PD and severe PG (13 male), mean age 61 years, mean SOGS 15,1 *Inclusion criteria* PG identified the last 10 months PG not improved by DA reduction or behavior strategies No bipolar disorder No antipsychotic or anticholinergic drugs *Follow up time* Posttest (cross over part)	*Intervention* Amantadine *Dose* 50 mg twice daily for 2 days, 100 mg for 2 weeks, *Drop-out rate*	*Comparison* Placebo *Dose* As for amantadine *Drop-out rate*	*Severity of gambling problems (Y-BOCS)* Amantadine: reduction by 80 % Placebo: no reduction p<0,001 *gambling time, gambling expenditures* amantadine superior to placebo	*Drop out due to side effects* Amantadine: 5 patients *Side effects*
Toneatto 2009	*Recruitment* Newspaper advertisements	*Intervention* Naltrexone 11 weeks + 7 sessions CBT	*Comparison* Placebo (Lactose filled) + 7 sessions CBT	*Gambling frequency, expenditures* Both groups improved between baseline and	*Withdrawal due to side effects*

Canada	*Population* 401 subjects responded; 326 were screened and 135 eligible; n = 52 were randomized (7 % F); mean age 40 years *Inclusion criteria* PG and concomitant alcohol use disorder (DSM-IV) *Follow up time* Posttest, 3, 6 and 12 months past baseline	n = 27 *Dose* 25 mg/d for 3 days; 50 mg/d for 11 days; could be increased up to 250 mg/d depending on patient self-report on lack of effect on alcohol consumption Mean dose: 100 mg *Drop-out* Posttest: 4 % 6 months: 37 %	n = 25 *Dose* As naltrexone Mean medication dose 97,5 mg/d *Drop-out* Posttest: 0 6 months: 28 %	posttest; results were maintained for at least 6 months. No differences between groups *Abstinence from gambling* Differences between groups at 3 months but not before and after	Naltrexone: n = 1 *Side effects* 80 % of placebo and 63 % of naltrexone subjects reported no adverse events *Comments* Participants were compensated $ 400 in gift certificates for completing the medication phase of the study n = 1 was randomised but excluded due to placebo response (1 w lead in)