NKR24 - PICO7 - Schizophrenia: Social cognition training

Characteristics of studies

Characteristics of included studies

Bechi 2012

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** Socialcognition ● *Age, mean (sd)*: 37.14 (10.02) ● *Sex (male %)*: 68 ● *Length of illness (years), mean (sd)*: 14.00 (9.08) ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: TAU ● *Age, mean (sd)*: 40.20 (8.99) ● *Sex (male %)*: 67 ● *Length of illness (years), mean (sd)*: 16.62 (6.40) ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: **Included criteria:** DSM IV-R criteria for schizophrenia **Excluded criteria:** Exclusion criteria were substance dependenceor abuse, co-morbid diagnosis on Axis I or II, major neurological illness, perinataltrauma andmental retardation. Patients had been treatedwith a stable dose of the same antipsychotictherapy for at least 3months and remained on the samemedication throughoutthe study.
Interventions	**Intervention Characteristics** Socialcognition ● *Description* : The ToM and EP training administered in the SCT condition was conducted by atrained psychologist and a facilitator over 12 weeks (one 1-h session/week)A total of 36 film excerpts were selected; thescenes followed a growing difficulty order of presentation. Twenty four clips representedbasic emotions (happiness, sadness, anger, surprise, fear and disgust) in asingle-actor speechless scene or manifested in multi actors verbal interaction; 12clips represented ToM-centered situations: irony, gaffe, misunderstanding and implicitmeanings. Enclosed scenes last between 30 and 70 s and need recognition of emotions(happiness, sadness, anger, surprise, fear and disgust) and ToM abilities (decoding beliefs,irony, misunderstandings and intentions) to be correctly comprehended.All participants attended a group intervention, consisting of 1-h sessionsonce weekly for 3 months. They all had started a 3-month course of CognitiveRemediation Therapy (CRT, individual 1-h sessions, twice weekly) in the last 6 months TAU ● *Description* : Twenty four outpatients who weren't attending any rehabilitation program wereallocated in the time-matched control group (NT); they were regularly visited everytwo weeks through a routine check with the psychiatrist.
Outcomes	*Continuous*: ● Theory of mind ● Social function ● Emotion processing/emotion perception ● Social perception ● Days at hospital ● Symptoms, totalscore ● QoL *Dichotomous*: ● Symptomatic relapse ● Symptomatic remitted
Identification	**Sponsorship source:** Not stated. **Country:** Italy **Setting:** **Comments:** **Authors name:** Margherita Bechi **Institution:** Department of Clinical Neurosciences, San Raffaele Universitary Scientific Institute Hospital, Vita-Salute San Raffaele University, Milano, Italy **Email:** bechi.margherita@hsr.it **Address:**
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** *Jesper ØStrup Rasmussen* One more study group were in the study (IPT), but was considered too comprehensive. **Pretreatment:** **Continuous outcomes:** *Jesper ØStrup Rasmussen* Scales: ToM: PST (ToM was assessed using the Theory of Mind Picture Sequencing Task (PST; Brune,2003), consisting of six cartoon picture stories of four cards each, depicting (1) two scenarioswhere two characters cooperated, (2) two scenarioswhere one character deceived a second character and (3) two scenarios

	showing two characters cooperating to deceive a third. For example, in a scenario a boy captures a bee in a paper bag (first picture) which then presents to a girl (second picture); she grabs into the bag (third picture) and is stung by the bee (fourth picture). The cards were presented face-down in mixed order; the participants were asked to turn the cards over and to order them in a logical sequence of events. In the Sequencing task, two points were given for the first and last correctly sequenced cards and one point each for correct sequencing of the two middle cards.) (high=better)EP: POFA (110 black and white photographs from the POFA, depicting faces of women and men of different ages who exhibit basic emotions (happiness, sadness, fear, disgust, surprise, anger) and neutral expression too, were displayed in random order on a pc screen for 10 seconds each. Patients were asked to attribute the correct emotions to stimuli, by pressing the previously labeled keys on a keyboard. Outcomes provided by the test are: total of correct and wrong answers, number and reaction time of correct recognitions for each emotion, amount of missing answers and error type in case of incorrect, misreading, attribution (for example, if a response “anger” is given at a face expressing “disgust”); the raw scores were then converted into percentages. For the purpose of this study, we considered the percentage of correct answers. 25 stimuli were presented in a preliminary training session to allow patients to get acquainted with the task, the remaining 85 were utilized for the assessment.) (High = better) **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Quote: "We scheduled a randomized allocation in regard to both treatment groups but not in regard to the allocation to the treatment vs no treatment condition." Comment: Not correctly randomized
Allocation concealment (selection bias)	Unclear risk	Comment: Not described b
Blinding of participants and personnel (performance bias)	High risk	Comment: Not possible.
Blinding of outcome assessment (detection bias)	Unclear risk	Quote: "Performances of interest (EP and ToM) were compared at the baseline and after 3 months between and within subjects. Psychologists who administered the neuropsy- chological assessment were blind to the IPT or VST condition, they weren't blind to the allocation to treatment/no-treatment group condition" Comment: Moreover, in order to decrease the likelihood of rate bias in theQuestionnaire scoring, assessors were extensively trained and theywere blind to the treatment group.
Incomplete outcome data (attrition bias)	Low risk	Quote: "training (n = 27) or to a standard social cognitive rehabili- tation treatment (n = 24). They were assessed before and after 12 weeks of intervention and compared to a time-matched control group (n = 24)." Comment: 2 dropout in control group 0 in intervention - no itt .. But relatively small dropout (short intervention)
Selective reporting (reporting bias)	Unclear risk	no details
Other bias	Low risk	

Bellack 1984

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not described, only radomised.
Allocation concealment (selection bias)	Unclear risk	Not described.
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Chien 2003

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Choi 2006

Methods	
Participants	
Interventions	Social Cognitive Training: Social Cognition Enhancement Training vs. TAU SCET was delivered on a group basis for one-and-a-half hours twice weekly. It took about 6 months to complete the whole package of 36 sessions, which were divided into three levels (elementary, middle, and advanced). The sessions were led by a master's level psychologist according to the manual containing detailed instructions for the conduct of each session (Kwon, 2003).
Outcomes	Picture Arrangement (PA). PA assesses the subject's ability for perceptual organization and sequencing, to distinguish essential from non-essential details in a social context, and required integrated brain functioning (Kaufman, 1994). Social Behavior Sequencing Task (SBST). Higher scores reflect greater ability in the use of social sequential information. Emotion Recognition Test (ERT), subscale contextual recognition (CR) only used - objective measure of ability to evaluate emotional stimuli accurately.
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	no details
Allocation concealment (selection bias)	Unclear risk	no details
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Unclear risk	no details
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Daniels 1998

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No details.
Allocation concealment (selection bias)	Unclear risk	No details.
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Favrod 2014

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**

Participants	**Baseline Characteristics** Socialcognition ● *Age, mean (sd)*: 36.85 (10.38) ● *Sex (male %)*: 65 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: TAU ● *Age, mean (sd)*: 36.58 (9.76) ● *Sex (male %)*: 65 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: **Included criteria:** Inclusion criteria were aschizophrenia spectrum disorder (ICD diagnoses F20, F22, F25).The diagnosis was verified by an experienced clinician. Furthercriteria were: fluent command of the French language, agebetween 18 and 65 and partial response to antipsychoticmedication. Partial response to antipsychotic medication wasdefined as a score higher than 2 on the P1 delusion item of thePositive and Negative Syndrome Scale (PANSS) and no increase inantipsychotic dosage or switch to clozapine during the 3 monthsprior to the study. The largest effect of antipsychotic agents isexpected during the first 2 months of treatment [2 **Excluded criteria:** Failing the San Diego Brief Assessment of Capacity to Consent.
Interventions	**Intervention Characteristics** Socialcognition ● *Description* : The program consists of two cycles of eightmodules. Each module is administered during a 1-hour session to agroup of three to ten patients. The program is composed of amanual [35] and slides. MCT is currently available in thirtylanguages and can been downloaded via the following webaddress: http://www.uke.de/mct. TAU ● *Description* : TAUconsists of psychiatric management by a clinical team composed ofat least one psychiatrist, a social worker and/or a psychiatric nurse,with additional access to community treatment or hospitaladmission. Treatment involves antipsychotic medication, regularoffice-based or community contacts with the clinical team fortreatment monitoring, and socialization groups, therapy andpsycho-educational groups. No attempts have been made tostandardize this treatment as TAU was tailored to the patient'sspecific needs.
Outcomes	*Continuous*: ● Theory of mind ● Social function ● Emotion processing/emotion perception ● Social perception ● Days at hospital ● Symptoms, totalscore ● QoL ● SUMD awareness of delusion *Dichotomous*: ● Symptomatic remitted ● Symptomatic relapse
Identification	**Sponsorship source:** The study has been supported a grant from the Swiss NationalScience Foundation, grant number: 13DPD6-129784 and by adonation from Dr Alexander Engelhorn. **Country:** Switzerland **Setting:** **Comments:** **Authors name:** J. Favrod **Institution:** La Source, School of Nursing Sciences, University of Applied Sciences of Western Switzerland **Email:** jerome.favrod@chuv.ch **Address:** La Source, School of Nursing Sciences, University of Applied Sciences of Western Switzerland, avenue Vinet 30, 1004 Lausanne, Switzerland
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Ved ikke helt hvad der skal bruges men har ekstraheret: Psychotic Symptom Rating Scales (PSYRATS) – French version[13,18]. The PSYRATS is a 17-item multidimensional measure ofdelusions and auditory hallucinations. Symptoms are rated overthe past 2 weeks. Two scales exist for auditory hallucinations(11 items) and delusions (6 items);EOTinterventionsgruppe: 11.08 (5.05) N=24kontrolgruppe13.46 (3.44) N=246mfuinterventionsgruppe: 8.00 (5.63) N=24kontrol:11.65 (5.75) N=23Indsat i skema; The Scale to Assess Unawareness of Mental Disorder (SUMD) – French version. The SUMD evaluates insight into variousdimensions of the disease across the following independentdimensions. Awareness of delusion er ekstraheret.. **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	High risk	Comment: Not possible
Blinding of outcome assessment (detection bias)	Low risk	Quote: "At the end of the T1 and T2 evaluation, raters had to guess the group of the participant and provide any clues that had been obtained during, for example, the interview."
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	Comment: All planned outcomes were reported.
Other bias	Low risk	Comment: No other biases apparent.

GilSanz 2009

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** Socialcognition ● *Age, mean (sd)*: 33.29 (8.36) ● *Sex (male %)*: 57 ● *Length of illness (years), mean (sd)*: 13.43 ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: TAU ● *Age, mean (sd)*: 41.43 (9.03) ● *Sex (male %)*: 43 ● *Length of illness (years), mean (sd)*: 20.57 ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: **Included criteria:** The the sample is made up of 14 patients, diagnosed withschizophrenia according to the CIE-10 criteria (WHO, 1992)by their psychiatrists of reference of the Sistema Cántabrode Salud (Translation: Spanish Cantabrian Health System),and in pharmacological treatment with antipsychotics at thetime of the study **Excluded criteria:** None given
Interventions	**Intervention Characteristics** Socialcognition ● *Description* : Training theexperimental group was carried out in two phases, with atotal of 20 sessions, in two weekly 45-minute sessions. Thegoal of the first phase was for the patients to learn to identify the six emotions considered basic: happiness, sadness, fear,surprise, anger, and disgust (Ekman, 1973, 1982, 1994).This phase had four sessions. In the first session, the purposeof the program and the concept of basic emotion wereexplained. In the second session, the facial traits that makeup each emotion were analyzed. In the following twosessions, the patients performed exercises of emotionrecognition by means of the analysis of different photographsfrom those that were used in the assessment test, and theywere asked to express the emotions trained with facialgestures. The photographs employed in these two sessionswere also selected from the NimStim Face Stimulus Set.In the second phase, the social perception subprogram ofthe IPT was administered in a total of 16 sessions, in which14 slides were used, as the first two slides were analyzed in2 sessions. The degree of stimular and emotional complexitywas progressively increased. Each training session was carriedout in three phases: collecting information, interpretation anddiscussion, and allocating a title interpreting, the patients had to offer their explanation of whathad happened in the image and to analyze the responses givenby the rest of the participants. Lastly, in the phase of allocatinga title, each group member proposed a title that summarizedthe most relevant aspects of the image. The group had toappraise the diverse titles proposed and choose the one theythought was the most appropriate. If the final title chosen hadno relation to the slide analyzed, the therapists suggestedcarrying out a new analysis of the image. TAU ● *Description* : Both the experimental group and the control groupmembers carried on with their regular activities in theirrespective rehabilitation programs, with the sole differencethat the patients from the experimental group receivedtraining in social perception.
Outcomes	*Continuous*: ● Theory of mind ● Social function Whodas2 lower=better ● Emotion processing/emotion perception ● Social perception EPS higher=better ● Days at hospital ● Symptoms, totalscore PANSS ● QoL *Dichotomous*: ● Symptomatic remitted ● Symptomatic relapse

Identification	**Sponsorship source:** None reported **Country:** Spain **Setting:** **Comments:** **Authors name:** David Gil Sanz **Institution:** 2Hospital Universitario Marqués de Valdecilla **Email:** crpsant@mennisant.com **Address:** to David Gil, Centro de Rehabilitación Psicosocial Padre Menni, C/Andrés del Río, 7 bajo. 39004 Santander (Spain)
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Ved Social perception er brugt EPS Interpretation subscale **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Comment: Not described. Quote: "The patients were randomly assigned to the experimental group or to the control group."
Allocation concealment (selection bias)	Unclear risk	Quote: "The patients were randomly assigned to the experimental group or to the control group." Comment: Not described
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	High risk	Comment: Not described.
Incomplete outcome data (attrition bias)	Unclear risk	Comment: No ITT dropout unclear. Small group
Selective reporting (reporting bias)	Low risk	Comment: Stated measures reported.
Other bias	Low risk	Comment: No other apparent biases.

Granholm 2005

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No details
Allocation concealment (selection bias)	Unclear risk	No details
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Habel 2010

Methods	Twenty male schizophrenia patients and 10 healthy male control subjects of matching age and parental education participated in the study. Ten patients received the six weeks' training (n 10, TAR) whereas the other 10 were randomized to the ''treatment as usual'' group (n10, TAU, without any special cognitive training).
Participants	TAR patients had a mean age of 31.4 years (SD7.8) and a mean parental education of 10.9 years (SD4.0), TAU patients 33.7 years (SD 10.65) and 9.1 years (SD2.3), accordingly. HC had a mean age of 31.6 years (SD8.8) and a mean parental education of 8.8 years (SD2.0).

	All patients were on antipsychotic medication.
Interventions	Training of Affect Recognition (TAR) vs. TAU
Outcomes	subtests of the WAIS TMT Percent correct identifications for the emotion identification tasks
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	no details
Allocation concealment (selection bias)	Unclear risk	no details
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Unclear risk	no details
Incomplete outcome data (attrition bias)	Unclear risk	no details
Selective reporting (reporting bias)	Unclear risk	In the methods section it is stated that 'subtests of the WAIS + TMT' is used, but only 'Percent correct identifications and reaction times for the emotion and age identification tasks' are reported.
Other bias	Low risk	

Kayser 2006

Methods	
Participants	A total of 14 patients (13 outpatients and 1 patient whose hospital stay was about to end) were included in this study. They all had a DSM-IV (American Psychiatric Association, 1994) diagnosis of schizophrenia and were considered as stabilised by two independent psychiatrists.
Interventions	
Outcomes	The patients' vocabulary level was assessed using the Binois and Pichot Vocabulary Test (Binois & Pichot, 1947). The disorganisation signs were evaluated using two instruments: the ability to attribute mental states to others was assessed with a ToM task without language (Sarfati et al., 1997); communication disorders were assessed using the Schizophrenia Communication Disorder Rating Scale (SCD; Olivier et al., 1997) Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962) the Positive and Negative Syndrome Scale (PANSS; Kay, Fiszbein, & Opler, 1987).
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	no details
Allocation concealment (selection bias)	Unclear risk	no details
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	High risk	the clinical evaluations were not performed by an assessor ignorant of the group membership
Incomplete outcome data (attrition bias)	Low risk	None of the patients asked to quit the programme and all participated actively in the video sessions.
Selective reporting (reporting bias)	High risk	not all outcomes reported
Other bias	Low risk	

Lak 2010

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** Socialcognition ● *Age, mean (sd)*: 38.32 (10.37) ● *Sex (male %)*: 51 ● *Length of illness (years), mean (sd)*: 15.61 (11.61) ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: 62.39 (12.11) TAU ● *Age, mean (sd)*: 44.48 (9.88)

	● *Sex (male %)*: 49 ● *Length of illness (years), mean (sd)*: 18.32 (11.96) ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: 63.07 (15.02) **Included criteria:** The selection criteria included an ICD-10 diagnosis of schizophrenia; completion of primaryeducation; aged between 18 and 50 of either sex; beingfree from fl orid positive symptom as indicated byBPRS with a score less than 72; and a Global Assessmentof Functioning score over 50 **Excluded criteria:** any major physical illnessorganic brain diseasemental retardationactive substance abuse
Interventions	**Intervention Characteristics** Socialcognition ● *Description* : SGT started within the first week after the completion of CBCSM and lasted for 6 months. SGT was conducted individually only with the par- ticipants assigned to it. The trainer met each partici- pant once a week for sessions lasting 30–45 min. SGT involved three components: (1) verifying the daily application of basic conversation skills, (2) review of the content in the CBCSM, and (3) encouragement and support designed to increase the motivation of participants to solve interaction problem and gain confidence in their daily interactions. TAU ● *Description* : The treatment group only received CBCSM training. No follow-up training was provided to these participants after the completion of the CBCSM training within the first 6 months.
Outcomes	*Continuous*: ● Theory of mind ● Social function (VSSS higher prob. better) ● Emotion processing/emotion perception ● Social perception ● Days at hospital ● Symptoms, totalscore BPRS ● QoL *Dichotomous*: ● Symptomatic remitted ● Symptomatic relapse
Identification	**Sponsorship source:** The Hong Kong Polytechnic University (MPhil studentship, referenced G-RG3P) **Country:** China **Setting:** **Comments:** **Authors name:** DAVIS C. C. LAK **Institution:** Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hung Hom, Hong, Kong, **Email:** rshtsang@inet.polyu.edu.hk **Address:** Hector W.H. Tsang, PhD, Associate Professor, Department of Rehabilitation Sciences, The Hong Kong Polytechnic University, Hung Hom, Hong Kong
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Som jeg forstår det er "social skills, total" taget fra:Vocational Social Skill Assessment Scale (VSSS) [20] consistsof a self-administered checklist that measured thesubjects' subjective perception of their competence inhandling work-related social situations and a simplerole-play exercise that measured participants' socialskill in simulated job-related situations (Skal den evt. under social perception??)Er i tvivl om "symptom severity" er BPRS? Den står kun som screening og ikke som outcome? **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "Every recruited partici- pant was then randomly assigned into one of the three groups by the fi rst author who was blind to the recruitment data including their mental and cogni- tive conditions." Comment: unclear how
Allocation concealment (selection bias)	Unclear risk	Comment: Not described
Blinding of participants and personnel (performance bias)	Unclear risk	no details
Blinding of outcome assessment (detection bias)	Low risk	Quote: "the fi rst author who was blind to the recruitment data including their mental and cogni- tive conditions." Quote: "All participants were assessed by a blind rater at baseline, 5 weeks after commencement of skills training, and 3 and 6 months after completion of skills train- ing on conversation skill mastery, subjective personal well being, and self esteem."
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	Comment: All stated measures were reported, but there was no protocol to check.
Other bias	Low risk	

Patterson 2003

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Block randomisation, no further details.
Allocation concealment (selection bias)	Unclear risk	No details.
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

Peniston 1988

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Roberts 2014

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** Socialcognition ● *Age, mean (sd)*: 40.0 (12.2) ● *Sex (male %)*: 67 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: TAU ● *Age, mean (sd)*: 39.4 (10.8) ● *Sex (male %)*: 67 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 97 ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: **Included criteria:** Participants were recruited from outpatient mental health clinics who had DSM-IVdiagnoses of schizophrenia or schizoaffective disorder, were aged 25–60 years, and haddifficulties interacting with others based on the Interaction subscale of the SocialFunctioning Scale (Birchwood, Smith, Cochrane, Wetton, & Copestake, 1990). **Excluded criteria:** Individualswere excluded if they currently met criteria for a substance use disorder, had an IQ of 80 or below, or met criteria for mental retardation.
Interventions	**Intervention Characteristics** Socialcognition ● *Description* : SCIT is a manual-based group intervention that is delivered in 20–24weekly, hour-longsessions. The exact duration of the intervention varies based on the speedwith which thegroup moves through the session content. Groups include two clinicians and four to eightpatients.Describedin detailelsewhere(Roberts et al.,

	inpress),SCITuses acombinationofpsychoeducation, drill-and-repeat skill practice, strategy games, heuristic rehearsal, andhomework assignments to remediate deficits and decrease biases in social cognition. EachSCIT group participant was encouraged to identify a 'practice partner', a family member oracquaintancewhowaswillingtopracticeSCITskillswiththeparticipantweeklyinlieuof,orin addition to, traditional homework. This approach was used because in previous clinicalexperiencewithSCITahigh proportionof participants failed tocompletepaper-and-pencilhomeworkassignments. AllSCITgroupmembers identifiedpracticepartners, andpartnerswereprovidedwitha set ofhandoutsandphonecheck-ins toguidetheir participation. SCITcliniciansattemptedtoreachpracticepartnersbyphoneeachweektocheck-inandprovideguidance in their efforts to support SCIT participants' learning TAU ● *Description* : The TAU condition involved no study-based control or manipulation. Thus, TAUparticipants received varying combinations of locally available services, includingpharmacotherapy, case management, and individual and group psychotherapy. SCITgroup members were not prohibited from participation in other TAU services.
Outcomes	*Continuous*: ● Theory of mind (Hinting task) ● Social function (GSFS) 1-10 higher=better ● Emotion processing/emotion perception ● Social perception ● Days at hospital ● Symptoms, totalscore PANNS ● QoL (QOL Social Scale) ● Theory of mind (Social Inference; TASIT) *Dichotomous*: ● Symptomatic remitted ● Symptomatic relapse
Identification	**Sponsorship source:** This study was supported by an NIMH R-34 grant to DLP (NIMH 1-R34-MH080010-01) **Country:** USA **Setting:** **Comments:** **Authors name:** David L. Roberts **Institution:** University of Texas Health Science Center, San Antonio, USA **Email:** robertsd5@uthscsa.edu **Address:** David L. Roberts, Division of Schizophrenia and Related Disorders, Department ofPsychiatry, University of Texas Health Science Center, San Antonio, 7703 Floyd Curl Drive, MC 7797, San Antonio, TX 78229, USA
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* OBS Follow up in this study is at 3 months,,The Quality of Life Scale – Social (QLS-S) and Work (QLS-W) subscales (Heinrichs,Hanlon, & Carpenter, 1984) are 8- and 4-item scales, respectively, that are rated on the basis of a semi-structured interview regarding the participant's functioning during the preceding 4 weeks. The QLS-S scale ranges from 0 to 48 and the QLS-W from 0 to 24.Theory of mind (ToM) was assessed with the Hinting Task (Corcoran, Mercer, & Frith,1995; range 0–20) and the Social Inference-Enriched subtest of The Awareness of SocialInference Task (TASIT; McDonald, Flanagan, Rollins, & Kinch, 2003; range 0–60). Higherscores on both reflect better ToM **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "Of the 137 people who were referred and made phone contact, 66 passed baseline screening and were randomized to either SCIT or TAU." Comment: No description of sequence generation or allocation concealment
Allocation concealment (selection bias)	Unclear risk	Quote: "Of the 137 people who were referred and made phone contact, 66 passed baseline screening and were randomized to either SCIT or TAU." Comment: Not described
Blinding of participants and personnel (performance bias)	Unclear risk	Comment: not described
Blinding of outcome assessment (detection bias)	Unclear risk	Quote: "trained research assistants who were blind to group assignment conducted assessments."
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	Comment: Stated measures were reported, but no protocol to compare to
Other bias	Low risk	

Roncone 2004

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	
Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Rus Calafell 2013

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** Socialcognition ● *Age, mean (sd)*: 37.54 (8.054) ● *Sex (male %)*: 77 ● *Length of illness (years), mean (sd)*: 13.2 ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: TAU ● *Age, mean (sd)*: 42.39 (8,1) ● *Sex (male %)*: 83 ● *Length of illness (years), mean (sd)*: 13.5 ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 100 ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: **Included criteria:** All patients met DSM-IV-TR (2004) criteria for schizophreniaor schizoaffective disorder, and had been clinically diagnosed by theircurrent treating psychiatrist. Their ages ranged between 18 and55 years old. From these patients, only forty of them agreed to participateand were enrolled in the study. The inclusion criteria were twofold: to have received a diagnosis of schizophrenia or schizoaffectivedisorder and to be able to participate in group therapy **Excluded criteria:** -to have a diagnosis of substance abuse -drug consumption and to have a comorbid neurological disorder.
Interventions	**Intervention Characteristics** Socialcognition ● *Description* : A SST program was designed and created based on the innovativeproposals of Kopelowicz et al. (2006). They proposed seven targetbehaviours (social perception, processing of social information, respondingand sending skills, affiliative skills, instrumental role skills, interactionalskills, and behaviour governed by social norms) which haveto be trained in an SST program. According to this proposal, the programwas divided in seven blocks, with two sessions planned for each block.Moreover, an introduction at the beginning session and a final sessionwere included. Thus, the entire program consisted of sixteen sessions TAU ● *Description* : TAU consisted of individual sessions with a psychiatrist, a socialworker, and a psychologist. These are the available services the MentalHealth Centre of Igualada offers, with the main purposes being casemanagement, medication adherence, psychotherapy, leisure engagement,and family support. Although TAU subjects received no interventionoriented to improving social behaviour, neither were the SST-groupsubjects required to abandon their TAU services.
Outcomes	*Continuous*: ● Theory of mind ● Social function SFS withdrawal ● Emotion processing/emotion perception ● Social perception ● Days at hospital ● Symptoms, totalscore ● QoL SF-36 Physical Health ● Social function SFS Interpersonal_C ● Social function SFS Independence ● Social function SFS Competence ● Social function SFS Recreation ● Social function SFS Prosocial ● QoL SF-36 Mental Health *Dichotomous*:

	● Symptomatic remitted ● Symptomatic relapse
Identification	**Sponsorship source:** his study was partially supported by a research grant from the Agency of University Management and Research, Catalonia Government (AGAUR) **Country:** Spain **Setting:** **Comments:** **Authors name:** Mar Rus-Calafell **Institution:** Department of Personality, Assessment and Psychological Treatments, University of Barcelona **Email:** m.ruscalafell@gmail.com **Address:** Department of Personality, Assessment and Psychological Treatments, University of Barcelona, Paseo Valle de Hebrón, 171, 08035, Barcelona, Spain.
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* SFS = The Social Functioning Scale. Lower scores indicate more social impairmentSF-36 The lower the score the more disability. **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	no details
Allocation concealment (selection bias)	Unclear risk	Comment: Not described
Blinding of participants and personnel (performance bias)	High risk	Quote: "nei- ther patients nor informants were blinded to treatment conditions."
Blinding of outcome assessment (detection bias)	High risk	Quote: "although assessors were not blind to treat- ment conditions"
Incomplete outcome data (attrition bias)	Low risk	Quote: "four subjects from the SST intervention did not attend four or more of the sixteen sessions due to schedule incompatibilities (1), lack of motivation (3), and lost at follow-up due to a change of address (1)." Comment: 32/36 participants completed the study
Selective reporting (reporting bias)	Low risk	Comment: Stated measures are reported, though no protocol to compare with.
Other bias	Low risk	

Sachs 2012

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** Socialcognition ● *Age, mean (sd)*: 27.20 (7.17) ● *Sex (male %)*: 60 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: TAU ● *Age, mean (sd)*: 31.72 (9.35) ● *Sex (male %)*: 40 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: **Included criteria:** Patients who met DSM-IV criteria for schizophrenia (SCID-P; Firstet al., 1994) with stable symptoms in the age range from 18 to55 years were included into the study. Patients were either inpatientsrecruited at the Department of Psychiatry and Psychotherapy at theMedical University of Vienna or outpatients from the associatedoutpatient clinic. **Excluded criteria:** Criteria according to which patients were excluded from the study were: (1) disorders other than schizophrenia, diagnosed according to the DSM-IV diagnosis criteria(2) additional axis-I- or axis-II-diagnosis(3) dependencies (alcohol, drugs)(4) with serious somatic disorders or neurological disorders such as epilepsy and stroke (5) serious lifetime disorders(6) previous depot neuroleptic treatment within the last 3 months (7) previous treatment classical antipsychotics within the last 4 weeks.
Interventions	**Intervention Characteristics** Socialcognition ● *Description* : TAR is a 12-session training on facial affect recognition over aperiod of 6 weeks. It involves neuropsychological strategies, such asrestitution and compensation, as well as principles of errorless learning, direct positive reinforcement, verbalization and self-instruction(Frommann et al., 2003; Wölwer et al., 2005). The

	program is dividedinto three blocks, whereas each block consists of 4 sessions: duringthe first block patients learn to identify and discriminate the prototypicalfacial signs of the six basic emotions (happiness, sadness,fear, disgust, anger and surprise). The next block aims at a more holisticprocessing mode with fast decisions, relying on first impression,nonverbal processing and recognition of facial expressions withsmall intensities. The third block deals with the role of facial emotionsin social, behavioral and situational context TAU ● *Description* : Not described.
Outcomes	*Continuous*: ● Theory of mind ● Social function ● Emotion processing/emotion perception ● Social perception ● Days at hospital ● Symptoms, totalscore ● WHOQoL Phy ● WHOQoL Psych ● WHOQoL Soc ● WHOQoL Envir *Dichotomous*: ● Symptomatic remitted ● Symptomatic relapse
Identification	**Sponsorship source:** Received no sponsorship. **Country:** Austria **Setting:** in and outpatients **Comments:** **Authors name:** G. Sachs **Institution:** Department of Psychiatry and Psychotherapy, Medical University of Vienna, **Email:** gabriele.sachs@meduniwien.ac.at **Address:** Medical University of Vienna, Währinger Gürtel 18-20, 1090 Vienna, Austria
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* WHO-QOL (Livskvalitet) rated on a 5 point Likert scale where 1 indicates low, negativeperceptions and 5 indicates high, positive perceptions. For example, an item in the positive feeling facetasks “How much do you enjoy life?” and the available responses are 1 (not at all), 2 (a little) 3 (a moderateamount), 4 (very much) and 5 (an extreme amount). As such, domain and facet scores are scaled in apositive direction where higher scores denote higher quality of life *Michael Nixon* Unclear if PANSS scores are total scores (positive and negative) or only negative scores. **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Quote: "Forty clinically stabilized schizophrenic patients were randomized to" Comment: not clear how
Allocation concealment (selection bias)	Unclear risk	Comment: Not described
Blinding of participants and personnel (performance bias)	High risk	Comment: Probably not possible
Blinding of outcome assessment (detection bias)	Unclear risk	Comment: Not described.
Incomplete outcome data (attrition bias)	Low risk	Comment: 38/40 completed.
Selective reporting (reporting bias)	Low risk	Comment: All stated measures reported.
Other bias	Low risk	

Ucok 2006

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	
Allocation concealment (selection bias)	Unclear risk	
Blinding of participants and personnel (performance bias)	Unclear risk	

Blinding of outcome assessment (detection bias)	Unclear risk	
Incomplete outcome data (attrition bias)	Unclear risk	
Selective reporting (reporting bias)	Unclear risk	
Other bias	Unclear risk	

Valencia 2007

Methods	
Participants	
Interventions	
Outcomes	
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	No details
Allocation concealment (selection bias)	Unclear risk	No details.
Blinding of participants and personnel (performance bias)	Unclear risk	Unclear.
Blinding of outcome assessment (detection bias)	Low risk	
Incomplete outcome data (attrition bias)	Low risk	
Selective reporting (reporting bias)	Low risk	
Other bias	Low risk	

vanOosterhout 2014

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:** YES
Participants	**Baseline Characteristics** Socialcognition ● *Age, mean (sd)*: 38.3 (11.1) ● *Sex (male %)*: 72 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 73 ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: TAU ● *Age, mean (sd)*: 36.8 (8.7) ● *Sex (male %)*: 71 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: 65 ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: **Included criteria:** Eligible participants were adults aged 18−65 years with a psychotic disorder in the DSM-IV schizophrenia spectrum were selected who met the criteria for at least moderate delusional symptoms, that is ideas of social reference and/or per- secutory ideas on the GPTS score 50. **Excluded criteria:** Exclusion criteria were primary addiction, insufficient understanding of the Dutch language and an IQ<70.
Interventions	**Intervention Characteristics** Socialcognition ● *Description* : In the experimental condition, in addition to TAU,patients received MCT, a group intervention intendedfor 3−10 patients (Moritz, 2009). Each of eight sessions was conducted either by a clinical psychologist, psychiatrist, occupational therapist or psychiatricnurse. TAU ● *Description* : In the TAU condition, patients received standard treatment for psychotic patients, which consists of medi- cation prescribed by a psychiatrist and/or out-patient treatment by a social psychiatrist nurse and/or psychologist.
Outcomes	*Continuous*: ● Theory of mind ● Social function ● Emotion processing/emotion perception ● Social perception Dacobs ● Days at hospital ● Symptoms, totalscore ● QoL *Dichotomous*: ● Symptomatic remitted ● Symptomatic relapse

Identification	**Sponsorship source:** This work was supportedby The Netherlands Organization for HealthResearch and Development (Zon-Mw), grant no.80-82305-97-10045. **Country:** Netherlands **Setting:** **Comments:** **Authors name:** B. van Oosterhout **Institution:** GGzE, De Woenselse Poort **Email:** bj.van.oosterhout@dewoenselsepoort.nl **Address:** GGzE, PO Box 909, 5600 AX, Eindhoven, The Netherlands.
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* Social perception måled via SACOBS social cognition problems subscale **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "The random allocation lists were generated by a web- based automated randomization system. The randomi- zation was stratified to a research site in blocks of 10."
Allocation concealment (selection bias)	Low risk	Quote: "The allocation list was kept in a remote secure location and the different sites confirmed the randomization status to the randomization bureau."
Blinding of participants and personnel (performance bias)	Unclear risk	Comment: Not described
Blinding of outcome assessment (detection bias)	Low risk	Quote: "Independent research assistants who were blind to condition conducted the assessments." Quote: "conducted at locations other than the training loca- tions. Assistants were asked to report any unblinding of the assessments."
Incomplete outcome data (attrition bias)	High risk	Comment: Intention to treat done, but almost 50 % dropout in intervention group and 30 % in control group
Selective reporting (reporting bias)	Low risk	Quote: "It was registered in the Dutch Trial Register (NTR 2307). The study was approved by the local ethics committee (NL28883.097.09)." Comment: All stated measures reported
Other bias	Low risk	

Wang 2013

Methods	**Study design:** Randomized controlled trial **Study grouping:** Parallel group **Open Label:** **Cluster RCT:**
Participants	**Baseline Characteristics** Socialcognition ● *Age, mean (sd)*: 43.86 (11.65) ● *Sex (male %)*: 55 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: TAU ● *Age, mean (sd)*: 40.88 (10.15) ● *Sex (male %)*: 47 ● *Length of illness (years), mean (sd)*: ● *Length of illness (month), mean (sd)*: ● *Schizophrenia, Schizoaffective, schizofreniform (%)*: ● *Level of functioning (GAF, GAS) at baseline, mean (sd)*: **Included criteria:** Forty-five adults who met the diagnostic criteria for schizophrenia (DSM-IV, APA, 2000) were recruited from local community health institutions in the city of Hangzhou. All patients had been receiving a stable dose of antipsychotic medication for at least 30 days before entry, and were clinically stable as defined by having no psychiatric hospitalizations in the past year and the same psychiatric medication for at least the past 3 months. All were able to understand the instructions of measures and the content of SCIT. **Excluded criteria:** Two participants with other clinical pathologies that could be associated with poor social functioning were excluded from the study.Patients who had a current or past diagnosis of substance dependence or a severe medical or neurological condition were excluded.
Interventions	**Intervention Characteristics** Socialcognition ● *Description* : The 20-week SCIT group intervention was delivered by six qualified psychiatric counselors who had been trained in-person by one of SCIT's developers (DR) and had administered a training trial of SCIT in a sample of normal adults. Three SCIT intervention groups were conducted, each with seven or eight participants and two psychiatric counselors. TAU ● *Description* : Treatment as usual on waiting list

Outcomes	*Continuous*: ● Theory of mind (The eyes task-Mind reading) Higher=better ● Social function PSP higher = better ● Social perception ● Days at hospital ● Symptoms, totalscore ● QoL ● Theory of mind (The eyes task - Gender recognition) ● Emotion processing/Emotion perception (FEIT) higher=better *Dichotomous*: ● Symptomatic remitted ● Symptomatic relapse
Identification	**Sponsorship source:** Program for Science and Technology Innovative Research Team in Zhejiang Province (2010R50049-08). **Country:** China **Setting:** **Comments:** **Authors name:** Yongguang Wang **Institution:** Department of Psychology and Behavioral Sciences, Zhejiang University **Email:** xubaihua305@126.com **Address:** Baihua Xu 148 Tianmushan Road, Hangzhou, Zhejiang Province 310028, China
Notes	**Identification:** **Participants:** **Study design:** **Baseline characteristics:** **Intervention characteristics:** **Pretreatment:** **Continuous outcomes:** *Elisabeth Ginnerup-Nielsen* FEIT: Scores ranged from 0to30with higher scores indicating better emotion perception. **Dichotomous outcomes:** **Adverse outcomes:**

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Quote: "Forty-three participants who met enrollment criteria were randomly assigned in a 1:1 ratio to SCIT or a waiting-list group using a computer-generated list of random numbers. Patients drawing an even number were assigned to SCIT group (n ¼22), and those drawing an odd number were allocated in waiting-list group (n ¼21)."
Allocation concealment (selection bias)	Unclear risk	Comment: Not described
Blinding of participants and personnel (performance bias)	High risk	Comment: Not possible
Blinding of outcome assessment (detection bias)	Low risk	Quote: "All assessments were performed by raters who were blind to the research design."
Incomplete outcome data (attrition bias)	Low risk	Quote: "During the study, four adult patients in the waiting-list group dropped out and did not complete the follow-up assessments. Two patients dropped out due to hospitalization for relapse and two in order to attend another intervention program. Thus, the data from 22 SCIT and 17 waiting-list participants were used in statistical analyses." Comment: 39/43 participants completed
Selective reporting (reporting bias)	High risk	Comment: Unclear if the PANSS score was only for baseline purposes, or was not reported. No protocol to compare to
Other bias	Low risk	Comment: No other apparent biases.

Wölwer 2005

Methods	A randomized three group pre-post design was used to investigate effects of the program bTraining of Affect RecognitionQ (TAR), compared to a cognitive remediation training program (CRT) focusing on cold cognition, and to treatment as usual (TAU) without any special cognitive training.
Participants	
Interventions	
Outcomes	Performance in facial affect recognition and basic cognitive functioning were assessed before (T0) and after (T1) a six week training phase.
Identification	
Notes	

Risk of bias table

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	no details
Allocation concealment (selection bias)	Unclear risk	no details
Blinding of participants and personnel (performance bias)	High risk	
Blinding of outcome assessment (detection bias)	Unclear risk	no details
Incomplete outcome data (attrition bias)	Low risk	Fifty-three patients completed the six week training phase, while 24 patients prematurely terminated participation due to loss of interest in continuing the training or due to discharge without possibility to further participate in the study (TAD: n =8, CRT: n =10, TAU: n =6).
Selective reporting (reporting bias)	High risk	not all outcomes reported
Other bias	Low risk	

Footnotes

Characteristics of excluded studies

Aghotor 2010

Reason for exclusion	Wrong comparator

Balzan 2013

Reason for exclusion	Wrong setting

Bartholomeusz 2013

Reason for exclusion	Wrong study design

Bechi 2013

Reason for exclusion	Wrong comparator

Briki 2014

Reason for exclusion	Wrong comparator

Bucci 2013

Reason for exclusion	Wrong comparator

Christensen 2013

Reason for exclusion	Wrong setting

Eack 2009

Reason for exclusion	Wrong patient population

Eack 2009a

Reason for exclusion	Wrong intervention

Eack 2010

Reason for exclusion	Wrong intervention

Eack 2010a

Reason for exclusion	Wrong intervention

Eack 2010b

Reason for exclusion	Wrong intervention

Eack 2011

Reason for exclusion	Wrong intervention

Eack 2013

Reason for exclusion	Wrong intervention

Eack 2013a

Reason for exclusion	Wrong intervention

Emmerson 2009

Reason for exclusion	Wrong intervention

Galderisi 2010

Reason for exclusion	Wrong intervention

Gohar 2013

Reason for exclusion	Wrong comparator

Granholm 2008

Reason for exclusion	Wrong intervention

Granholm 2013

Reason for exclusion	Wrong intervention

Guo 2010

Reason for exclusion	Wrong intervention

Hansen 2012

Reason for exclusion	Wrong intervention

Hooker 2012

Reason for exclusion	Wrong intervention

Hooker 2013

Reason for exclusion	Wrong intervention

Horan 2009

Reason for exclusion	Paediatric population

Lahera 2013

Reason for exclusion	Wrong patient population

Lincoln 2014

Reason for exclusion	Wrong intervention

Lindenmayer 2013

Reason for exclusion	Wrong intervention

Mazza 2010

Reason for exclusion	Wrong comparator

Moritz 2013

Reason for exclusion	Wrong comparator

Moritz 2014

Reason for exclusion	Wrong comparator

Mueser 2010

Reason for exclusion	Wrong patient population

Nahum 2014

Reason for exclusion	Wrong study design

Park 2011

Reason for exclusion	Wrong comparator

Pijnenborg 2013

Reason for exclusion	Wrong setting

Pratt 2013

Reason for exclusion	Wrong patient population

Schmidt 2011

Reason for exclusion	Wrong setting

Tas 2012

Reason for exclusion	Wrong comparator

Wolwer 2011

Reason for exclusion	Wrong comparator

Footnotes

Characteristics of studies awaiting classification

Footnotes

Characteristics of ongoing studies

Footnotes

References to studies

Included studies

Bechi 2012

Bechi,M.; Riccaboni,R.; Ali,S.; Fresi,F.; Buonocore,M.; Bosia,M.; Cocchi,F.; Smeraldi,E.; Cavallaro,R.. Theory of mind and emotion processing training for patients with schizophrenia: preliminary findings.. Psychiatry research 2012;198(3):371-377. [DOI:]

Bellack 1984

[Empty]

Chien 2003

[Empty]

Choi 2006

[Empty]

Daniels 1998

[Empty]

Favrod 2014

Favrod,J.; Rexhaj,S.; Bardy,S.; Ferrari,P.; Hayoz,C.; Moritz,S.; Conus,P.; Bonsack,C.. Sustained antipsychotic effect of metacognitive training in psychosis: a randomized-controlled study.. European Psychiatry: the Journal of the Association of European Psychiatrists 2014;29(5):275-281. [DOI:]

GilSanz 2009

Gil Sanz,D.; Diego Lorenzo,M.; Bengochea Seco,R.; Arrieta Rodriguez,M.; Lastra Martinez,I.; Sanchez Calleja,R.; Alvarez Soltero,A.. Efficacy of a social cognition training program for schizophrenic patients: a pilot study.. Spanish Journal of Psychology 2009;12(1):184-191. [DOI:]

Granholm 2005

[Empty]

Habel 2010

[Empty]

Kayser 2006

[Empty]

Lak 2010

Lak,D. C. C.; Tsang,H. W. H.; Kopelowicz,A.; Liberman,R. P.. Outcomes of the Chinese basic conversation skill module (CBCSM) for people with schizophrenia having mild to moderate symptoms and dysfunction in Hong Kong.. International Journal of Psychiatry in Clinical Practice 2010;14(2):137-144. [DOI:]

Patterson 2003

[Empty]

Peniston 1988

[Empty]

Roberts 2014

Roberts,D. L.; Combs,D. R.; Willoughby,M.; Mintz,J.; Gibson,C.; Rupp,B.; Penn,D. L.. A randomized, controlled trial of Social Cognition and Interaction Training (SCIT) for outpatients with schizophrenia spectrum disorders.. British Journal of Clinical Psychology 2014;53(3):281-298. [DOI:]

Roncone 2004

[Empty]

Rus Calafell 2013

Rus-Calafell,M.; Gutierrez-Maldonado,J.; Ortega-Bravo,M.; Ribas-Sabate,J.; Caqueo-Urizar,A.. A brief cognitive-behavioural social skills training for stabilised outpatients with schizophrenia: a preliminary study.. Schizophrenia research 2013;143(2-3):327-336. [DOI:]

Sachs 2012

Sachs,G.; Winklbaur,B.; Jagsch,R.; Lasser,I.; Kryspin-Exner,I.; Frommann,N.; Wolwer,W.. Training of affect recognition (TAR) in schizophrenia--impact on functional outcome.. Schizophrenia research 2012;138(2-3):262-267. [DOI:]

Ucok 2006

[Empty]

Valencia 2007

[Empty]

vanOosterhout 2014

van Oosterhout,B.; Krabbendam,L.; de Boer,K.; Ferwerda,J.; van der Helm,M.; Stant,A. D.; van der Gaag,M.. Metacognitive group training for schizophrenia spectrum patients with delusions: a randomized controlled trial.. Psychological medicine 2014;44(14):3025-3035. [DOI:]

Wang 2013

Wang,Y.; Roberts,D. L.; Xu,B.; Cao,R.; Yan,M.; Jiang,Q.. Social cognition and interaction training for patients with stable schizophrenia in Chinese community settings.. Psychiatry research 2013;210(3):751-755. [DOI:]

Wölwer 2005

[Empty]

Excluded studies

Aghotor 2010

Aghotor,J.; Pfueller,U.; Moritz,S.; Weisbrod,M.; Roesch-Ely,D.. Metacognitive training for patients with schizophrenia (MCT): feasibility and preliminary evidence for its efficacy.. Journal of Behavior Therapy & Experimental Psychiatry 2010;41(3):207-211. [DOI:]

Balzan 2013

Balzan,R.; Delfabbro,P.; Galletly,C.; Woodward,T.. Metacognitive training for patients with schizophrenia: Preliminary evidence for a targeted single-module program.. Schizophrenia bulletin 2013;39(Journal Article):S256. [DOI:]

Bartholomeusz 2013

Bartholomeusz,C. F.; Allott,K.; Killackey,E.; Liu,P.; Wood,S. J.; Thompson,A.. Social cognition training as an intervention for improving functional outcome in first-episode psychosis: A feasibility study.. Early Intervention in Psychiatry 2013;7(4):421-426. [DOI:]

Bechi 2013

Bechi,M.; Spangaro,M.; Bosia,M.; Zanoletti,A.; Fresi,F.; Buonocore,M.; Cocchi,F.; Guglielmino,C.; Smeraldi,E.; Cavallaro,R.. Theory of Mind intervention for outpatients with schizophrenia.. Neuropsychological Rehabilitation 2013;23(3):383-400. [DOI:]

Briki 2014

Briki,M.; Monnin,J.; Haffen,E.; Sechter,D.; Favrod,J.; Netillard,C.; Cheraitia,E.; Marin,K.; Govyadovskaya,S.; Tio,G.; Bonin,B.; Chauvet-Gelinier,J. C.; Leclerc,S.; Hode,Y.; Vidailhet,P.; Berna,F.; Bertschy,A. Z.; Vandel,P.. Metacognitive training for schizophrenia: a multicentre randomised controlled trial.. Schizophrenia research 2014;157(1-3):99-106. [DOI:]

Bucci 2013

Bucci,P.; Piegari,G.; Mucci,A.; Merlotti,E.; Chieffi,M.; De Riso,F.; De Angelis,M.; Di Munzio,W.; Galderisi,S.. Neurocognitive individualized training versus social skills individualized training: a randomized trial in patients with schizophrenia.. Schizophrenia research 2013;150(1):69-75. [DOI:]

Christensen 2013

Christensen,T. N.; Nordentoft,M.. The effectiveness of IPS enhanced with cognitive remediation and social skills training for people with severe mental illness in Denmark: A randomised controlled trial.. Schizophrenia bulletin 2013;39(Journal Article):S285. [DOI:]

Eack 2009

Eack,S. M.; Greenwald,D. P.; Hogarty,S. S.; Cooley,S. J.; DiBarry,A. L.; Montrose,D. M.; Keshavan,M. S.. Cognitive enhancement therapy for early-course schizophrenia: effects of a two-year randomized controlled trial.. Psychiatric Services 2009;60(11):1468-1476. [DOI:]

Eack 2009a

Eack,Shaun M.; Greenwald,Deborah P.; Hogarty,Susan S.; Cooley,Susan J.; DiBarry,Ann Louise; Montrose,Debra M.; Keshavan,Matcheri S.. Cognitive enhancement therapy for early-course schizophrenia: Effects of a two-year randomized controlled trial.. Psychiatric Services 2009;60(11):1468-1476. [DOI:]

Eack 2010

Eack,Shaun Michael. Social cognition and social disability in schizophrenia: The role of emotional intelligence.. Dissertation Abstracts International Section A: Humanities and Social Sciences 2010;70(10-A):4049. [DOI:]

Eack 2010a

Eack,S. M.; Hogarty,G. E.; Cho,R. Y.; Prasad,K. M.; Greenwald,D. P.; Hogarty,S. S.; Keshavan,M. S.. Neuroprotective effects of cognitive enhancement therapy against gray matter loss in early schizophrenia: results from a 2-year randomized controlled trial.. Archives of General Psychiatry 2010;67(7):674-682. [DOI:]

Eack 2010b

Eack,Shaun M.; Hogarty,Gerard E.; Cho,Raymond Y.; Prasad,Konasale M. R.; Greenwald,Deborah P.; Hogarty,Susan S.; Keshavan,Matcheri S.. Neuroprotective effects of cognitive enhancement therapy against gray matter loss in early schizophrenia: Results from a 2-year randomized controlled trial.. Archives of General Psychiatry 2010;67(7):674-682. [DOI:]

Eack 2011

Eack,Shaun M.; Hogarty,Gerard E.; Greenwald,Deborah P.; Hogarty,Susan S.; Keshavan,Matcheri S.. Effects of cognitive enhancement therapy on employment outcomes in early schizophrenia: Results from a 2-year randomized trial.. Research on Social Work Practice 2011;21(1):32-42. [DOI:]

Eack 2013

Eack,S. M.; Keshavan,M.. Integrating the treatment of social and non-social cognitive impairments in schizophrenia with cognitive enhancement therapy.. Schizophrenia bulletin 2013;39(Journal Article):S328. [DOI:]

Eack 2013a

Eack,S. M.; Mesholam-Gately,R. I.; Greenwald,D. P.; Hogarty,S. S.; Keshavan,M. S.. Negative symptom improvement during cognitive rehabilitation: results from a 2-year trial of Cognitive Enhancement Therapy.. Psychiatry research 2013;209(1):21-26. [DOI:]

Emmerson 2009

Emmerson,L. C.; Granholm,E.; Link,P. C.; McQuaid,J. R.; Jeste,D. V.. Insight and treatment outcome with cognitive-behavioral social skills training for older people with schizophrenia.. Journal of Rehabilitation Research & Development 2009;46(8):1053-1058. [DOI:]

Galderisi 2010

Galderisi,S.; Piegari,G.; Mucci,A.; Acerra,A.; Luciano,L.; Rabasca,A. F.; Santucci,F.; Valente,A.; Volpe,M.; Mastantuono,P.; Maj,M.. Social skills and neurocognitive individualized training in schizophrenia: comparison with structured leisure activities.. European Archives of Psychiatry & Clinical Neuroscience 2010;260(4):305-315. [DOI:]

Gohar 2013

Gohar,S. M.; Hamdi,E.; El Ray,L. A.; Horan,W. P.; Green,M. F.. Adapting and evaluating a social cognitive remediation program for schizophrenia in Arabic.. Schizophrenia research 2013;148(1-3):12-17. [DOI:]

Granholm 2008

Granholm,E.; McQuaid,J. R.; Link,P. C.; Fish,S.; Patterson,T.; Jeste,D. V.. Neuropsychological predictors of functional outcome in Cognitive Behavioral Social Skills Training for older people with schizophrenia.. Schizophrenia research 2008;100(1-3):133-143. [DOI:]

Granholm 2013

Granholm,E.; Holden,J.; Link,P. C.; McQuaid,J. R.; Jeste,D. V.. Randomized controlled trial of cognitive behavioral social skills training for older consumers with schizophrenia: defeatist performance attitudes and functional outcome.. American Journal of Geriatric Psychiatry 2013;21(3):251-262. [DOI: 10.1016/j.jagp.2012.10.014 [doi]]

Guo 2010

Guo, X.; Zhai, J.; Liu, Z.; Fang, M.; Wang, B.; Wang, C.; Hu, B.; Sun, X.; Lv, L.; Lu, Z.; Ma, C.; He, X.; Guo, T.; Xie, S.; Wu, R.; Xue, Z.; Chen, J.; Twamley, E. W.; Jin, H.; Zhao, J.. Effect of antipsychotic medication alone vs combined with psychosocial intervention on outcomes of early-stage schizophrenia: A randomized, 1-year study. Archives of General Psychiatry 2010;67(9):895-904. [DOI:]

Hansen 2012

Hansen,J. P.; Ostergaard,B.; Nordentoft,M.; Hounsgaard,L.. Cognitive adaptation training combined with assertive community treatment: a randomised longitudinal trial.. Schizophrenia research 2012;135(1-3):105-111. [DOI:]

Hooker 2012

Hooker, C. I.; Bruce, L.; Fisher, M.; Verosky, S. C.; Miyakawa, A.; Vinogradov, S.. Neural activity during emotion recognition after combined cognitive plus social cognitive training in schizophrenia. Schizophrenia Research 2012;139(1-3):53-59. [DOI:]

Hooker 2013

Hooker,C. I.; Bruce,L.; Fisher,M.; Verosky,S. C.; Miyakawa,A.; D'Esposito,M.; Vinogradov,S.. The influence of combined cognitive plus social-cognitive training on amygdala response during face emotion recognition in schizophrenia.. Psychiatry research 2013;213(2):99-107. [DOI:]

Horan 2009

Horan,W. P.; Kern,R. S.; Shokat-Fadai,K.; Sergi,M. J.; Wynn,J. K.; Green,M. F.. Social cognitive skills training in schizophrenia: an initial efficacy study of stabilized outpatients.. Schizophrenia research 2009;107(1):47-54. [DOI:]

Lahera 2013

Lahera,G.; Benito,A.; Montes,J. M.; Fernandez-Liria,A.; Olbert,C. M.; Penn,D. L.. Social cognition and interaction training (SCIT) for outpatients with bipolar disorder.. Journal of affective disorders 2013;146(1):132-136. [DOI:]

Lincoln 2014

Lincoln,T. M.; Rief,W.; Westermann,S.; Ziegler,M.; Kesting,M. L.; Heibach,E.; Mehl,S.. Who stays, who benefits? Predicting dropout and change in cognitive behaviour therapy for psychosis.. Psychiatry research 2014;216(2):198-205. [DOI:]

Lindenmayer 2013

Lindenmayer,J. P.; McGurk,S. R.; Khan,A.; Kaushik,S.; Thanju,A.; Hoffman,L.; Valdez,G.; Wance,D.; Herrmann,E.. Improving social cognition in schizophrenia: a pilot intervention combining computerized social cognition training with cognitive remediation.. Schizophrenia bulletin 2013;39(3):507-517. [DOI:]

Mazza 2010

Mazza,M.; Lucci,G.; Pacitti,F.; Pino,M. C.; Mariano,M.; Casacchia,M.; Roncone,R.. Could schizophrenic subjects improve their social cognition abilities only with observation and imitation of social situations?.. Neuropsychological Rehabilitation 2010;20(5):675-703. [DOI:]

Moritz 2013

Moritz,S.; Veckenstedt,R.; Bohn,F.; Hottenrott,B.; Scheu,F.; Randjbar,S.; Aghotor,J.; Kother,U.; Woodward,T. S.; Treszl,A.; Andreou,C.; Pfueller,U.; Roesch-Ely,D.. Complementary group Metacognitive Training (MCT) reduces delusional ideation in schizophrenia.. Schizophrenia research 2013;151(1-3):61-69. [DOI:]

Moritz 2014

Moritz,S.; Veckenstedt,R.; Andreou,C.; Bohn,F.; Hottenrott,B.; Leighton,L.; Kother,U.; Woodward,T. S.; Treszl,A.; Menon,M.; Schneider,B. C.; Pfueller,U.; Roesch-Ely,D.. Sustained and "sleeper" effects of group metacognitive training for schizophrenia a randomized clinical trial.. JAMA Psychiatry 2014;71(10):1103-1111.

[DOI:]

Mueser 2010

Mueser,K. T.; Pratt,S. I.; Bartels,S. J.; Swain,K.; Forester,B.; Cather,C.; Feldman,J.. Randomized trial of social rehabilitation and integrated health care for older people with severe mental illness.. Journal of Consulting & Clinical Psychology 2010;78(4):561-573. [DOI:]

Nahum 2014

Nahum,M.; Fisher,M.; Loewy,R.; Poelke,G.; Ventura,J.; Nuechterlein,K. H.; Hooker,C. I.; Green,M. F.; Merzenich,M. M.; Vinogradov,S.. A novel, online social cognitive training program for young adults with schizophrenia: A pilot study.. Schizophrenia Research: Cognition 2014;1(1):e11-e19. [DOI:]

Park 2011

Park,K. M.; Ku,J.; Choi,S. H.; Jang,H. J.; Park,J. Y.; Kim,S. I.; Kim,J. J.. A virtual reality application in role-plays of social skills training for schizophrenia: a randomized, controlled trial.. Psychiatry research 2011;189(2):166-172. [DOI:]

Pijnenborg 2013

Pijnenborg,M.; Van Der Meer,L.; De Vos,A.; Bockting,C.; Van Der Gaag,M.; Aleman,A.. REFLEX: A metacognitive group treatment to improve insight in psychosis.. Schizophrenia bulletin 2013;39(Journal Article):S349. [DOI:]

Pratt 2013

Pratt,S. I.; Mueser,K. T.; Bartels,S. J.; Wolfe,R.. The impact of skills training on cognitive functioning in older people with serious mental illness.. American Journal of Geriatric Psychiatry 2013;21(3):242-250. [DOI:]

Schmidt 2011

Schmidt,S. J.; Mueller,D. R.; Roder,V.. The importance of cognition, negative symptoms and subjective parameters for functional recovery in schizophrenia.. Schizophrenia bulletin 2011;37(Journal Article):281-282. [DOI:]

Tas 2012

Tas, C.; Danaci, A. E.; Cubukcuoglu, Z.; Brune, M.. Impact of family involvement on social cognition training in clinically stable outpatients with schizophrenia -- a randomized pilot study. Psychiatry Res 2012;195(1-2):32-8. [DOI: 10.1016/j.psychres.2011.07.031]

Wolwer 2011

Wolwer,W.; Frommann,N.. Social-cognitive remediation in schizophrenia: generalization of effects of the Training of Affect Recognition (TAR).. Schizophrenia bulletin 2011;37(Suppl 2):S63-70. [DOI:]

Data and analyses

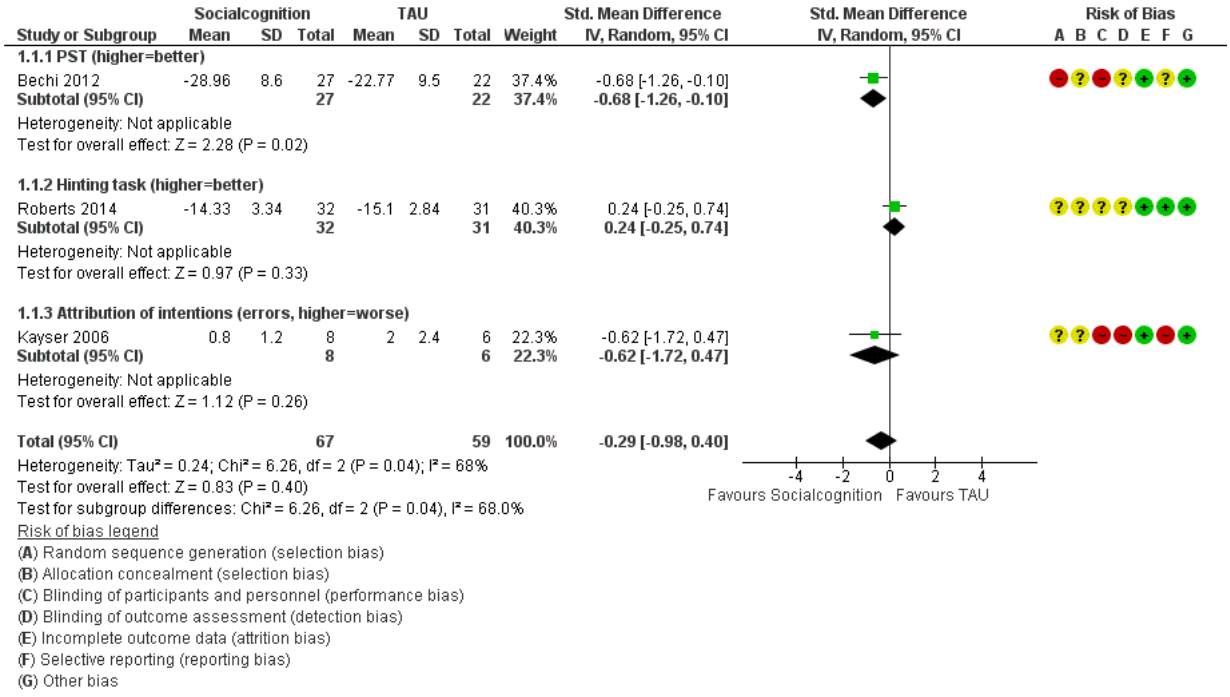
1 Socialcognition vs TAU

Outcome or Subgroup	Studies	Participants	Statistical Method	Effect Estimate
1.1 Theory of mind, end of treatment	3	126	Std. Mean Difference (IV, Random, 95% CI)	-0.29 [-0.98, 0.40]
1.1.1 PST (higher=better)	1	49	Std. Mean Difference (IV, Random, 95% CI)	-0.68 [-1.26, -0.10]
1.1.2 Hinting task (higher=better)	1	63	Std. Mean Difference (IV, Random, 95% CI)	0.24 [-0.25, 0.74]
1.1.3 Attribution of intentions (errors, higher=worse)	1	14	Std. Mean Difference (IV, Random, 95% CI)	-0.62 [-1.72, 0.47]
1.2 Theory of mind, Longest FU (min 4-6 mo)	2	99	Std. Mean Difference (IV, Random, 95% CI)	-0.45 [-1.57, 0.67]
1.2.1 The eyes task - Mind reading (higher=better)	1	39	Std. Mean Difference (IV, Random, 95% CI)	-1.05 [-1.73, -0.37]
1.2.3 Hingting task (higher=better)	1	60	Std. Mean Difference (IV, Random, 95% CI)	0.10 [-0.41, 0.60]
1.3 Emotion processing/emotion perception (higher=better), end of treatment	5	178	Std. Mean Difference (IV, Random, 95% CI)	-0.81 [-1.12, -0.50]
1.3.1 POFA (higher=better)	1	49	Std. Mean Difference (IV, Random, 95% CI)	-0.42 [-0.99, 0.14]
1.3.2 Emotion perception (higher=better)	1	38	Std. Mean Difference (IV, Random, 95% CI)	-1.00 [-1.68, -0.32]
1.3.3 Emotion Recognition Test (ERT) contextual recognition (CR) subscale (higher=better)	1	18	Std. Mean Difference (IV, Random, 95% CI)	-1.44 [-2.51, -0.37]
1.3.4 Emotion discrimination task (higher=better)	1	20	Std. Mean Difference (IV, Random, 95% CI)	-0.59 [-1.49, 0.31]
1.3.5 Pictures of Facial Affect (PFA) (higher=better)	1	53	Std. Mean Difference (IV, Random, 95% CI)	-0.99 [-1.56, -0.41]
1.4 Emotion processing/Emotion perception (FEIT) higher=better, longest FU	1	39	Mean Difference (IV, Random, 95% CI)	-2.65 [-4.52, -0.78]
1.5 Social function, end of treatment	4	178	Std. Mean Difference (IV, Random, 95% CI)	-0.02 [-0.32, 0.27]
1.5.1 SFS Prosocial (higher=better)	1	31	Std. Mean Difference (IV, Random, 95% CI)	-0.10 [-0.81, 0.62]
1.5.8 VSSS (higher prob. better)	1	70	Std. Mean Difference (IV, Random, 95% CI)	0.10 [-0.37, 0.57]
1.5.9 GSFS (higher=better)	1	63	Std. Mean Difference (IV, Random, 95% CI)	-0.21 [-0.70, 0.29]
1.5.10 Whodas2 (lower=better)	1	14	Std. Mean Difference (IV, Random, 95% CI)	0.35 [-0.71, 1.41]
1.6 Social function Longest FU (min 4-6 mo)	4	200	Std. Mean Difference (IV, Random, 95% CI)	-0.54 [-1.04, -0.04]
1.6.1 SFS Prosocial (higher=better)	1	31	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.59, 0.84]
1.6.2 VSSS (higher prob. better)	1	70	Std. Mean Difference (IV, Random, 95% CI)	-0.60 [-1.08, -0.12]
1.6.3 GSFS (higher=better)	1	60	Std. Mean Difference (IV, Random, 95% CI)	-0.37 [-0.88, 0.14]

1.6.9 PSP (higher=better)	1	39	Std. Mean Difference (IV, Random, 95% CI)	-1.33 [-2.04, -0.63]
1.7 Symptomatic relapse	3	238	Risk Ratio (IV, Random, 95% CI)	0.75 [0.45, 1.24]
1.8 Social perception, End of treatment	2	77	Std. Mean Difference (IV, Random, 95% CI)	-0.06 [-0.51, 0.38]
1.8.2 EPS (higher=better)	1	14	Std. Mean Difference (IV, Random, 95% CI)	-0.19 [-1.24, 0.86]
1.8.3 Social Inference (TASIT) (higher=better)	1	63	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.53, 0.46]
1.9 Symptoms, end of treatment	6	266	Std. Mean Difference (IV, Random, 95% CI)	-0.08 [-0.39, 0.22]
1.9.1 totalscore PANNS	4	156	Std. Mean Difference (IV, Random, 95% CI)	-0.09 [-0.40, 0.23]
1.9.3 totalscore BPRS	2	110	Std. Mean Difference (IV, Random, 95% CI)	-0.17 [-1.11, 0.76]
1.10 QoL, end of treatment (higher=better)	5	204	Std. Mean Difference (IV, Random, 95% CI)	-0.49 [-0.98, 0.01]
1.10.1 QoL Social Scale	1	63	Std. Mean Difference (IV, Random, 95% CI)	-0.09 [-0.58, 0.41]
1.10.2 WHOQoL Soc	1	38	Std. Mean Difference (IV, Random, 95% CI)	-0.50 [-1.15, 0.14]
1.10.3 SF-36 Mental Health	1	31	Std. Mean Difference (IV, Random, 95% CI)	-1.65 [-2.49, -0.81]
1.10.4 QLS wellbeing	2	72	Std. Mean Difference (IV, Random, 95% CI)	-0.25 [-0.72, 0.22]
1.11 Symptomatic remitted	0		Risk Ratio (IV, Fixed, 95% CI)	No totals
1.12 Days at hospital	0	0	Mean Difference (IV, Fixed, 95% CI)	Not estimable
1.13 Social functioning Scale (higher=better), end of treatment	1	186	Std. Mean Difference (IV, Random, 95% CI)	-0.43 [-0.78, -0.09]
1.13.1 SFS Prosocial	1	31	Std. Mean Difference (IV, Random, 95% CI)	-0.10 [-0.81, 0.62]
1.13.3 SFS withdrawal	1	31	Std. Mean Difference (IV, Random, 95% CI)	-0.74 [-1.48, 0.00]
1.13.4 SFS interpersonal_C	1	31	Std. Mean Difference (IV, Random, 95% CI)	-1.11 [-1.88, -0.33]
1.13.5 SFS Independence	1	31	Std. Mean Difference (IV, Random, 95% CI)	-0.33 [-1.04, 0.39]
1.13.6 SFS Competence	1	31	Std. Mean Difference (IV, Random, 95% CI)	0.08 [-0.63, 0.79]
1.13.7 SFS Recreation	1	31	Std. Mean Difference (IV, Random, 95% CI)	-0.51 [-1.24, 0.21]
1.14 Social function Scale (higher=better), Longest FU (min 4-6 mo)	1	186	Std. Mean Difference (IV, Random, 95% CI)	-0.29 [-0.63, 0.05]
1.14.4 SFS Prosocial	1	31	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.59, 0.84]
1.14.5 SFS Interpersonal_C	1	31	Std. Mean Difference (IV, Random, 95% CI)	-0.46 [-1.18, 0.27]
1.14.6 SFS Independence	1	31	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.75, 0.67]
1.14.7 SFS Competence	1	31	Std. Mean Difference (IV, Random, 95% CI)	0.14 [-0.58, 0.85]
1.14.8 SFS Recreation	1	31	Std. Mean Difference (IV, Random, 95% CI)	-0.83 [-1.58, -0.09]
1.14.9 SFS withdrawal	1	31	Std. Mean Difference (IV, Random, 95% CI)	-0.72 [-1.46, 0.02]

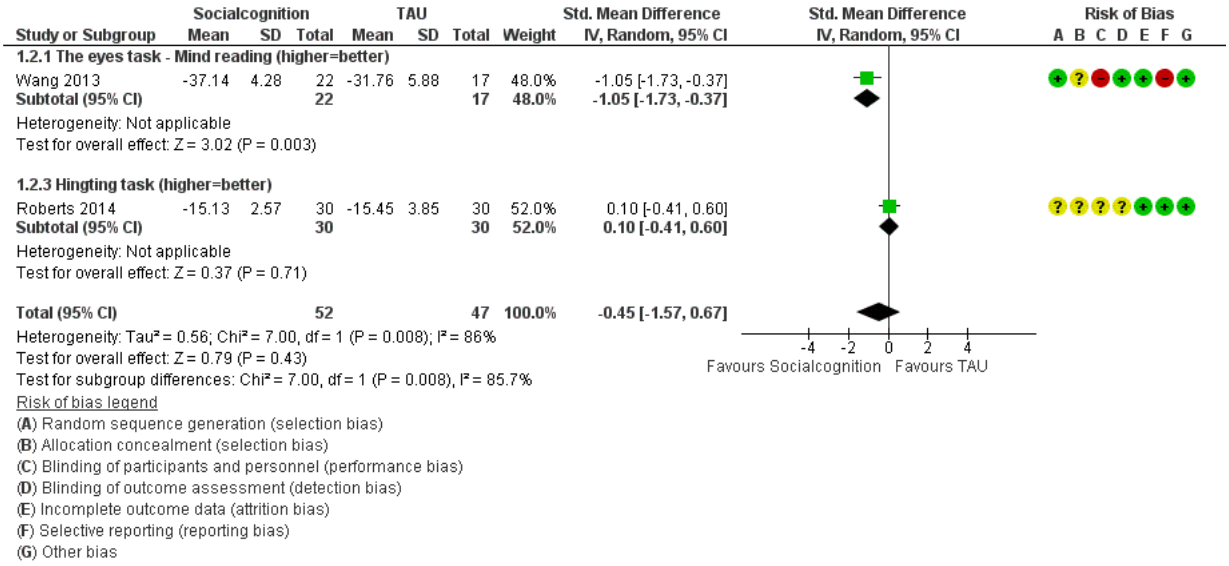
Figures

Figure 1 (Analysis 1.1)



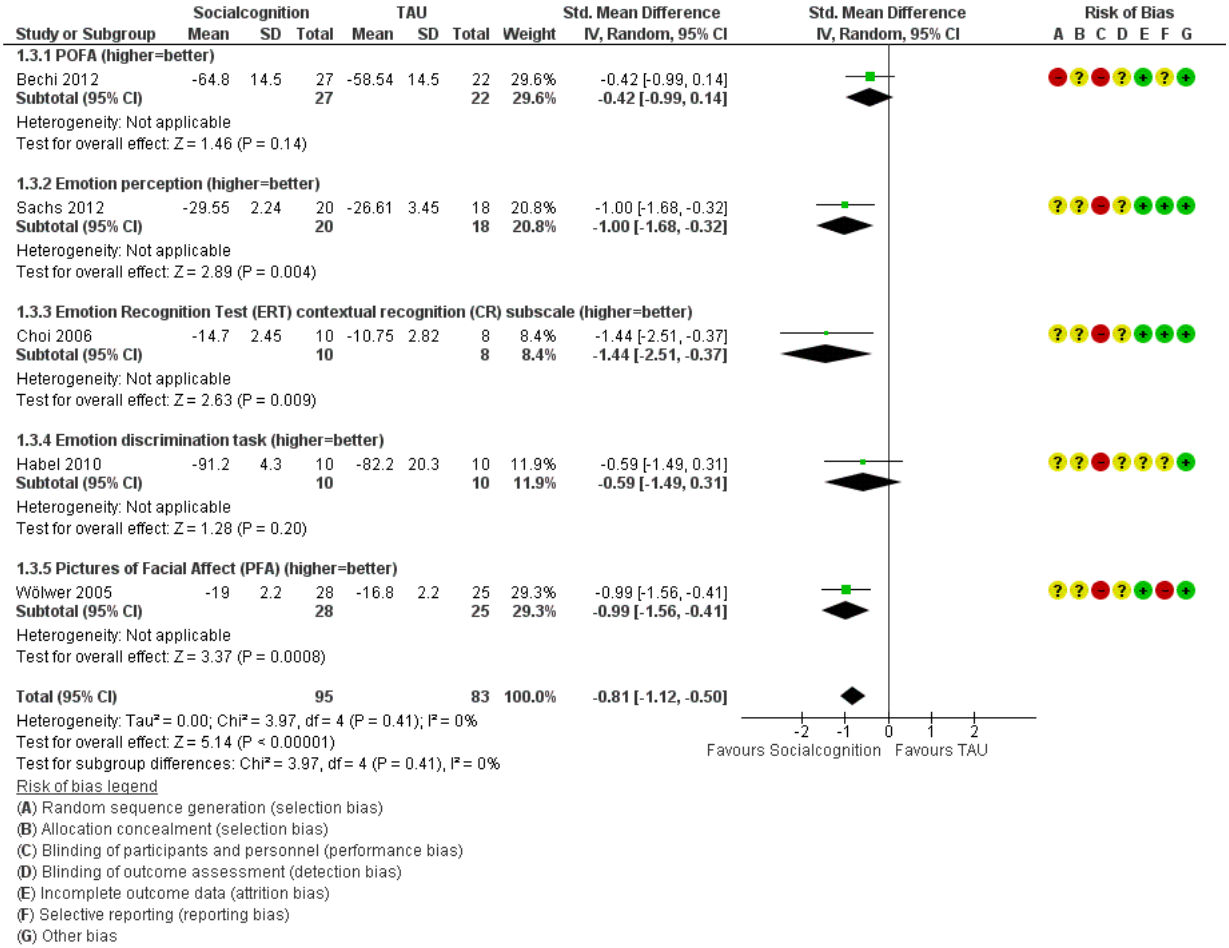
Forest plot of comparison: 1 Socialcognition vs TAU, outcome: 1.1 Theory of mind, end of treatment.

Figure 2 (Analysis 1.2)



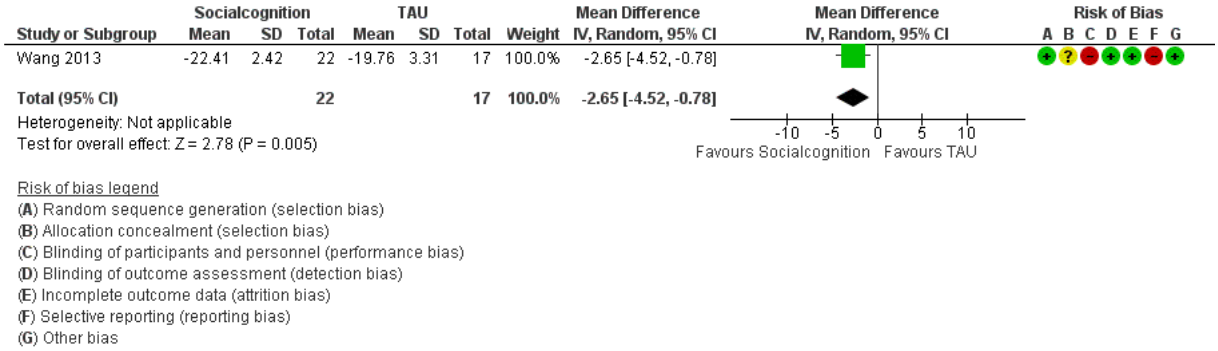
Forest plot of comparison: 1 Socialcognition vs TAU, outcome: 1.2 Theory of mind, Longest FU (min 4-6 mo).

Figure 3 (Analysis 1.3)



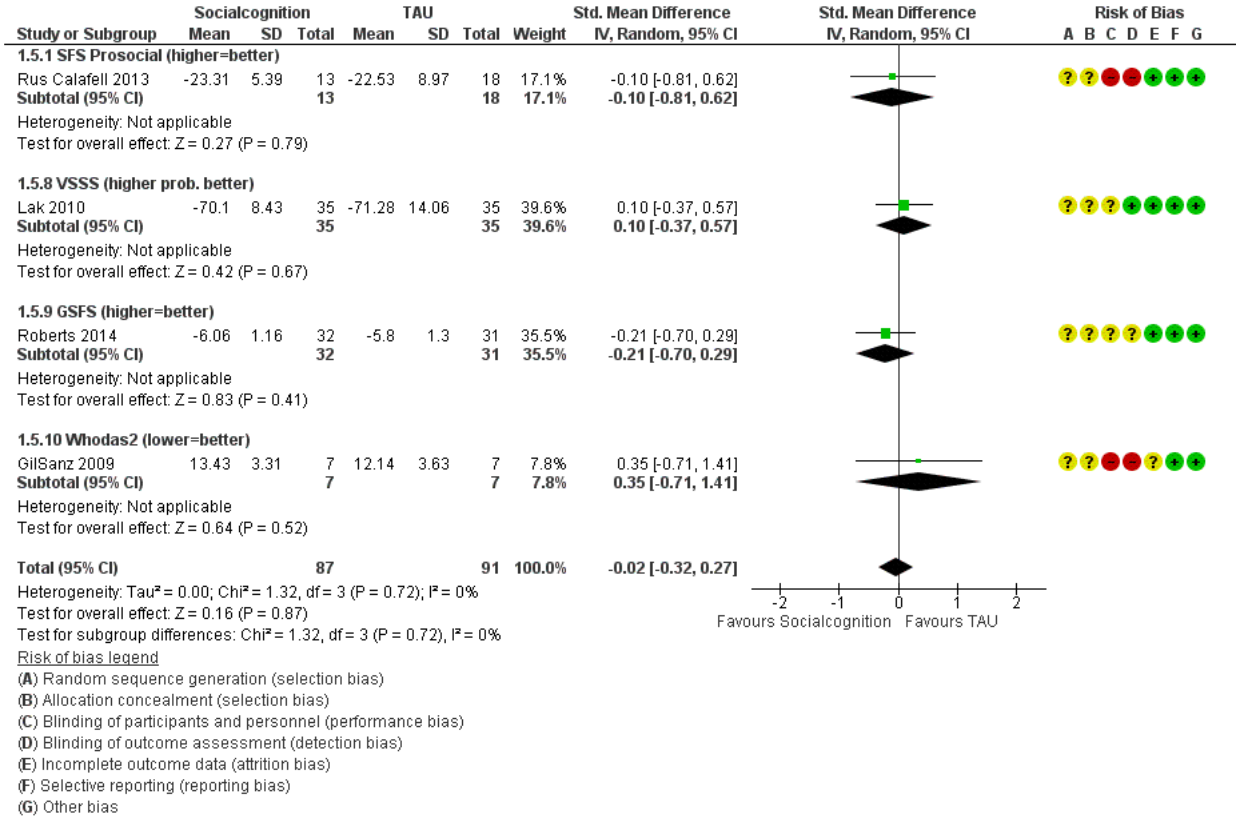
Forest plot of comparison: 1 Socialcognition vs TAU, outcome: 1.3 Emotion processing/emotion perception (higher=better), end of treatment.

Figure 4 (Analysis 1.4)



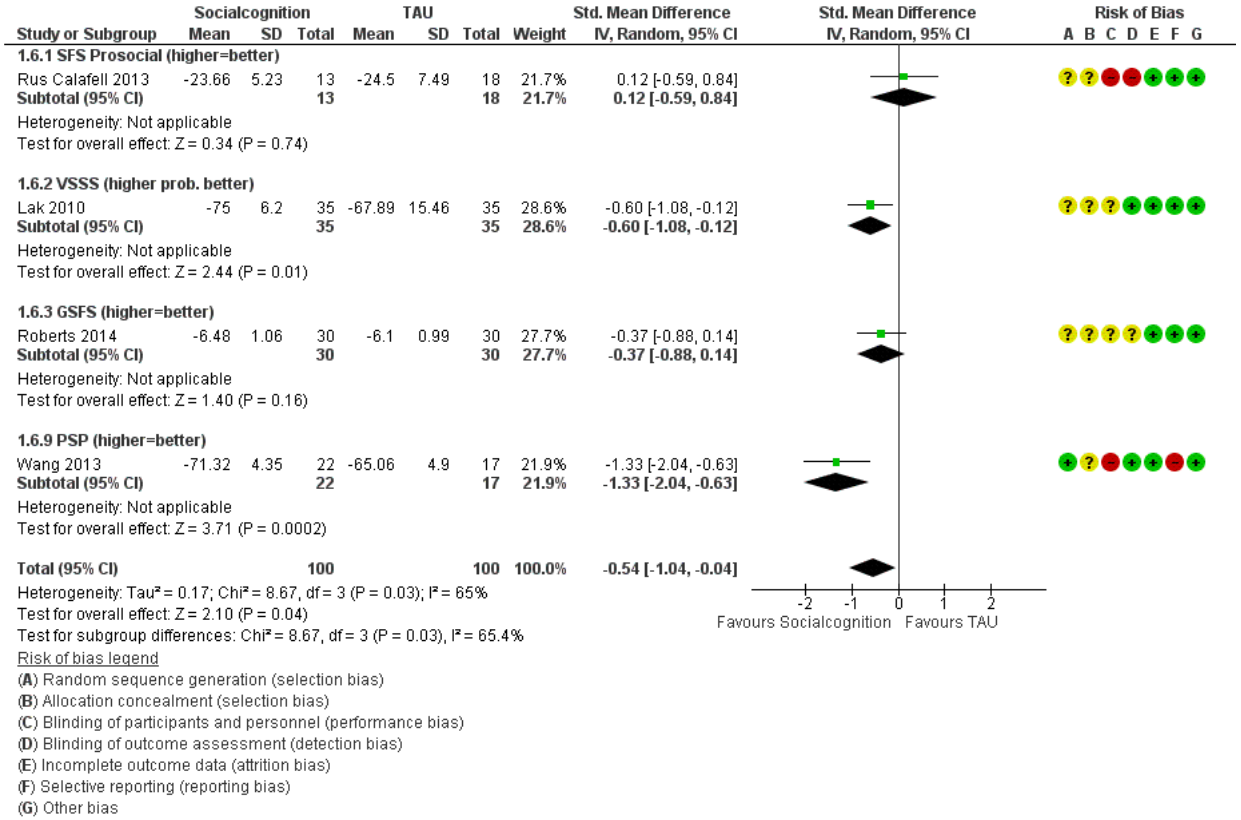
Forest plot of comparison: 1 Socialcognition vs TAU, outcome: 1.4 Emotion processing/Emotion perception (FEIT) higher=better, longest FU.

Figure 5 (Analysis 1.5)



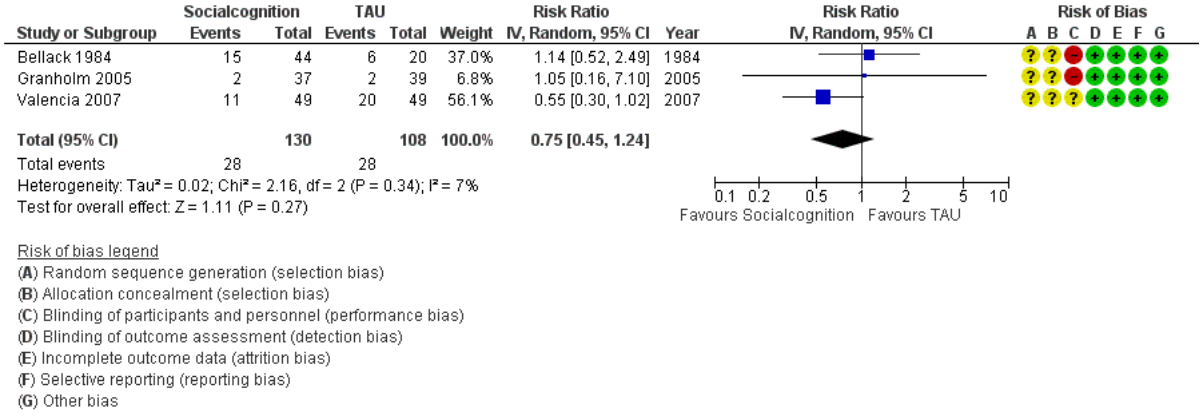
Forest plot of comparison: 1 Socialcognition vs TAU, outcome: 1.5 Social function, end of treatment.

Figure 6 (Analysis 1.6)



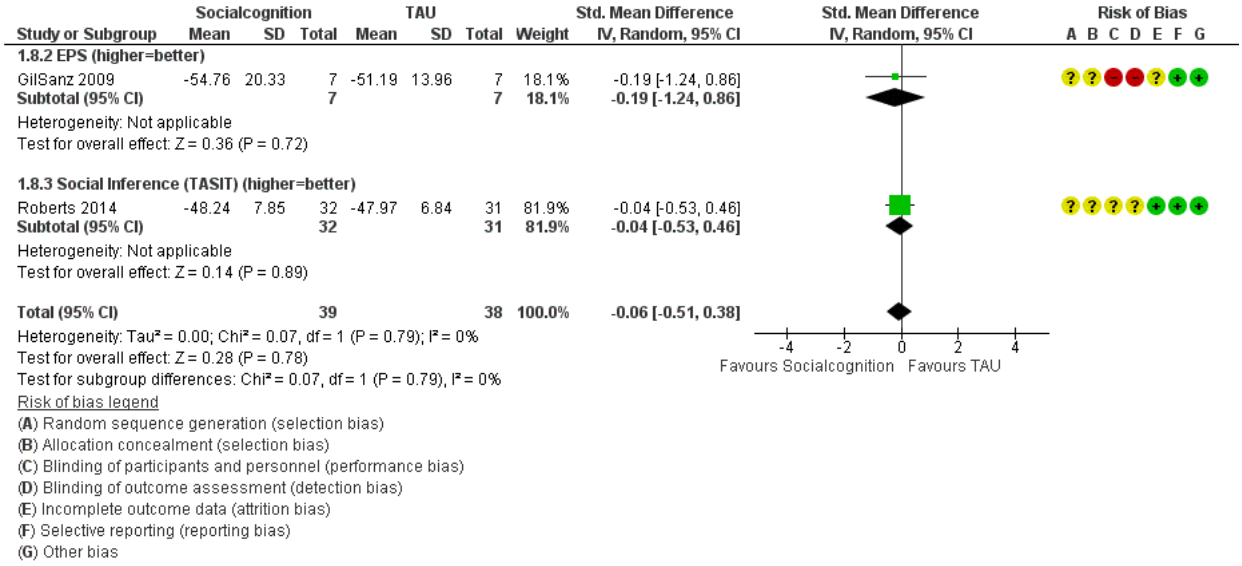
Forest plot of comparison: 1 Socialcognition vs TAU, outcome: 1.6 Social function Longest FU (min 4-6 mo).

Figure 7 (Analysis 1.7)



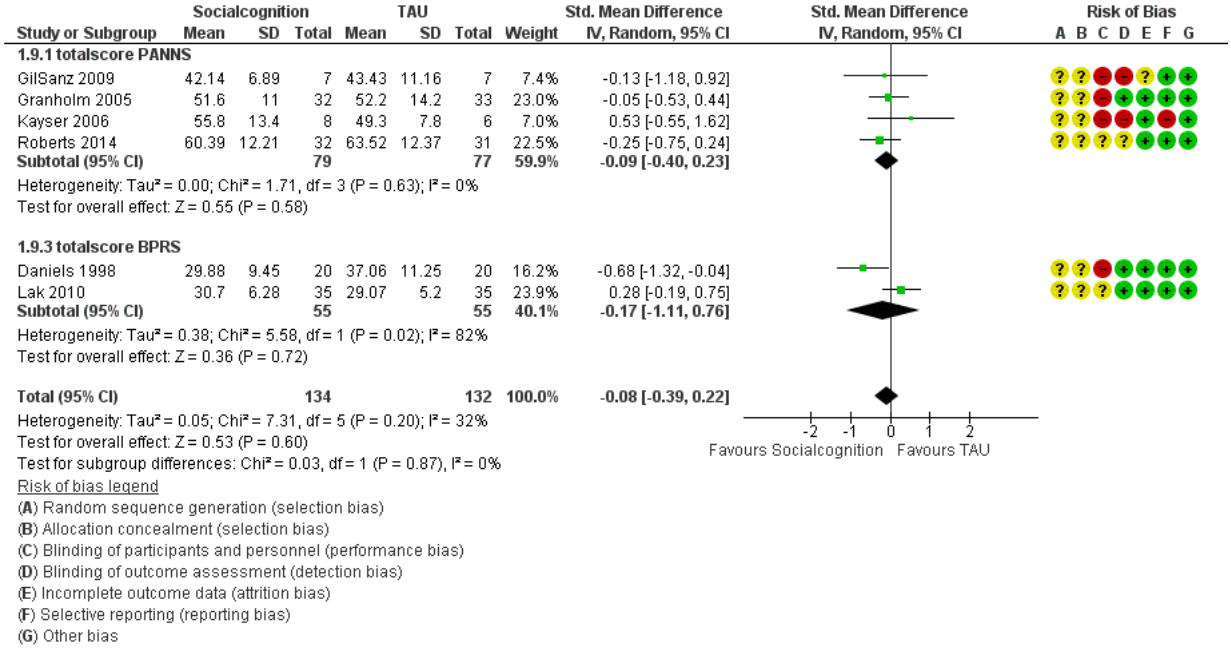
Forest plot of comparison: 1 Socialcognition vs TAU, outcome: 1.7 Symptomatic relapse.

Figure 8 (Analysis 1.8)



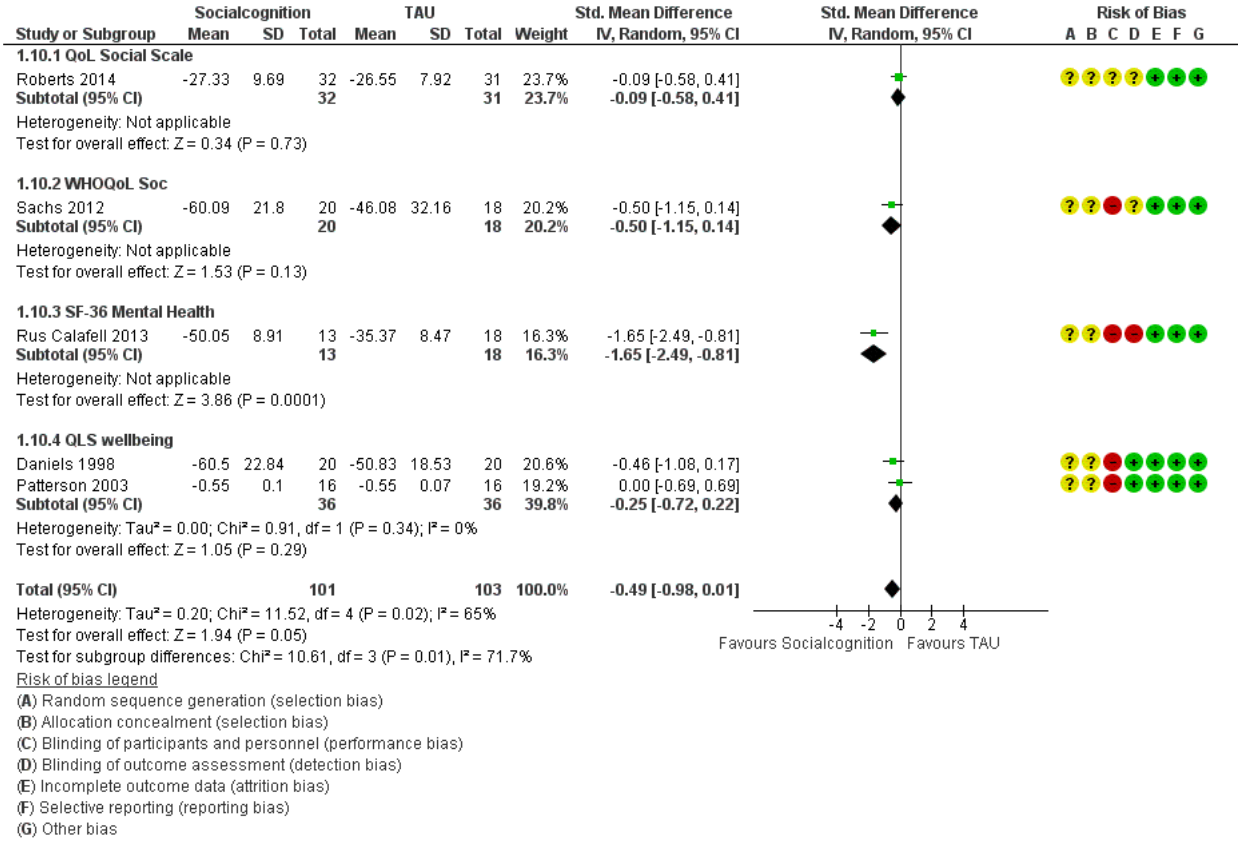
Forest plot of comparison: 1 Socialcognition vs TAU, outcome: 1.8 Social perception, End of treatment.

Figure 9 (Analysis 1.9)



Forest plot of comparison: 1 Socialcognition vs TAU, outcome: 1.9 Symptoms, end of treatment.

Figure 10 (Analysis 1.10)



Forest plot of comparison: 1 Socialcognition vs TAU, outcome: 1.10 QoL, end of treatment (higher=better).