

# **30 cbt & psychotherapy relevant abstracts** **september '14 newsletter**

(DeRubeis, Gelfand et al. 2013; Amble, Gude et al. 2014; Barber, Zilcha-Mano et al. 2014; Bowen, Witkiewitz et al. 2014; Bulli, Melli et al. 2014; Costello 2014; Cuijpers, Sijbrandij et al. 2014; Falkenström, Granström et al. 2014; Gerrits, van Oppen et al. 2014; Grant, Hotopf et al. 2014; Haller, Cramer et al. 2014; Hollon, DeRubeis et al. 2014; Hutton and Taylor 2014; Kendler and Aggen 2014; Kleim, Wilhelm et al. 2014; Li, Xiong et al. 2014; Ly, Trüschel et al. 2014; Radkowsky, McARDle et al. 2014; Stiles-Shields, Kwasny et al. 2014; Takayanagi, Spira et al. 2014; Takizawa, Maughan et al. 2014; Tan, Wang et al. 2014; Turner, van der Gaag et al. 2014; Unlu Ince, Riper et al. 2014; van Straten, Emmelkamp et al. 2014; van Zoonen, Buntrock et al. 2014; Veale and Roberts 2014; Vossbeck-Elsebusch, Freisfeld et al. 2014; Williams, Crane et al. 2014; Zalta, Gillihan et al. 2014)

Amble, I., T. Gude, et al. (2014). **"The effect of implementing the Outcome Questionnaire-45.2 feedback system in Norway: A multisite randomized clinical trial in a naturalistic setting."** *Psychotherapy Research*: 1-9.  
<http://dx.doi.org/10.1080/10503307.2014.928756>

It has been claimed that the monitoring of ongoing psychotherapy is of crucial importance for improving the quality of mental health care. This study investigated the effect of using the Norwegian version of the patient feedback system OQ-Analyst using the Outcome Questionnaire-45.2. Patients from six psychiatric clinics in Southern Norway (N = 259) were randomized to feedback (FB) or no feedback (NFB). The main effect of feedback was statistically significant ( $p = .027$ ), corroborating the hypothesis that feedback would improve the quality of services, although the size of the effect was small to moderate ( $d = 0.32$ ). The benefits of feedback have to be considered against the costs of implementation.

Barber, J. P., S. Zilcha-Mano, et al. (2014). **"The associations among improvement and alliance expectations, alliance during treatment, and treatment outcome for major depressive disorder."** *Psychotherapy Research* 24(3): 257-268.  
<http://dx.doi.org/10.1080/10503307.2013.871080>

Objective: To examine the associations between treatment/outcome expectations, alliance before and during treatment, and the impact of alliance on symptomatic improvement. Methods: One hundred and fifty-three depressed patients randomized to dynamic supportive-expressive psychotherapy (SET), antidepressant medication (ADM) or placebo (PBO) + clinical management completed ratings of treatment expectations, therapeutic alliance (CALPAS, WAI-S), and depressive symptoms (HAM-D). Results: Pretreatment expectations of the therapeutic alliance were significantly related to alliance later in therapy but did not differ across treatments and did not predict outcome. Alliance development over time differed between treatments; it increased more in SET than in PBO. After controlling for prior symptom improvement, early alliance predicted subsequent depression change. Conclusions: Expectations of alliance and of treatment outcome/improvement, measured prior to treatment onset, predicted subsequent alliance.

Bowen, S., K. Witkiewitz, et al. (2014). **"Relative efficacy of mindfulness-based relapse prevention, standard relapse prevention, and treatment as usual for substance use disorders: A randomized clinical trial."** *JAMA Psychiatry* 71(5): 547-556. <http://dx.doi.org/10.1001/jamapsychiatry.2013.4546>

Importance Relapse is highly prevalent following substance abuse treatments, highlighting the need for improved aftercare interventions. Mindfulness-based relapse prevention (MBRP), a group-based psychosocial aftercare, integrates evidence-based practices from mindfulness-based interventions and cognitive-behavioral relapse prevention (RP) approaches. Objective To evaluate the long-term efficacy of MBRP in reducing relapse compared with RP and treatment as usual (TAU [12-step programming and psychoeducation]) during a 12-month follow-up period. Design, Setting, and Participants Between October 2009 and July 2012, a total of 286 eligible individuals who successfully completed initial treatment for substance use disorders at a private, nonprofit treatment facility were randomized to MBRP, RP, or TAU aftercare and monitored for 12 months. Participants medically cleared for continuing care were aged 18 to 70 years; 71.5% were male and 42.1% were of ethnic/racial minority. Interventions Participants were randomly assigned to 8 weekly group sessions of MBRP, cognitive-behavioral RP, or TAU. Main Outcomes and Measures Primary outcomes included relapse to drug use and heavy drinking as well as frequency of substance use in the past 90 days. Variables were assessed at baseline and at 3-, 6-, and 12-month follow-up points. Measures used included self-report of relapse and urinalysis drug and alcohol screenings. Results Compared with TAU, participants assigned to MBRP and RP reported significantly lower risk of relapse to substance use and heavy drinking and, among those who used substances, significantly fewer days of substance use and heavy drinking at the 6-month follow-up. Cognitive-behavioral RP showed an advantage over MBRP in time to first drug use. At the 12-month follow-up, MBRP participants reported significantly fewer days of substance use and significantly decreased heavy drinking compared with RP and TAU. Conclusions and Relevance For individuals in aftercare following initial treatment for substance use disorders, RP and MBRP, compared with TAU, produced significantly reduced relapse risk to drug use and heavy drinking. Relapse prevention delayed time to first drug use at 6-month follow-up, with MBRP and RP participants who used alcohol also reporting significantly fewer heavy drinking days compared with TAU participants. At 12-month follow-up, MBRP offered added benefit over RP and TAU in reducing drug use and heavy drinking. Targeted mindfulness practices may support long-term outcomes by strengthening the ability to monitor and skillfully cope with discomfort associated with craving or negative affect, thus supporting long-term outcomes.

Bulli, F., G. Melli, et al. (2014). **"Hoarding behaviour in an Italian non-clinical sample."** *Behavioural and Cognitive Psychotherapy* 42(03): 297-311. <http://dx.doi.org/10.1017/S1352465812001105>

Background: Hoarding is associated with significant impairment. Although traditionally considered as a symptom of obsessive-compulsive disorder (OCD), some authors have proposed that pathological hoarding could be considered as a stand alone condition. The prevalence of pathological hoarding behaviour has been shown to be high in some countries, but little is known about the prevalence and correlates of hoarding in the non-clinical population in Italy. Method: We studied the prevalence of self-reported hoarding behaviour using the Italian version of the Saving Inventory-Revised, as well as the association between hoarding and various clinical correlates, including obsessive-compulsive symptoms, compulsive buying, anxiety, and depression. Results: The prevalence of pathological hoarding behaviour in two studies was between 3.7 and 6.0%. No differences were found between hoarding and non-hoarding participants with regard to gender, age, marital status, level of education, and employment status. Significant correlations were found between compulsive hoarding and obsessive-compulsive symptoms and also between hoarding and a measure of compulsive buying, even after controlling for anxiety and depressive symptoms. Conclusions: These results indicate that pathological hoarding may also be prevalent in Italy and highlight the need for further epidemiological studies using validated instruments to assess hoarding disorder.

Costello, E. J. (2014). **"Adult outcomes of childhood bullying victimization."** *American Journal of Psychiatry* 171(7): 709-711. <http://dx.doi.org/10.1176/appi.ajp.2014.14040466>

In "Tom Brown's School Days" (1) the evil bully Henry Flashman roasts young Tom Brown in front of the great fire in the Rugby school common room until Tom's trousers are seared onto his thighs. Flashman is soon expelled from Rugby—but for drunkenness, not for bullying. He goes on to become Sir Harry Paget Flashman, VC, KCB, KCIE, an "illustrious Victorian soldier" (according to Wikipedia) and the hero of a dozen novels. Thomas Hughes, the early Victorian author of the Tom Brown stories, has Tom go to Oxford, fall in love, and come to no harm from his experiences at Flashman's hands. In this, Hughes's attitude is one held by most parents and teachers until quite recently. As part of the process of growing up to be "a brave, helpful, truth-telling Englishman, and a gentleman" (p. 69), being bullied is inevitable if not actually a good thing. The Arseneault group (Takizawa et al. [2]) brings this Victorian view of bullying up to date. They use data from a 50-year-old study to document the adult consequences of being bullied as a child. Parents of a representative birth cohort of British children born in 1958, interviewed when their child was 7 years old, and again at 11, reported whether their child was bullied by other children never, sometimes, or frequently. After adequate controls for attrition and potential confounds, answers to this single question predicted many kinds of poor biopsychosocial functioning decades later: psychological distress at ages 23 and 50, depression at age 45, poor physical health at ages 23 and 50, and poorer cognitive function at age 50. It is worth noting that these are the ages at which these variables were measured; absence of effects at other ages means that variables were not measured, not that the results were nonsignificant. So bullying predicts poorer functioning up to 40 years later. But how much does this matter in real-world terms? The authors have tested this by comparing the effects of bullying to those of other childhood problems known to bode ill for adult functioning: placement in public or substitute care; unattractive physical appearance; and being in the worst quartile on a scale of poor parenting, physical or sexual abuse, poverty, and parental mental illness or drug problems. The risk of problems in adulthood that were created by bullying was of the same magnitude in each case. Furthermore, the outcomes remained significant after controlling for a wide range of correlated risks.

Cuijpers, P., M. Sijbrandij, et al. (2014). **"Psychological treatment of generalized anxiety disorder: A meta-analysis."** *Clin Psychol Rev* 34(2): 130-140. <http://www.ncbi.nlm.nih.gov/pubmed/24487344>

Recent years have seen a near-doubling of the number of studies examining the effects of psychotherapies for generalized anxiety disorder (GAD) in adults. The present article integrates this new evidence with the older literature through a quantitative meta-analysis. A total of 41 studies (with 2132 patients meeting diagnostic criteria for GAD) were identified through systematic searches in bibliographical databases, and were included in the meta-analysis. Most studies examined the effects of cognitive behavior therapy (CBT). The majority of studies used waiting lists as control condition. The pooled effect of the 38 comparisons (from 28 studies) of psychotherapy versus a control group was large ( $g=0.84$ ; 95% CI: 0.71-0.97) with low to moderate heterogeneity. The effects based on self-report measures were somewhat lower than those based on clinician-rated instruments. The effects on depression were also large ( $g=0.71$ ; 95% CI: 0.59-0.82). There were some indications for publication bias. The number of studies comparing CBT with other psychotherapies (e.g., applied relaxation) or pharmacotherapy was too small to draw conclusions about comparative effectiveness or the long-term effects. There were some indications that CBT was also effective at follow-up and that CBT was more effective than applied relaxation in the longer term.

DeRubeis, R. J., L. A. Gelfand, et al. (2013). **"Understanding processes of change: How some patients reveal more than others – and some groups of therapists less – about what matters in psychotherapy."** *Psychotherapy Research* 24(3): 419-428. <http://dx.doi.org/10.1080/10503307.2013.838654>

Objective: We identify difficulties researchers encounter in psychotherapy process-outcome investigations, and we describe several limitations of the popular 'variance accounted for' approach to understanding the effects of psychotherapy. Methods & Results: Using data simulations, we show how the expected correlation between an excellent measure of therapy quality and outcome would be surprisingly small (approximately .25) under conditions likely to be common in psychotherapy research. Even when we modeled conditions designed to increase the likelihood that strong process-outcome relationships would be observed, we found that the expected correlations were still only in the modest range (.38-.51). Conclusions: We discuss the implications of our analysis for the interpretation of process-outcome findings as well as for design considerations in future investigations.

Falkenström, F., F. Granström, et al. (2014). **"Working alliance predicts psychotherapy outcome even while controlling for prior symptom improvement."** *Psychotherapy Research* 24(2): 146-159. <http://dx.doi.org/10.1080/10503307.2013.847985>

Abstract Objective: Although the working alliance as been found to be a robust predictor of psychotherapy outcome, critics have questioned the causal status of this effect. Specifically, the effect of the alliance may be confounded with the effect of prior symptom improvement. The objective of the present study was to test this possibility. Method: A large dataset from primary care psychotherapy was used to study relationships between alliance and outcome using piecewise multilevel path analysis. Results: Initial symptom level and symptom change up to session three predicted the alliance at session three. Working alliance significantly predicted symptom change rate from session three to termination, even while controlling for several possible confounds. Conclusions: The alliance predicts outcome over and above the effect of prior symptom improvement, supporting a reciprocal influence model of the relationship between alliance and symptom change.

Gerrits, M., P. van Oppen, et al. (2014). **"Pain, not chronic disease, is associated with the recurrence of depressive and anxiety disorders."** *BMC Psychiatry* 14(1): 187. <http://www.biomedcentral.com/1471-244X/14/187>

(Available in free full text) BACKGROUND: Studies suggest that poor physical health might be associated with increased depression and anxiety recurrence. The objectives of this study were to determine whether specific chronic diseases and pain characteristics are associated with depression and anxiety recurrence and to examine whether such associations are mediated by subthreshold depressive or anxiety symptoms. METHODS: 1122 individuals with remitted depressive or anxiety disorder (Netherlands Study of Depression and Anxiety) were followed up for a period of four years. The impact of specific chronic diseases and pain characteristics on recurrence was assessed using Cox regression and mediation analyses. RESULTS: Chronic diseases were not associated with recurrence. Neck (HR 1.45,  $p<.01$ ), chest (HR 1.65,  $p<.01$ ), abdominal (HR 1.52,  $p<.01$ ) pain, an increase in the number of pain locations (HR 1.10,  $p<.01$ ) and pain severity (HR 1.18,  $p=.01$ ) were associated with an increased risk of depression recurrence but not anxiety. Subthreshold depressive symptoms mediated the associations between pain and depression recurrence. CONCLUSIONS: Pain, not chronic disease, increases the likelihood of depression recurrence, largely through its association with aggravated subthreshold depressive symptoms. These findings support the idea of the existence of a mutually reinforcing mechanism between pain and depression and are indicative of the importance of shedding light on neurobiological links in order to optimize pain and depression management.

Grant, N., M. Hotopf, et al. (2014). **"Predicting outcome following psychological therapy in iapt (prompt): A naturalistic project protocol."** *BMC Psychiatry* 14(1): 170. <http://www.biomedcentral.com/1471-244X/14/170>

**BACKGROUND:** Depression and anxiety are highly prevalent and represent a significant and well described public health burden. Whilst first line psychological treatments are effective for nearly half of attenders, there remain a substantial number of patients who do not benefit. The main objective of the present project is to establish an infrastructure platform for the identification of factors that predict lack of response to psychological treatment for depression and anxiety, in order to better target treatments as well as to support translational and experimental medicine research in mood and anxiety disorders. **METHODS/DESIGN:** Predicting outcome following psychological therapy in IAPT (PROMPT) is a naturalistic observational project that began patient recruitment in January 2014. The project is currently taking place in Southwark Psychological Therapies Service, an Improving Access to Psychological Therapies (IAPT) service currently provided by the South London and Maudsley NHS Foundation Trust (SLaM). However, the aim is to roll-out the project across other IAPT services. Participants are approached before beginning treatment and offered a baseline interview whilst they are waiting for therapy to begin. This allows us to test for relationships between predictor variables and patient outcome measures. At the baseline interview, participants complete a diagnostic interview; are asked to give blood and hair samples for relevant biomarkers, and complete psychological and social questionnaire measures. Participants then complete their psychological therapy as offered by Southwark Psychological Therapies Service. Response to psychological therapy will be measured using standard IAPT outcome data, which are routinely collected at each appointment. **DISCUSSION:** This project addresses a need to understand treatment response rates in primary care psychological therapy services for those with depression and/or anxiety. Measurement of a range of predictor variables allows for the detection of bio-psycho-social factors which may be relevant for treatment outcome. This will enable future clinical decision making to be based on the individual needs of the patient in an evidence-based manner. Moreover, the identification of individuals who fail to improve following therapy delivered by IAPT services could be utilised for the development of novel interventions.

Haller, H., H. Cramer, et al. (2014). **"The prevalence and burden of subthreshold generalized anxiety disorder: A systematic review."** BMC Psychiatry 14(1): 128. <http://www.biomedcentral.com/1471-244X/14/128>

(Free full text available) **BACKGROUND:**To review the prevalence and impact of generalized anxiety disorder (GAD) below the diagnostic threshold and explore its treatment needs in times of scarce healthcare resources. **METHODS:**A systematic literature search was conducted using PUBMED/MEDLINE, PSYCINFO, EMBASE and reference lists to identify epidemiological studies of subthreshold GAD, i.e. GAD symptoms that do not reach the current thresholds of DSM-III-R, DSM-IV or ICD-10. Quality of all included studies was assessed and median prevalences of subthreshold GAD were calculated for different subpopulations. **RESULTS:**Inclusion criteria led to 15 high-quality and 3 low-quality epidemiological studies being reviewed. Whilst GAD proved to be a common mental health disorder, the prevalence for subthreshold GAD was twice that for the full syndrome. Subthreshold GAD is typically persistent, causing considerably more suffering and impairment in psychosocial and work functioning, benzodiazepine and primary health care use, than in non-anxious individuals. Subthreshold GAD can also increase the risk of onset and worsen the course of a range of comorbid mental health, pain and somatic disorders; further increasing costs. Results are robust against bias due to low study quality. **CONCLUSIONS:**Subthreshold GAD is a common, recurrent and impairing disease with verifiable morbidity that claims significant healthcare resources. As such, it should receive additional research and clinical attention.

Hollon, S. D., R. J. DeRubeis, et al. (2014). **"Effect of cognitive therapy with antidepressant medications vs antidepressants alone on the rate of recovery in major depressive disorder: A randomized clinical trial."** JAMA Psychiatry. <http://dx.doi.org/10.1001/jamapsychiatry.2014.1054>

**Importance** Antidepressant medication (ADM) is efficacious in the treatment of depression, but not all patients achieve remission and fewer still achieve recovery with ADM alone. **Objective** To determine the effects of combining cognitive therapy (CT) with ADM vs ADM alone on remission and recovery in major depressive disorder (MDD). **Design, Setting, and Participants** A total of 452 adult outpatients with chronic or recurrent MDD participated in a trial conducted in research clinics at 3 university medical centers in the United States. The patients were randomly assigned to ADM treatment alone or CT combined with ADM treatment. Treatment was continued for up to 42 months until recovery was achieved. **Interventions** Antidepressant medication with or without CT. **Main Outcomes and Measures** Blind evaluations of recovery with a modified version of the 17-item Hamilton Rating Scale for Depression and the Longitudinal Interval Follow-up Evaluation. **Results** Combined treatment enhanced the rate of recovery vs treatment with ADM alone (72.6% vs 62.5%;  $t_{451} = 2.45$ ;  $P = .01$ ; hazard ratio [HR], 1.33; 95% CI, 1.06-1.68; number needed to treat [NNT], 10; 95% CI, 5-72). This effect was conditioned on interactions with severity ( $t_{451} = 1.97$ ;  $P = .05$ ; NNT, 5) and chronicity ( $\chi^2 = 7.46$ ;  $P = .02$ ; NNT, 6) such that the advantage for combined treatment was limited to patients with severe, nonchronic MDD (81.3% vs 51.7%;  $n = 146$ ;  $t_{145} = 3.96$ ;  $P = .001$ ; HR, 2.34; 95% CI, 1.54-3.57; NNT, 3; 95% CI, 2-5). Fewer patients dropped out of combined treatment vs ADM treatment alone (18.9% vs 26.8%;  $t_{451} = -2.04$ ;  $P = .04$ ; HR, 0.66; 95% CI, 0.45-0.98). Remission rates did not differ significantly either as a main effect of treatment or as an interaction with severity or chronicity. Patients with comorbid Axis II disorders took longer to recover than did patients without comorbid Axis II disorders regardless of the condition ( $P = .01$ ). Patients who received combined treatment reported fewer serious adverse events than did patients who received ADMs alone (49 vs 71;  $P = .02$ ), largely because they experienced less time in an MDD episode. **Conclusions and Relevance** Cognitive therapy combined with ADM treatment enhances the rates of recovery from MDD relative to ADMs alone, with the effect limited to patients with severe, nonchronic depression. **Trial Registration** clinicaltrials.gov Identifier: NCT00057577

Hutton, P. and P. J. Taylor (2014). **"Cognitive behavioural therapy for psychosis prevention: A systematic review and meta-analysis."** Psychological Medicine 44(03): 449-468. <http://dx.doi.org/10.1017/S0033291713000354>

**Background** Clinical equipoise regarding preventative treatments for psychosis has encouraged the development and evaluation of psychosocial treatments, such as cognitive behavioural therapy (CBT). **Method** A systematic review and meta-analysis was conducted, examining the evidence for the effectiveness of CBT-informed treatment for preventing psychosis in people who are not taking antipsychotic medication, when compared to usual or non-specific control treatment. Included studies had to meet basic quality criteria, such as concealed and random allocation to treatment groups. **Results** Our search produced 1940 titles, out of which we found seven completed trials (six published). The relative risk (RR) of developing psychosis was reduced by more than 50% for those receiving CBT at every time point [RR at 6 months 0.47, 95% confidence interval (CI) 0.27-0.82,  $p = 0.008$  (fixed-effects only: six randomized controlled trials (RCTs),  $n = 800$ ); RR at 12 months 0.45, 95% CI 0.28-0.73,  $p = 0.001$  (six RCTs,  $n = 800$ ); RR at 18-24 months 0.41, 95% CI 0.23-0.72,  $p = 0.002$  (four RCTs,  $n = 452$ )]. Heterogeneity was low in every analysis and the results were largely robust to the risk of an unpublished 12-month study having unfavourable results. CBT was also associated with reduced subthreshold symptoms at 12 months, but not at 6 or 18-24 months. No effects on functioning, symptom-related distress or quality of life were observed. CBT was not associated with increased rates of clinical depression or social anxiety (two studies). **Conclusions** CBT-informed treatment is associated with a reduced risk of transition to psychosis at 6, 12 and 18-24 months, and reduced symptoms at 12 months. Methodological limitations and recommendations for trial reporting are discussed.

Kendler, K. S. and S. H. Aggen (2014). **"Clarifying the causal relationship in women between childhood sexual abuse and lifetime major depression."** *Psychological Medicine* 44(06): 1213-1221. <http://dx.doi.org/10.1017/S0033291713001797>

Background Childhood sexual abuse (CSA) is strongly associated with risk for major depression (MD) but the degree to which this association is causal remains uncertain. Method We applied structural equation modeling using the Mplus program to 1493 longitudinally assessed female twins from the Virginia Adult Twin Study of Psychiatric and Substance Use Disorders. Results Our model included (i) retrospective self- and co-twin reports on CSA, (ii) major potentially confounding covariates, (iii) assessment of lifetime history of MD at two separate interviews, and (iv) mood-congruent recall (implemented by allowing current depressive symptoms to predict reporting of CSA). In a model with only measurement error, CSA explained 9.6% of MD. Including four key covariates reduced the variance explained to 5.3%, with the largest effects found for parental loss and low parental warmth. Adding the effect of mood-congruent recall to a final well-fitting model reduced the percentage of variance explained in lifetime MD (LTMD) by CSA to 4.4%. In this model, current depressive symptoms significantly predicted recall of CSA. Conclusions In a model correcting for measurement error, confounding and the impact of mood-congruent recall, CSA remains substantially associated with the risk for LTMD in women. These findings strongly suggest, but do not prove, that this association is causal, and are consistent with previous results in this sample using a co-twin control design, but also indicate that more than half of the uncorrected CSA-MD association is probably not causal. Traumatic life experiences contribute substantially to the risk for LTMD.

Kleim, B., F. H. Wilhelm, et al. (2014). **"Sleep enhances exposure therapy."** *Psychological Medicine* 44(07): 1511-1519. <http://dx.doi.org/10.1017/S0033291713001748>

Background Sleep benefits memory consolidation. Here, we tested the beneficial effect of sleep on memory consolidation following exposure psychotherapy of phobic anxiety. Method A total of 40 individuals afflicted with spider phobia according to DSM-IV underwent a one-session virtual reality exposure treatment and either slept for 90 min or stayed awake afterwards. Results Sleep following exposure therapy compared with wakefulness led to better reductions in self-reported fear ( $p = 0.045$ ,  $d = 0.47$ ) and catastrophic spider-related cognitions ( $p = 0.026$ ,  $d = 0.53$ ) during approaching a live spider, both tested after 1 week. Both reductions were associated with greater percentages of stage 2 sleep. Conclusions Our results indicate that sleep following successful psychotherapy, such as exposure therapy, improves therapeutic effectiveness, possibly by strengthening new non-fearful memory traces established during therapy. These findings offer an important non-invasive alternative to recent attempts to facilitate therapeutic memory extinction and consolidation processes with pharmacological or behavioral interventions.

Li, L., L. Xiong, et al. (2014). **"Cognitive-behavioral therapy for irritable bowel syndrome: A meta-analysis."** *Journal of Psychosomatic Research* 77(1): 1-12. <http://www.sciencedirect.com/science/article/pii/S0022399914000750>

Objective To establish whether cognitive behavioral therapy (CBT) improves the bowel symptoms, quality of life (QOL) and psychological states of irritable bowel syndrome (IBS) patients. Methods Randomized controlled trials (RCTs) of CBT for adult patients with IBS were searched by using PubMed, Scopus and Web of Science. The standardized mean difference (SMD) with 95% confidence intervals (CIs) of the evidence-based outcome measures of the IBS bowel symptoms, QOL and psychological states at post-treatment and follow-up was calculated. Prespecified subgroup analysis was performed. Results Eighteen RCTs satisfied our inclusion criteria. In the subgroup analyses, CBT was more effective in reducing IBS bowel symptoms, QOL and psychological states than waiting list controls at the end of the intervention and short-term follow-up. When compared with controls of basic support and medical treatment, the effect sizes were found to favor CBT for the improvement of IBS bowel symptoms at post-treatment and short-term follow-up, but CBT was not superior to controls in improving QOL and psychological states. When comparing CBT with other psychological controls, the effect sizes were almost non-significant. Conclusions For IBS patients, CBT was superior to waiting list, basic support or medical treatment at the end of treatment but not superior to other psychological treatments. The meta-analysis might be limited by the heterogeneities and small sample sizes of the included studies.

Ly, K. H., A. Trüschel, et al. (2014). **"Behavioural activation versus mindfulness-based guided self-help treatment administered through a smartphone application: A randomised controlled trial."** *BMJ Open* 4(1). <http://bmjopen.bmj.com/content/4/1/e003440.abstract>

(Available in free full text) Objectives Evaluating and comparing the effectiveness of two smartphone-delivered treatments: one based on behavioural activation (BA) and other on mindfulness. Design Parallel randomised controlled, open, trial. Participants were allocated using an online randomisation tool, handled by an independent person who was separate from the staff conducting the study. Setting General community, with recruitment nationally through mass media and advertisements. Participants 40 participants diagnosed with major depressive disorder received a BA treatment, and 41 participants received a mindfulness treatment. 9 participants were lost at the post-treatment. Intervention BA: An 8-week long behaviour programme administered via a smartphone application. Mindfulness: An 8-week long mindfulness programme, administered via a smartphone application. Main outcome measures The Beck Depression Inventory-II (BDI-II) and the nine-item Patient Health Questionnaire Depression Scale (PHQ-9). Results 81 participants were randomised (mean age 36.0 years (SD=10.8)) and analysed. Results showed no significant interaction effects of group and time on any of the outcome measures either from pretreatment to post-treatment or from pretreatment to the 6-month follow-up. Subgroup analyses showed that the BA treatment was more effective than the mindfulness treatment among participants with higher initial severity of depression from pretreatment to the 6-month follow-up (PHQ-9:  $F(1, 362.1)=5.2$ ,  $p<0.05$ ). In contrast, the mindfulness treatment worked better than the BA treatment among participants with lower initial severity from pretreatment to the 6-month follow-up (PHQ-9:  $F(1, 69.3)=7.7$ ,  $p<0.01$ ); BDI-II: ( $F(1, 53.60)=6.25$ ,  $p<0.05$ ). Conclusions The two interventions did not differ significantly from one another. For participants with higher severity of depression, the treatment based on BA was superior to the treatment based on mindfulness. For participants with lower initial severity, the treatment based on mindfulness worked significantly better than the treatment based on BA.

Radkovsky, A., J. J. McArdle, et al. (2014). **"Successful emotion regulation skills application predicts subsequent reduction of symptom severity during treatment of major depressive disorder."** *J Consult Clin Psychol* 82(2): 248-262. <http://www.ncbi.nlm.nih.gov/pubmed/24564219>

OBJECTIVE: Deficits in emotion regulation (ER) skills are considered a putative maintaining factor for major depressive disorder (MDD) and hence a promising target in the treatment of MDD. However, to date, the association between the successful application of arguably adaptive ER skills and changes in depressive symptom severity (DSS) has yet to be investigated over the course of treatment. Thus, the primary aim of this study was to clarify reciprocal prospective associations between successful ER skills application and DSS over the course of inpatient cognitive behavioral therapy for MDD. Additionally, we explored whether such associations would differ across specific ER skills. METHOD: We assessed successful ER skills application and DSS 4 times during the first 3 weeks of treatment in 152 inpatients (62.5% women, average age 45.6 years)

meeting criteria for MDD. We first tested whether successful skills application and depression were cross-sectionally associated by computing Pearson's correlations. Then, we utilized latent curve modeling to test whether changes in successful skills application were negatively associated with changes in DSS during treatment. Finally, we used latent change score models to clarify whether successful skills application would predict subsequent reduction of DSS. RESULTS: Cross-sectionally, successful ER skills application was associated with lower levels of DSS at all assessment times, and an increase of successful skills application during treatment was associated with a decrease of DSS. Moreover, successful overall ER skills application predicted subsequent changes in DSS (but not vice versa). Finally, strength of associations between successful application and DSS differed across specific ER skills. Among a broad range of potentially adaptive skills, only the abilities to tolerate negative emotions and to actively modify undesired emotions were significantly associated with subsequent improvement in DSS. CONCLUSIONS: Systematically enhancing health-relevant ER skills with specific interventions may help reduce DSS in patients suffering from MDD.

Stiles-Shields, C., M. J. Kwasny, et al. (2014). **"Therapeutic alliance in face-to-face and telephone-administered cognitive behavioral therapy."** *J Consult Clin Psychol* 82(2): 349-354. <http://www.ncbi.nlm.nih.gov/pubmed/24447003>

OBJECTIVE: Telephone-administered therapies have emerged as an alternative method of delivery for the treatment of depression, yet concerns persist that the use of the telephone may have a deleterious effect on therapeutic alliance. The purpose of this study was to compare therapeutic alliance in clients receiving cognitive behavioral therapy (CBT) for depression by telephone (T-CBT) or face-to-face (FtF-CBT). METHOD: We randomized 325 participants to receive 18 sessions of T-CBT or FtF-CBT. The Working Alliance Inventory (WAI) was administered at Weeks 4 and 14. Depression was measured during treatment and over 1 year posttreatment follow-up using the Hamilton Rating Scale for Depression and Patient Health Questionnaire-9. RESULTS: There were no significant differences in client or therapist WAI between T-CBT or FtF-CBT (Cohen's  $f(2)$  ranged from 0 to .013, all  $ps > .05$ ). All WAI scores predicted depression end of treatment outcomes (Cohen's  $f(2)$  ranged from .009 to .06, all  $ps < .02$ ). The relationship between the WAI and depression outcomes did not vary by treatment group (Cohen's  $f(2)$  ranged from 0 to .004,  $ps > .07$ ). The WAI did not significantly predict depression during posttreatment follow-up (all  $ps > .12$ ). CONCLUSIONS: Results from this analysis do not support the hypothesis that the use of the telephone to provide CBT reduces therapeutic alliance relative to FtF-CBT.

Takayanagi, Y., A. P. Spira, et al. (2014). **"Accuracy of reports of lifetime mental and physical disorders: Results from the Baltimore epidemiological catchment area study."** *JAMA Psychiatry* 71(3): 273-280. <http://dx.doi.org/10.1001/jamapsychiatry.2013.3579>

Importance Our understanding of how mental and physical disorders are associated and contribute to health outcomes in populations depends on accurate ascertainment of the history of these disorders. Recent studies have identified substantial discrepancies in the prevalence of mental disorders among adolescents and young adults depending on whether the estimates are based on retrospective reports or multiple assessments over time. It is unknown whether such discrepancies are also seen in midlife to late life. Furthermore, no previous studies have compared lifetime prevalence estimates of common physical disorders such as diabetes mellitus and hypertension ascertained by prospective cumulative estimates vs retrospective estimates. Objective To examine the lifetime prevalence estimates of mental and physical disorders during midlife to late life using both retrospective and cumulative evaluations. Design, Setting, and Participants Prospective population-based survey (Baltimore Epidemiologic Catchment Area Survey) with 4 waves of interviews of 1071 community residents in Baltimore, Maryland, between 1981 and 2005. Main Outcomes and Measures Lifetime prevalence of selected mental and physical disorders at wave 4 (2004-2005), according to both retrospective data and cumulative evaluations based on 4 interviews from wave 1 to wave 4. Results Retrospective evaluations substantially underestimated the lifetime prevalence of mental disorders as compared with cumulative evaluations. The respective lifetime prevalence estimates ascertained by retrospective and cumulative evaluations were 4.5% vs 13.1% for major depressive disorder, 0.6% vs 7.1% for obsessive-compulsive disorder, 2.5% vs 6.7% for panic disorder, 12.6% vs 25.3% for social phobia, 9.1% vs 25.9% for alcohol abuse or dependence, and 6.7% vs 17.6% for drug abuse or dependence. In contrast, retrospective lifetime prevalence estimates of physical disorders ascertained at wave 4 were much closer to those based on cumulative data from all 4 waves. The respective prevalence estimates ascertained by the 2 methods were 18.2% vs 20.2% for diabetes, 48.4% vs 55.4% for hypertension, 45.8% vs 54.0% for arthritis, 5.5% vs 7.2% for stroke, and 8.4% vs 10.5% for cancer. Conclusions and Relevance One-time, cross-sectional population surveys may consistently underestimate the lifetime prevalence of mental disorders. The population burden of mental disorders may therefore be substantially higher than previously appreciated.

Takizawa, R., B. Maughan, et al. (2014). **"Adult health outcomes of childhood bullying victimization: Evidence from a five-decade longitudinal British birth cohort."** *American Journal of Psychiatry* 171(7): 777-784. <http://dx.doi.org/10.1176/appi.ajp.2014.13101401>

Objective The authors examined midlife outcomes of childhood bullying victimization. Method Data were from the British National Child Development Study, a 50-year prospective cohort of births in 1 week in 1958. The authors conducted ordinal logistic and linear regressions on data from 7,771 participants whose parents reported bullying exposure at ages 7 and 11 years, and who participated in follow-up assessments between ages 23 and 50 years. Outcomes included suicidality and diagnoses of depression, anxiety disorders, and alcohol dependence at age 45; psychological distress and general health at ages 23 and 50; and cognitive functioning, socioeconomic status, social relationships, and well-being at age 50. Results Participants who were bullied in childhood had increased levels of psychological distress at ages 23 and 50. Victims of frequent bullying had higher rates of depression (odds ratio=1.95, 95% CI=1.27-2.99), anxiety disorders (odds ratio=1.65, 95% CI=1.25-2.18), and suicidality (odds ratio=2.21, 95% CI=1.47-3.31) than their nonvictimized peers. The effects were similar to those of being placed in public or substitute care and an index of multiple childhood adversities, and the effects remained significant after controlling for known correlates of bullying victimization. Childhood bullying victimization was associated with a lack of social relationships, economic hardship, and poor perceived quality of life at age 50. Conclusions Children who are bullied—and especially those who are frequently bullied—continue to be at risk for a wide range of poor social, health, and economic outcomes nearly four decades after exposure. Interventions need to reduce bullying exposure in childhood and minimize long-term effects on victims' well-being; such interventions should cast light on causal processes.

Tan, L., M.-J. Wang, et al. (2014). **"Preventing the development of depression at work: A systematic review and meta-analysis of universal interventions in the workplace."** *BMC Medicine* 12(1): 74. <http://www.biomedcentral.com/1741-7015/12/74>

(Free full text available) BACKGROUND: Depression is a major public health problem among working-age adults. The workplace is potentially an important location for interventions aimed at preventing the development of depression, but to date, the mental health impact of universal interventions in the workplace has been unclear. METHOD: A systematic search was conducted in relevant databases to identify randomized controlled trials of workplace interventions aimed at universal prevention of depression. The quality of studies was assessed using the Downs and Black checklist. A meta-analysis was performed using

results from studies of adequate methodological quality, with pooled effect size estimates obtained from a random effects model. RESULTS: Nine workplace-based randomized controlled trials (RCT) were identified. The majority of the included studies utilized cognitive behavioral therapy (CBT) techniques. The overall standardized mean difference (SMD) between the intervention and control groups was 0.16 (95% confidence interval (CI): 0.07, 0.24,  $P=0.0002$ ), indicating a small positive effect. A separate analysis using only CBT-based interventions yielded a significant SMD of 0.12 (95% CI: 0.02, 0.22,  $P=0.01$ ). CONCLUSIONS: There is good quality evidence that universally delivered workplace mental health interventions can reduce the level of depression symptoms among workers. There is more evidence for the effectiveness of CBT-based programs than other interventions. Evidence-based workplace interventions should be a key component of efforts to prevent the development of depression among adults.

Turner, D. T., M. van der Gaag, et al. (2014). **"Psychological interventions for psychosis: A meta-analysis of comparative outcome studies."** *Am J Psychiatry* 171(5): 523-538.

<http://ajp.psychiatryonline.org/article.aspx?articleid=1831621>

OBJECTIVE Meta-analyses have demonstrated the efficacy of various interventions for psychosis, and a small number of studies have compared such interventions. The aim of this study was to provide further insight into the relative efficacy of psychological interventions for psychosis. METHOD Forty-eight outcome trials comparing psychological interventions for psychosis were identified. The comparisons included 3,295 participants. Categorization of interventions resulted in six interventions being compared against other interventions pooled. Hedges'  $g$  was calculated for all comparisons. Risk of bias was assessed using four items of the Cochrane risk of bias tool, and sensitivity analyses were conducted. Researcher allegiance was assessed, and sensitivity analyses were conducted for robust significant findings. RESULTS Cognitive-behavioral therapy (CBT) was significantly more efficacious than other interventions pooled in reducing positive symptoms ( $g=0.16$ ). This finding was robust in all sensitivity analyses for risk of bias but lost significance in sensitivity analyses for researcher allegiance, which suffered from low power. Social skills training was significantly more efficacious in reducing negative symptoms ( $g=0.27$ ). This finding was robust in sensitivity analyses for risk of bias and researcher allegiance. Significant findings for CBT, social skills training, and cognitive remediation for overall symptoms were not robust after sensitivity analyses. CBT was significantly more efficacious when compared directly with befriending for overall symptoms ( $g=0.42$ ) and supportive counseling for positive symptoms ( $g=0.23$ ). CONCLUSIONS There are small but reliable differences in efficacy between psychological interventions for psychosis, and they occur in a pattern consistent with the specific factors of particular interventions.

Unlu Ince, B., H. Riper, et al. (2014). **"The effects of psychotherapy on depression among racial-ethnic minority groups: A meta-regression analysis."** *Psychiatr Serv* 65(5): 612-617.

<http://ps.psychiatryonline.org/article.aspx?articleid=1831969>

OBJECTIVE Several psychotherapies have been found to be effective in the treatment of depression among adults. However, little is known about whether effectiveness differs by racial-ethnic minority group. The authors conducted a meta-analysis to assess the relative effects of psychotherapy for persons from racial-ethnic minority groups, by examining whether a sample's racial-ethnic minority proportion was a moderator of the effect size of psychotherapy. METHODS Eligible studies were identified with an existing database of randomized controlled trials (RCTs) on the psychological treatment of depression among adults. The analysis included all studies in which the effect of psychotherapy for adults with a depressive disorder or symptomatology was compared with a control condition in an RCT. Only studies that reported the overall racial-ethnic minority proportion of the sample or the studies reporting specific racial-ethnic backgrounds of participants were included. A total of 56 RCTs reported the proportion of participants from racial-ethnic minority groups (with 77 comparisons between psychotherapy treatment and control groups). RESULTS An overall moderate effect size ( $g=.50$ ) in favor of psychotherapy was found. No significant moderating effect of race-ethnicity was found in bivariate and multivariate analyses. CONCLUSIONS Results suggest that psychotherapy is equally effective regardless of care seekers' race-ethnicity. Future research should focus on filling in the gap between effective mental health care and the delivery of these services.

van Straten, A., J. Emmelkamp, et al. (2014). **"Guided internet-delivered cognitive behavioural treatment for insomnia: A randomized trial."** *Psychological Medicine* 44(07): 1521-1532. <http://dx.doi.org/10.1017/S0033291713002249>

Background Insomnia is a prevalent problem with a high burden of disease (e.g. reduced quality of life, reduced work capacity) and a high co-morbidity with other mental and somatic disorders. Cognitive behavioural therapy (CBT) is effective in the treatment of insomnia but is seldom offered. CBT delivered through the Internet might be a more accessible alternative. In this study we examined the effectiveness of a guided Internet-delivered CBT for adults with insomnia using a randomized controlled trial (RCT). Method A total of 118 patients, recruited from the general population, were randomized to the 6-week guided Internet intervention ( $n = 59$ ) or to a wait-list control group ( $n = 59$ ). Patients filled out an online questionnaire and a 7-day sleep diary before ( $T_0$ ) and after ( $T_1$ ) the 6-week period. The intervention group received a follow-up questionnaire 3 months after baseline ( $T_2$ ). Results Almost three-quarters (72.9%) of the patients completed the whole intervention. Intention-to-treat (ITT) analysis showed that the treatment had statistically significant medium to large effects ( $p < 0.05$ ; Cohen's  $d$  between 0.40 and 1.06), and resulted more often in clinically relevant changes, on all sleep and secondary outcomes with the exception of sleep onset latency (SOL) and number of awakenings (NA). There was a non-significant difference in the reduction in sleep medication between the intervention (a decrease of 6.8%) and control (an increase of 1.8%) groups ( $p = 0.20$ ). Data on longer-term effects were inconclusive. Conclusions This study adds to the growing body of literature that indicates that guided CBT for insomnia can be delivered through the Internet. Patients accept the format and their sleep improves.

van Zoonen, K., C. Buntrock, et al. (2014). **"Preventing the onset of major depressive disorder: A meta-analytic review of psychological interventions."** *International Journal of Epidemiology* 43(2): 318-329.

<http://ije.oxfordjournals.org/content/43/2/318.abstract>

Background Depressive disorders are highly prevalent, have a detrimental impact on the quality of life of patients and their relatives and are associated with increased mortality rates, high levels of service use and substantial economic costs. Current treatments are estimated to only reduce about one-third of the disease burden of depressive disorders. Prevention may be an alternative strategy to further reduce the disease burden of depression. Methods We conducted a meta-analysis of randomized controlled trials examining the effects of preventive interventions in participants with no diagnosed depression at baseline on the incidence of diagnosed depressive disorders at follow-up. We identified 32 studies that met our inclusion criteria. Results We found that the relative risk of developing a depressive disorder was incidence rate ratio = 0.79 (95% confidence interval: 0.69-0.91), indicating a 21% decrease in incidence in prevention groups in comparison with control groups. Heterogeneity was low ( $I^2 = 24\%$ ). The number needed to treat (NNT) to prevent one new case of depressive disorder was 20. Sensitivity analyses revealed no differences between type of prevention (e.g. selective, indicated or universal) nor between type of intervention (e.g. cognitive behavioural therapy, interpersonal psychotherapy or other). However, data on NNT did show differences. Conclusions Prevention of depression seems feasible and may, in addition to treatment, be an effective way to delay

or prevent the onset of depressive disorders. Preventing or delaying these disorders may contribute to the further reduction of the disease burden and the economic costs associated with depressive disorders.

Veale, D. and A. Roberts (2014). **"Obsessive-compulsive disorder."** *BMJ* 348. <http://www.bmj.com/content/348/bmj.g2183>  
Summary points: The World Health Organization ranks obsessive-compulsive disorder (OCD) as one of the 10 most handicapping conditions by lost income and decreased quality of life. OCD occurs across all ages but most commonly presents in young people. Shame often prevents people with OCD seeking help and causes delays in effective treatment. Non-specialists should ask screening questions if OCD is suspected. OCD is a treatable condition—children and adults should initially be offered cognitive behavioural therapy. For moderate to severe OCD in children and adults, selective serotonin reuptake inhibitors may also be offered

Vossbeck-Elsebusch, A., C. Freisfeld, et al. (2014). **"Predictors of posttraumatic stress symptoms following childbirth."** *BMC Psychiatry* 14(1): 200. <http://www.biomedcentral.com/1471-244X/14/200>  
(Available in free full text) BACKGROUND: Posttraumatic stress disorder (PTSD) following childbirth has gained growing attention in the recent years. Although a number of predictors for PTSD following childbirth have been identified (e.g., history of sexual trauma, emergency caesarean section, low social support), only very few studies have tested predictors derived from current theoretical models of the disorder. This study first aimed to replicate the association of PTSD symptoms after childbirth with predictors identified in earlier research. Second, cognitive predictors derived from Ehlers and Clark's (2000) model of PTSD were examined. METHODS: N = 224 women who had recently given birth completed an online survey. In addition to computing single correlations between PTSD symptom severities and variables of interest, in a hierarchical multiple regression analyses posttraumatic stress symptoms were predicted by (1) prenatal variables, (2) birth-related variables, (3) postnatal social support, and (4) cognitive variables. RESULTS: Wellbeing during pregnancy and age were the only prenatal variables contributing significantly to the explanation of PTSD symptoms in the first step of the regression analysis. In the second step, the birth-related variables peritraumatic emotions and wellbeing during childbirth significantly increased the explanation of variance. Despite showing significant bivariate correlations, social support entered in the third step did not predict PTSD symptom severities over and above the variables included in the first two steps. However, with the exception of peritraumatic dissociation all cognitive variables emerged as powerful predictors and increased the amount of variance explained from 43% to a total amount of 68%. CONCLUSIONS: The findings suggest that the prediction of PTSD following childbirth can be improved by focusing on variables derived from a current theoretical model of the disorder.

Williams, J. M., C. Crane, et al. (2014). **"Mindfulness-based cognitive therapy for preventing relapse in recurrent depression: A randomized dismantling trial."** *J Consult Clin Psychol* 82(2): 275-286. <http://psycnet.apa.org/index.cfm?fa=browsePA.volumes&jcode=ccp>  
(Available in free full text) OBJECTIVE: We compared mindfulness-based cognitive therapy (MBCT) with both cognitive psychological education (CPE) and treatment as usual (TAU) in preventing relapse to major depressive disorder (MDD) in people currently in remission following at least 3 previous episodes. METHOD: A randomized controlled trial in which 274 participants were allocated in the ratio 2:2:1 to MBCT plus TAU, CPE plus TAU, and TAU alone, and data were analyzed for the 255 (93%; MBCT = 99, CPE = 103, TAU = 53) retained to follow-up. MBCT was delivered in accordance with its published manual, modified to address suicidal cognitions; CPE was modeled on MBCT, but without training in meditation. Both treatments were delivered through 8 weekly classes. RESULTS: Allocated treatment had no significant effect on risk of relapse to MDD over 12 months follow-up, hazard ratio for MBCT vs. CPE = 0.88, 95% CI [0.58, 1.35]; for MBCT vs. TAU = 0.69, 95% CI [0.42, 1.12]. However, severity of childhood trauma affected relapse, hazard ratio for increase of 1 standard deviation = 1.26 (95% CI [1.05, 1.50]), and significantly interacted with allocated treatment. Among participants above median severity, the hazard ratio was 0.61, 95% CI [0.34, 1.09], for MBCT vs. CPE, and 0.43, 95% CI [0.22, 0.87], for MBCT vs. TAU. For those below median severity, there were no such differences between treatment groups. CONCLUSION: MBCT provided significant protection against relapse for participants with increased vulnerability due to history of childhood trauma, but showed no significant advantage in comparison to an active control treatment and usual care over the whole group of patients with recurrent depression.

Zalta, A. K., S. J. Gillihan, et al. (2014). **"Change in negative cognitions associated with PTSD predicts symptom reduction in prolonged exposure."** *J Consult Clin Psychol* 82(1): 171-175. <http://www.ncbi.nlm.nih.gov/pubmed/24188512>  
OBJECTIVE: The goal of the current study was to examine mechanisms of change in prolonged exposure (PE) therapy for posttraumatic stress disorder (PTSD). Emotional processing theory of PTSD proposes that disconfirmation of erroneous cognitions associated with PTSD is a central mechanism in PTSD symptom reduction; but to date, the causal relationship between change in pathological cognitions and change in PTSD severity has not been established. METHOD: Female sexual or nonsexual assault survivors (N = 64) with a primary diagnosis of PTSD received 10 weekly sessions of PE. Self-reported PTSD symptoms, depression symptoms, and PTSD-related cognitions were assessed at pretreatment, each of the 10 PE treatment sessions, and posttreatment. RESULTS: Lagged mixed-effect regression models indicated that session-to-session reductions in PTSD-related cognitions drove successive reductions in PTSD symptoms. By contrast, the reverse effect of PTSD symptom change on change in cognitions was smaller and did not reach statistical significance. Similarly, reductions in PTSD-related cognitions drove successive reductions in depression symptoms, whereas the reverse effect of depression symptoms on subsequent cognition change was smaller and not significant. Notably, the relationships between changes in cognitions and PTSD symptoms were stronger than the relationships between changes in cognitions and depression symptoms. CONCLUSIONS: To our knowledge, this is the 1st study to establish change in PTSD-related cognitions as a central mechanism of PE treatment. These findings are consistent with emotional processing theory and have important clinical implications for the effective implementation of PE.