

A META-ANALYSIS FOR THE EFFICACY OF HYPNOTHERAPY IN ALLEVIATING PTSD SYMPTOMS

TUDOR-ȘTEFAN ROTARU 

University of Medicine and Pharmacy Gr. T. Popa Iași, Romania

ANDREI RUSU

Alexandru Ioan-Cuza University of Iași and West University of Timișoara, Romania

Abstract: A systematic review and meta-analysis of the efficacy of hypnotherapy in the treatment of PTSD used literature searches to obtain 47 articles. However, only 6 were experiments testing the efficacy of hypnosis-based treatments. A fixed-effects meta-analysis was applied to postintervention assessment results and 4-week follow-ups. A large effect in favor of hypnosis-based (especially manualized abre-actve hypnosis) treatment was found for the studies that reported the posttest results ($d = 1.17$). The temporal stability of the effect remains strong, as reflected by the 4-week follow-up assessments ($d = 1.58$) and also by long-term evaluations (e.g., 12 months). Hypnosis appears to be effective in alleviating PTSD symptoms.

Mounting evidence indicates posttraumatic stress disorder (PTSD) is a debilitating condition, affecting quality of life for a significant number of individuals (Burri & Maercker, 2014; Cox, Resnick, & Kilpatrick, 2014; Hoge & Warner, 2014). Therefore, interventions targeted at relieving symptoms are relevant from a public health perspective. Several interventions to treat or alleviate PTSD symptoms seem promising, but the literature currently provides no clear consensus to the method(s) of choice. Among other treatments, hypnosis is a candidate for the treatment or amelioration of PTSD symptoms. A systematic review of evidence in this direction might prove useful for health care providers.

Posttraumatic stress disorder is a psychiatric condition usually subsequent to a major traumatic event. Symptoms include re-experiencing traumatic memories through nightmares and recurring stressful thoughts about the event. PTSD also includes avoidance, manifested

Manuscript submitted October 30, 2013; final revision accepted April 9, 2015.

Address correspondence to Tudor-Ștefan Rotaru, Center for Ethics and Health Policy, University of Medicine and Pharmacy Gr. T. Popa Iași, str. Universității nr. 16, Iași, 700115 Romania. E-mail: tudor.rotaru@umfiiasi.ro

as averting reference to or refusal to remember the event. Moreover, the patient experiences social isolation, sleep disturbances, increased irritability, and hypervigilance associated with the event (American Psychiatric Association, 2000). PTSD is a well-documented condition (Bisson & Andrew, 2009).

In the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (DSM—5), PTSD is classified by the American Psychiatric Association (2013) in two different categories, based on age-specific criteria: One includes adults, adolescents, and children 6 years or older; the other category is defined as children 6 years or younger. The diagnostic criteria for both categories include having been exposed to actual or threatened death, serious injury, or sexual violence. The second criterion is the presence of intrusion symptoms associated with traumatic events like recurrent distressing memories and dreams of the traumatic events, dissociative reactions, as well as marked physiological reactions to cues about the traumatic events. The third criterion is persistent avoidance of stimuli associated with traumatic events. The fourth criterion is alterations in cognitions and mood associated with the traumatic events, such as the inability to remember an important aspect of an event, persistent blame assigned to himself/herself or others, diminished interest in significant activities, or detachment or estrangement from others. The fifth criterion is marked alteration in arousal and reactivity associated with traumatic events, such as irritability, recklessness or self-destructive behavior, hypervigilance, and sleep disturbance. All of these symptoms could be conceptualized as a syndrome of stress response and approached therapeutically through an information-processing framework (Horowitz, 1974).

The mechanisms of this disorder have been historically hypothesized from three major evolutionary perspectives as presented by Beahrs (1990). First, it was hypothesized that posttraumatic behavior was adaptive at some point. In settings where dangerous situations are relatively infrequent, posttraumatic behavior seems to bring an automatic, quick, and advantageous response. This response is triggered when the subject is exposed to a previously known dangerous situation. However, this automatism may not provide an adaptive advantage in rapidly changing psychosocial environments. Therefore, PTSD symptoms may represent an exaggerated reaction. They appear in response to irrelevant cues for survival that are ultimately unnecessary for the organism. Furthermore, in contrast to rigidity and affect-driven behavior, PTSD-related reactions may be construed as advantageous for survival. The advantage resides in the spontaneous hypnosis-like states known to appear during and after a catastrophic stressor. Indeed, trauma seems to induce an adaptive dissociation by allowing the unconscious mind to “take over.” It triggers life-saving behaviors while obscuring the traumatic affect from usual awareness. In addition, the traumatic effect may

fuel continuing evolution by enhancing the creative potential of the species to adapt to a harsh environment (Behars, 1990).

Several forms of treatment seem promising, but the literature currently provides no clear consensus to the method(s) of choice (for a short overview of several such treatment effects, see Table 1). For example, in a more recent analysis, Bisson and his colleagues (2007) conclude that many psychotherapies seem consistently superior to wait list or usual care controls, except for “other therapies,” which do not seem to differ from controls. They state that “other therapies,” which consisted in their study of an assortment of treatments including hypnotherapy, psychodynamic therapies, supportive therapies, and nondirective counseling, were the least effective of the treatment categories and that

Table 1

Meta-Analytical Studies on the Effectiveness of Various Therapies on the Total Severity of PTSD Symptoms

Author(s)	Intervention(s)	No. of studies	Mean weighted effect size (Cohen's <i>d</i>)	Research designs
Bisson and Andrew (2009)	Trauma focused CBT and exposure therapy	9	1.68	Clinical trials; treatment vs. waitlist or usual care
Bisson and Andrew (2009)	Other psychological therapies than CBT or stress management therapy	2	0.61	Clinical trials; treatment vs. waitlist or usual care
Bradley et al. (2005)	Psychological therapies (overall)	44	1.11	Clinical trials; treatment vs. wait-list or control
Rolfsnes and Idsoe (2011)	CBT and other interventions	19	0.68	Experimental and quasi-experimental posttest and follow-up
Sherman (1998)	Psychological therapies (overall)	17	0.52	Clinical trials; pre-post comparison
Van Etten and Taylor (1998)	Psychological therapies (overall)	27	1.17	Clinical trials with pre-post comparison

eye-movement desensitization and reprocessing (EMDR) as well as trauma-focused cognitive-behavioral therapy (TFCBT) were the most efficacious. However, the authors used caution when it came to formulating this conclusion due to the “considerable unexplained heterogeneity observed in these comparisons” (Bisson et al., 2007, p. 13).

Drug therapies attempt to correct suspected neurochemical aberrations in mechanisms controlling arousal and other aspects of emotional processing subsequent to trauma (Sutherland & Davidson, 1994). Behavioral and cognitive-behavioral therapies target a suspected conditioned fear or anxiety response to trauma-related stimuli. According to the model of memory structures that underlie emotions, PTSD can be reduced by exposing the person to corrective information, which modifies the fear structure (Foa & Kozak, 1986). Exposure to fear-evoking but objectively harmless stimuli is usually used (Foa, Zinbarg, & Rothbaum, 1992). Another treatment frequently mentioned is EMDR. It uses exposure to traumatic images in one’s mind while systematic saccadic eye movements are produced. A disruption of a physiological balance between excitatory and inhibitory systems in the brain is thought to be responsible for the therapeutic changes. As explained by Shapiro (1995), the treatment allows appropriate reprocessing and integration of the traumatic memories.

Van der Kolk’s (2006) work shows that traumatized patients are vulnerable to sensory information with subcortically initiated responses that are irrelevant in the present. Reminders of the trauma activate intense emotions and decrease activity in regions responsible for the integration of sensory input with motor output, the modulation of physiological arousal, and the ability to put experience into words. Memory and attention deficits interfere with the capacity to engage in the present moment. Therefore, effective treatment(s) must include increasing the capacity for interoception, learning to modulate arousal, and learning to engage in taking effective action after being confronted with physical helplessness.

Relaxation training is another treatment for PTSD that aims to reduce hyperarousal (Taylor et al., 2003). Finally, psychodynamic psychotherapy tries to resolve unconscious conflicts arising from the traumatic events (Van Etten & Taylor, 1998).

Hypnosis is underrepresented in meta-analytical and systematic reviews. The existing approaches (Benish, Imel, & Wampold, 2008; Bisson & Andrew, 2009; Bisson et al., 2007; Bradley, Greene, Russ, Dutra, & Westen, 2005; Sherman, 1998; Van Etten & Taylor, 1998) were conducted prior to the publication of the latest randomized controlled trials (RCTs) that tested hypnotherapy-derived interventions for PTSD (e.g., Barabasz, Barabasz, Christensen, & French, 2013; Christensen, Barabasz, & Barabasz, 2013) and, thus, include only Brom, Kleber, and Defares’s

(1989) study. This makes the integration of hypnosis among the recognized treatments for various conditions more difficult. More research when it comes to the use of hypnosis may make a contribution with substantial benefits for treatments in general.

Hypnosis has been applied as a useful intervention in relieving symptoms of PTSD patients (Bisson & Andrew, 2009), and there are reports about its use with a variety of symptoms and populations (Abramowitz, Barak, Ben-Avi, & Knobler, 2008; Abramowitz & Lichtenberg, 2010; Lesmana, Suryan, Jensen, & Tiliopoulos, 2009; Shakibaei, Harandi, Gholamrezaei, Samoei, & Salehi, 2008). The claim that hypnosis does work to relieve PTSD symptoms is supported by studies comparing groups of PTSD patients receiving hypnosis with groups receiving interventions such as systematic desensitization (e.g., Brom et al., 1989), counseling (e.g., Bryant, Moulds, Guthrie, & Nixon, 2005), medication (e.g., Abramowitz et al., 2008), or placebo interventions (e.g., Barabasz et al., 2013).

It has been shown that hypnotherapy might compete with some alternative treatments. In the meta-analysis carried out by Van Etten and Taylor (1998), the authors found that psychological therapies were more effective than drug therapies and both more effective than controls in treating PTSD. The effect of hypnotherapy on avoidance symptoms has been shown to be similar in size to serotonin-specific reuptake inhibitors, EMDR, as well as behavior therapy. However, on the overall symptoms of PTSD, hypnotherapy seems to be one of the least effective psychological treatments. The results are difficult to interpret as they are based on a single trial (Van Etten & Taylor, 1998).

A hypnotherapy-targeted review by Cardeña (2000) observes the lack of systematic group or single-case studies necessary to infer the efficacy of hypnotic techniques in posttraumatic conditions. He argues that hypnosis can be integrated into other therapies commonly used with traumatized clients; it can also be used for symptoms associated with PTSD and may help modulate and integrate memories of trauma (Cardeña, 2000). Another controlled treatment study by Bryant and colleagues (2005) suggested that a combined CBT-hypnosis approach resulted in a greater reduction of re-experiencing symptoms at posttreatment than CBT alone. Although, in this sample, the CBT-hypnosis combined approach led to greater reductions when it came to re-experiencing symptoms at posttreatment than CBT alone, this difference was not evident at the 6-month nor 3-year follow-up assessments (Bryant et al., 2006).

Lynn and Cardeña (2007) also noticed the urgent need for more research on hypnosis, hypnotic suggestibility, and posttraumatic conditions. They recommend comparing exposure therapies, with and without hypnosis, as well as research on posttraumatic conditions

in which flashbacks and dissociative symptoms are prominent, versus cases where such symptomatology is less present. A more recent review by Cukor, Spitalnick, Difede, Rizzo, and Rothbaum (2009), concerning the emerging treatments for PTSD, examined the evidence for a range of interventions, from social- and family-based treatments to technological-based and pharmacological treatments. However, this review does not mention hypnotherapy as a possible intervention. Another strong meta-analytical approach concerning PTSD treatments only includes Brom and colleagues' (1989) study and, by doing so, marginally addresses the question of hypnotherapy's efficacy in the treatment of PTSD (Bisson & Andrew, 2009).

The purpose of this study was to fill, at least partially, the aforementioned void in systematic reviews concerning the effect of hypnotherapy in the treatment of PTSD. Specifically, our research incorporates, in addition to Brom and colleagues' study (1989), four other studies carried out after 2008 in a systematic review and meta-analysis concerning the efficacy of hypnotherapy in order to reduce PTSD symptoms.

METHOD

Search Strategy and Inclusion Criteria

To achieve our objectives, we searched for all relevant studies where PTSD-diagnosed patients received hypnosis-based interventions. The electronic databases (i.e., PILOTS: Published International Literature on Traumatic Stress, ProQuest Central, PsycINFO, PubMed Central) were searched in two consecutive periods (without a lower time limit and through the end of February 2013 and between March 2013 as well as the end of January 2014) using the following Boolean phrase: ((hypno* OR suggestion) AND (experiment OR quasi-experiment OR trial OR "clinical trial" OR random*)) AND (stress* OR PTSD)). The resulting abstracts were screened to determine which articles should be obtained for further review. References of the final sample of papers and existing reviews were hand searched to locate previously unidentified studies. Furthermore, we contacted the principal authors of included trials and requested unpublished or in-press manuscripts ("gray literature").

Eligible studies were randomized and nonrandomized trials with pretest equivalence designed to reduce PTSD symptoms. The participants must have been diagnosed based on *DSM—5* criteria for PTSD, and standardized instruments had to have been used for the measurement of the dependent variables (i.e., PTSD symptoms). We excluded studies that tested the incremental role of hypnosis combined with other interventions.

Quality Assessment and Data Extraction

The methodological quality was assessed based on Downs and Black's (1998) checklist. The instrument consists of 27 questions addressing studies' reporting quality, external validity, internal validity (bias and confounding), and statistical power. The item concerning power was recoded from a 0 to 5 scale to a 0 (*no power or sample size estimation*) to 1 (*reported power or sample size estimation*) scale. Similar to Tiernan, Tracey, and Shannon (2014) the total quality score was divided by the maxim possible score (i.e., 28 for randomized and 25 for non-randomized studies) and multiplied by 100. Higher scores indicate a higher methodological quality. Two PhD students in clinical psychology programs independently rated each trial and settled disagreements through consensus.

Both authors independently extracted information about the studies' authors, research designs, participant samples, type of intervention, and measurement instruments, as well as consensually resolved disagreements (Tables 2 and 3).

Statistical Methods

We used Borenstein, Hedges, Higgins, and Rothstein's (2009) recommendations applying a fixed-effect meta-analysis. Even though the random-effects model produces more results relying on the assumption that the true effect size varies between studies, in the case of a reduced number of studies, the between-studies variance estimate will be unreliable (Bornstein et al., 2009). Hence, all meta-analytical results provided in this present study should be viewed more as descriptive indicators for the included data. For each included study, we estimated Cohen's weighted d effect sizes (Cohen, 1988). Effect-size (ES) values between $d = 0.20$ and $d = 0.49$ are considered low, values between $d = 0.50$ and $d = 0.79$ are medium, and values equal and higher than $d = 0.80$ are considered large. Effect-size computations were based on reported means, standard deviations, and sample size, with the exception of two records: One lacked standard deviations, and we used the reported ES coefficient; while the other one implied asymmetrically distributed data, and we used a nonparametric ES to avoid an underestimation of the effect. In the latter case, we computed the r estimate based on the nonparametric test statistics (i.e., Mann-Whitney U test) and afterward converted it in Cohen's d (Fritz, Morris, & Richler, 2012). In cases where the separate factorial results were reported for the dependent variable (e.g., for intrusion and avoidance), we computed a single indicator by averaging the ESs. Furthermore, we calculated for each mean ES an adjusted variance index (Sava, 2013). The entire meta-analytical procedure was performed with the aid of the Comprehensive Meta-Analysis software solution (version 2.2.064, Biostat, Englewood, NJ).

Table 2
Characteristics of Included Studies

Author(s)	Country	Research design	Sample size and trauma type	Mean age (years)	Male (%)	Drop-outs	Study quality
1. Abramowitz et al. (2008)	Israel	Randomized; pharmacotherapy control; pretest/posttest & 1-month follow-up.	N = 42: 17 hypnotherapy and 15 control;	31.7	100	0	61
2. Barabasz et al. (2013)	USA	Randomized; placebo control group; pretest/posttest/4 weeks & 16- to 18-week follow-up.	Combat related N = 36: 18 hypnotherapy and 18 control;	29.2	44	0	57
3. Barabasz (2013)	USA	Barabasz et al. (2013) study's 12-month follow-up.	Not specified N = 33: 13 hypnotherapy and 18 control;	–	–	3	
4. Brom et al. (1989)	Holland	Randomized; waitlist control; pretest/posttest.	Not specified N = 52: 29 hypnotherapy and 23 control;	42	12	4	50
5. Christensen et al. (2013)	USA	Randomized; placebo control group; pretest/posttest/1-month & 3-month follow-up.	Violent crime experience (17%); traffic accident involvement (3.5%); bereavement related (7.4%); not mentioned (5.5%) N = 30: 15 hypnotherapy and 15 control;	37.75	33	0	61
6. Lesmana et al. (2009)	Indonesia	Randomized; nontreatment control; pretest & 2-year follow-up.	Not specified N = 226: 48 hypnotherapy and 178 control; Terrorist bomb blast witness	9.83	47	0	50

Note. Mean age and male participants' percentage from the Brom et al. (1989) trial are computed on the whole study sample (N = 112).

Table 3
Types of Interventions and Measurement Instruments in Included Studies

Article	Intervention	No. of sessions	Hypnotizability measure	Main outcome measures
1.	Symptom-oriented hypnotherapy	4	Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer & Hilgard, 1959)	Posttraumatic Diagnostic Scale (PDS; Foa, Cashman, Jaycox, & Perry, 1997); Impact of Event Scale (IES; Sundin & Horowitz, 2002)
2. & 3.	Manualized abreactive ego state single-session therapy	1	Stanford Hypnotic Clinical Scale (SHCS; Morgan & Hilgard, 1978)	Posttraumatic Stress Disorder Checklist (PCL)
4.	Hypnotherapy with experienced clinicians and supervision	$M = 14.4$	–	Dutch version of the Symptom Checklist-90 (SCL-90; Arinddl & Ettema, 1981)
5.	Manualized abreactive ego state single-session therapy	1	The Hypnotic Induction Profile (HIP; Spiegel & Spiegel, 2004)	Davidson Trauma Scale (DTS; Davidson et al., 1997)
6.	Spiritual-hypnosis assisted therapy	1	–	34 items custom-made instrument (based on DSM-IV criteria)

RESULTS

Forty-four abstracts were revealed from the searched electronic databases (excluding duplicates). After inspecting the abstracts, seven records were retrieved in their full text and evaluated for eligibility. Four articles were excluded because they studied the incremental role of hypnosis in association with cognitive behavioral therapy ($n = 2$; Bryant et al., 2005, 2006), used a degree of burn trauma instead of the PTSD diagnostic ($n = 1$; Shakibaei et al., 2008), and applied a pre-post design ($n = 1$; Abramowitz & Lichtenberg, 2010). One of the involved investigators provided three recently published eligible articles (Barabasz et al., 2013; Barabasz, 2014; Christensen et al., 2013). Moreover, Barabasz's article reported the 12-month follow-up of Barabasz and his colleagues' study. Hence, we included a final set of six journal articles reporting data from five RCTs (see Figure 1).

Beside three RCTs that used adult participants with multiple PTSD sources (Barabasz et al., 2013; Brom et al., 1989; Christensen et al., 2013), one study targeted combat-related PTSD, dealing with adult participants (Abramowitz et al., 2008), and another one included only child and teenage terrorist-attack witnesses (Lesmana et al., 2009). Only two studies reported separate results for intrusion and avoidance; therefore, we will only discuss the total scores for PTSD symptoms. Table 2 provides a synthetic view of the studies' characteristics.

The oldest study considered in our review used hypnotherapists with over 10 years of experience. They had a cognitive-behavioral focus when it came to using hypnosis to bring the patient in contact with the reality of the traumatic event and to decrease the conditioned responses triggered by it. In this study, the follow-up measures were taken after 3 months but only for the intervention groups and not for the control one (Brom et al., 1989). All patients were diagnosed according to the *DSM-III* (American Psychiatric Association, 1980).

Abramowitz et al. (2008) administered symptom-oriented hypnotherapy in two 1.5-hour sessions per week for 2 weeks by a psychiatrist who was certified experienced in hypnotherapy. Researchers collected details relevant for age regression, and they established an ideomotor response channel of communication using a system of finger signaling. The participants, previously diagnosed according to the *DSM-IV* (American Psychiatric Association, 2000), were returned to earlier periods in which normal sleep was present using age regression. Suggestions were used for ego strengthening. A follow-up measure was administered 1 month later.

In the study of Lesmana et al. (2009), a spiritual-hypnosis-assisted therapy (SHAT) approach was used in a single-group session that totaled 30 minutes. In a state of trance, the participants were guided to reframe the meaning of their traumatic memories and then to express

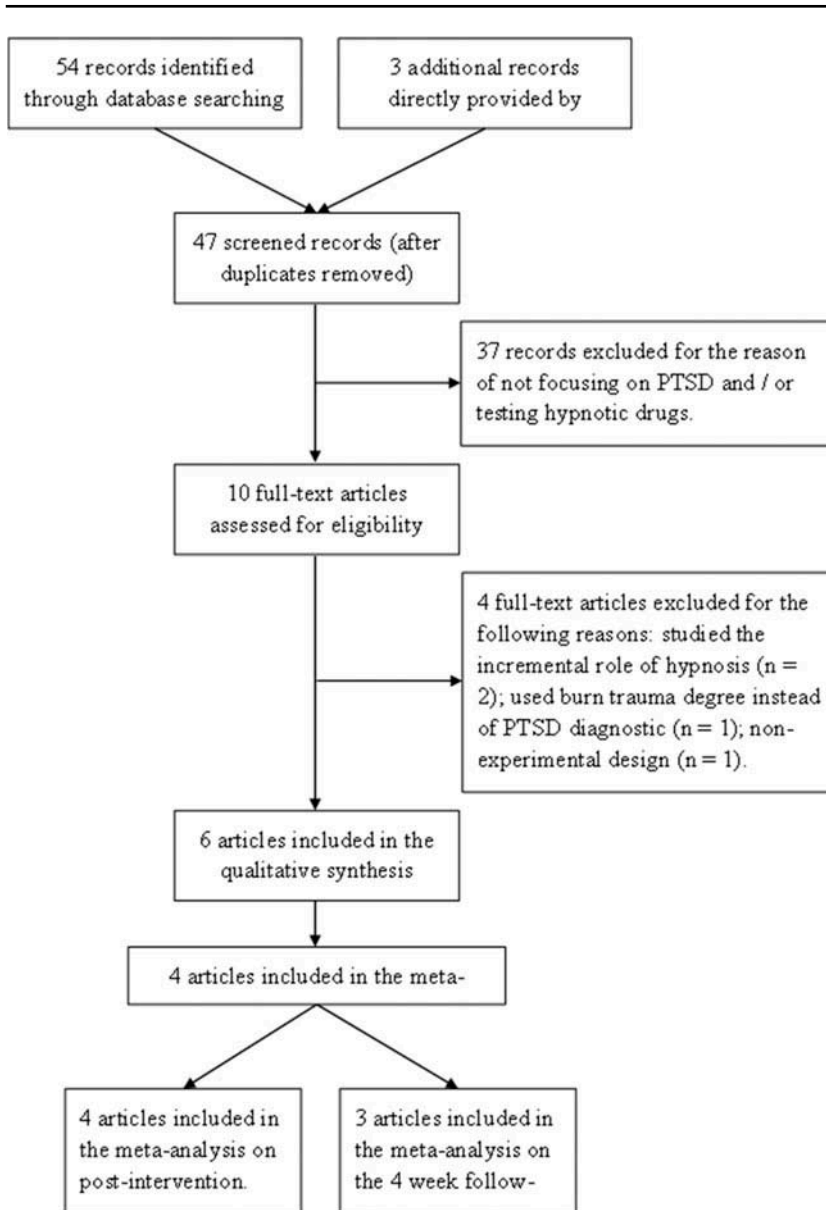


Figure 1. Adapted PRISMA flow diagram: Papers are included in the review.

negative feelings openly by crying, shouting, or deep breathing. The place of the traumatic event was visited in imagery. A reframing suggestion about being able to cope with new challenges, thanks to the

trauma, was administered. This approach has a very important Bali cultural component, does not include systematic desensitization, is present oriented and relies on elements of faith in God and spirit. The posttreatment measure was taken 2 years after the intervention, and, for this reason, we could not insert this record in any meta-analytical calculus. All participants were diagnosed according to the *DSM-IV-TR* criteria (American Psychiatric Association, 2000).

Barabasz and colleagues (2013) and Christensen et al. (2013) administered a single manualized abreactive ego state therapy (EST) session. This method is based on a psychodynamic understanding of personality as a product of an individual's ego states. As Watkins and Watkins (1993) explained, personality functions in a perceptual, cognitive, and affective dimension. It can manifest itself consciously, unconsciously, or in both aspects to a relative degree. Normal personality segments called *ego states* can function with varying degrees of mutual dependence and intercommunication. Therefore, interventions in therapy are more efficient if focused within the problem's specific segment. This point of view allows interventions to be more focused in the regions that are truly relevant.

In brief, subjects met the *DSM-IV* (American Psychiatric Association, 2000) criteria for PTSD and were able to identify a circumscribed traumatic event, which would be the focus of the session. A hypnotic induction was administered to each subject and the ego state harboring the trauma was identified. Using the strength of the therapists' ego, each subject released their bound affects through hypnotically induced abreactions (repeated three or four times). Abreactions involved revivification of the circumscribed trauma, release of affect, interpretation, and corrective nurturing/healing experiences. Single-session, manualized abreactive ego state therapy (Barabasz et al., 2013; Christensen et al., 2013) mirrored the prototype for resolving emotional blockage without retraumatization (Watkins & Watkins, 1993). A posttest measure was taken for both studies. Follow-ups were carried out at 1 and 3 months (Christensen et al., 2013), at 4 and 16–18 weeks (Barabasz et al., 2013) as well as at 12 months (Barabasz, 2013), respectively. Table 3 presents a structured overview of the interventions' characteristics.

The mean weighted effect size found for the four studies that reported the posttest results was large and in favor of hypnosis-based treatments ($d = 1.17$). Considering the increased heterogeneity of the studies' effects, $Q(3) = 15.687$, $p = .001$; $I^2 = 80.87\%$, the fact that two of the included RCTs were based on the same intervention protocol (i.e., Ego State Therapy; EST) and were implemented by the same team of investigators, we compared these two trials (Barabasz et al., 2013; Christensen et al., 2013) with the remaining ones (Abramowitz et al., 2008; Brom et al., 1989). The comparison revealed a significant

difference, $Q(1) = 11.420$, $p = .001$, with EST-based interventions having a large effect toward decreasing PTSD symptoms, $d = 1.99$, 95% CI (1.39, 2.59), $z = 6.51$, $p < .001$, while the other two tested interventions produced a medium effect, $d = 0.69$, 95% CI (0.23, 1.15), $z = 2.94$, $p = .003$.

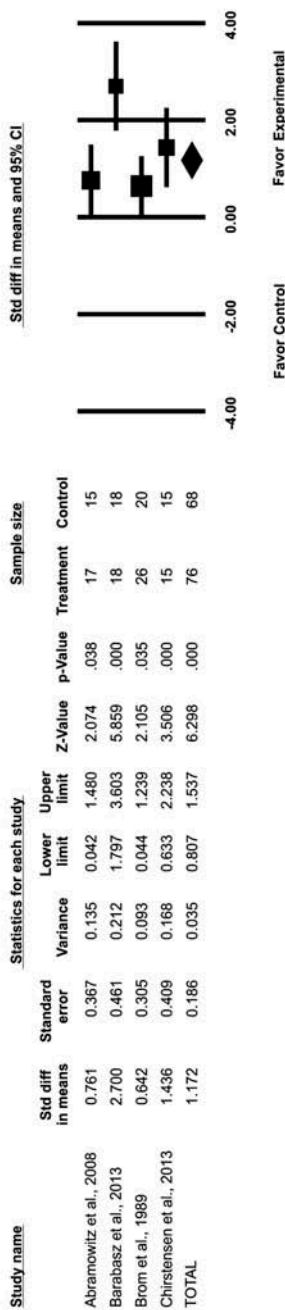
Because of insufficient data, we computed the mean ES only for the 4-week follow-up. The three studies (Abramowitz et al., 2008; Barabasz et al., 2013; Christensen et al., 2013) providing the 4-week evaluation results revealed a large mean effect in favor of the tested interventions ($d = 1.58$). Even though all three studies reported large ESs (smallest $d = 0.91$, largest $d = 3.31$), the difference between the estimates is still high, $Q(2) = 15.118$, $p = .001$, $I^2 = 86.77\%$.

In addition, the results reported by Barabasz et al. (2013) as well as Christensen and colleagues (2013) also reveal large effects at 12 weeks, $d = 0.93$, 95% CI (0.17, 1.68), and 16 to 18 week, $d = 2.44$, 95% CI (1.58, 3.30) follow-ups. At 12 months, Barabasz (2014) consequently recorded a large effect, $d = 3.61$, 95% CI (2.46, 4.75), while Lesmana and colleagues (2009) reported a medium effect, $d = 0.66$, 95% CI (0.33, 0.98), 2 years after implementing the intervention. All the aforementioned results reflect a positive impact of hypnotherapy in the long-term reduction of PTSD symptoms. Figure 2 displays the effect size values and the mean weighted effects of the meta-analyzed studies.

DISCUSSION

The purpose of this study was to conduct a systematic evaluation of the efficacy of hypnotherapy when it comes to relieving posttraumatic stress symptoms, as it appears in the small amount of data available at this time. All results reflect a positive impact of hypnotherapy on immediate and in the long-term reduction of PTSD symptoms. When compared to a control group, the experimental groups in the four studies with posttest measures had a reduction in PTSD symptoms of slightly more than one standard deviation ($d = 1.17$). This large effect is only partially reliable due to the modest number of included records and their highly heterogeneous effects. The strong effect seems stable in time, as it is revealed by the 4-week follow-ups in three of the five included trials ($d = 1.58$), although the heterogeneity is still significantly increased. Moreover, the temporal stability also receives support from several more long-term evaluations (i.e., 12 and 16 to 18 weeks and 1 and 2 years). These effect sizes are larger than the one reported by Rolfsnes and Idsoe (2011) in a meta-analysis of school-based intervention programs and their results from the posttest and/or follow-ups ($d = 0.68$). Similarly, the effect sizes are greater than the ones

Postintervention comparison



Four weeks follow-up comparison

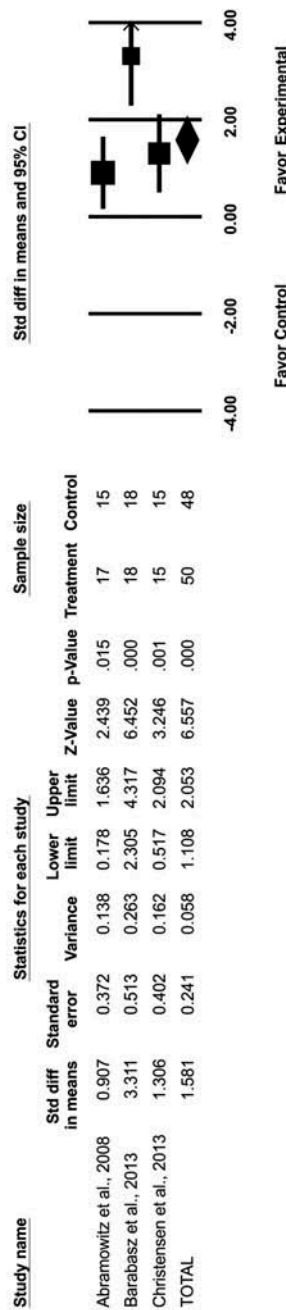


Figure 2. Meta-analysis results for postintervention (upper section) and 4-week follow-up (lower section) comparisons.

mentioned by Van Etten and Taylor (1998) as well as Bradley et al. (2005) concerning psychological therapies for PTSD.

When comparing the effect of hypnosis on PTSD symptoms and the effect of hypnosis on depression we notice that the effect at the posttest level, as it results from the aforementioned four studies, is bigger than the one meta-analytically calculated in Shih, Yang, and Koo's (2009) study ($d = 0.57$). The effect that we revealed is also bigger than that of hypnosis on psychosomatic disorders ($d = 0.61$) in the meta-analysis by Flammer and Alladin (2007). Even when taking into consideration only the two studies using other hypnotic interventions than abreactive ego state therapy, the effect size is still comparable ($d = 0.69$) to the aforementioned results. The most promising interventions seem to be those using abreactive ego state therapy (EST), showing a mean posttest reduction in PTSD symptoms of almost two standard deviations for the experimental groups as compared to the control groups ($d = 1.99$). Moreover, follow-up results also revealed strong effects in favor of EST-based interventions.

There are some practical implications from our results. First, hypnosis seems to successfully compete with other more traditional methods when it comes to relieving PTSD symptoms, like CBT and exposure therapy. Secondly, there is a promising contribution of abreactive ego state therapy (EST). The considerable effect in reducing PTSD symptoms is likely, due to the fact that this method avoids retraumatizing the patient. From an EST perspective, often ego states that originated in order to cope with trauma and are not integrated with other personality segments must be helped to confront, to abreact, and to work through traumatic experiences (Phillips, 1993). Ego state therapy encourages and facilitates patients to complete patterns of aborted attempts at action that can keep the shock of the trauma frozen in both the body and mind and thus prevent the learning of new responses. Phillips (1993) further explains that this approach appears to offer a methodology that can begin the process of helping victims of trauma move beyond the survivor position to the task of forging a new identity based on mastery and proficiency. Consequently, this leads to more profound personality restructuring (Barabasz et al., 2013; Christensen et al., 2013; Watkins & Watkins, 1993). However, the aforementioned results should be cautiously interpreted as they are provided from only two separate RCTs conducted by the same team of investigators. Future studies, independently conducted by other investigators and in different cultures and contexts, would help to certify the effect of EST.

The limits of our endeavor spring out from several sources. The first concern is the reduced number of records included in the actual meta-analysis ($n = 4$ for posttest comparison; $n = 3$ for a 4-week follow-up comparison) and their increased heterogeneity (i.e., large variation

in the studies' results), which forced us to apply a fixed-effect procedure (Borenstein et al., 2009). Therefore, the resulted data have more of a descriptive role and a diminished generalizability. From this perspective, any reader should take into account the specific conditions under which each included study was conducted when interpreting the revealed results. Moreover, the small number of studies restricted any moderator analysis that could aid in clarifying the large heterogeneity of the effects. New meta-analytical calculus could be conducted when more data are available.

Another important concern yielded from the methodological quality assessment of the included studies. Based on Downs and Black's (1998) checklist on a scale from 0 to 100, all the studies scored in the interval of 50–61. Some of the major reporting irregularities that can be easily adjusted in future articles represent the statistical description and, if this is the case, control of confounding variables, description of the recruitment period, and a priori statistical power estimation. There are also items, which account for the low quality that are not feasible in these kinds of studies. One such example concerns the use of masking procedures, since in most of the cases even a single-blind approach could not have been implemented, as is the case of using a pharmacotherapy (Abramowitz et al., 2008) or a waiting list (Brom et al., 1989) control group. A solution to avoid publication lacunae could be the use of highly standardized reporting frameworks, such as the Consolidated Standards of Reporting Trials Statement for RCTs of nonpharmacologic treatments (Boutron, Moher, Altman, Schulz, & Ravaud, 2008).

In addition, the study's selection bias seems to be a smaller concern for the present meta-analysis since the classic fail-safe N estimation suggested that an unlikely number of 44 studies with no effect would be needed to reduce the revealed mean effect size to 0.

CONCLUSION

The effect size we calculated is somehow bigger but less reliable than other results from the literature. There are too few studies that meet the criteria for a strong meta-analytical approach. Although systematic desensitization and other CBT techniques seem to be the preferred approaches when dealing with PTSD symptoms, the effect of hypnosis is promising and might be considered not only a value-adding technique to classic treatments but also as a valuable treatment per se. The results suggest that the new abreactive ego state therapy is the most promising intervention, but future randomized controlled trials conducted by separate investigators and settings outside of the United States of America are needed.

FUNDING

This work was supported by two grants from the Romanian National Authority for Scientific Research, CNCS – UEFISCDI (PN-II-RU-TE-2011-3-0230 and PN-II-ID-PCE-2012-4-0621, respectively).

ORCID

Tudor-Ștefan Rotaru  <http://orcid.org/0000-0002-7022-2894>

REFERENCES

- Abramowitz, E. G., Barak, Y., Ben-Avi, I., & Knobler, H. Y. (2008). Hypnotherapy in the treatment of chronic combat-related PTSD patients suffering from insomnia: A randomized, Zolpidem-controlled clinical trial. *International Journal of Clinical and Experimental Hypnosis*, *56*, 270–280. doi:10.1080/00207140802039672
- Abramowitz, E. G., & Lichtenberg, P. (2010). A new hypnotic technique for treating combat-related posttraumatic stress disorder: A prospective open study. *International Journal of Clinical and Experimental Hypnosis*, *58*, 316–328. doi:10.1080/00207141003760926
- American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.
- American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders*. (text revision). Washington, DC: Author.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: Author.
- Arrindell, W. A., & Ettema, H. (1981). Dimensionele structuur, betrouwbaarheid en validiteit van de Nederlandse bewerking van de Symptom Checklist (SCL-90): Gegevens gebaseerd op een fobischen een "normale" populatie [Dimensional structure, reliability and validity of the Dutch version of the Symptom Checklist (SCL-90): Data based on a phobic and a "normal" population]. *Nederlands Tijdschrift voor de Psychologie en haar Grensgebieden*, *36*, 77–108.
- Barabasz, A. (2013). Evidence based abreactive ego state therapy for PTSD. *American Journal of Clinical Hypnosis*, *61*, 54–65.
- Barabasz, A. (2014). Evidence based abreactive ego state therapy for PTSD. *American Journal of Clinical Hypnosis*, *56*, 54–65. doi:10.1080/00029157.2013.770384
- Barabasz, A., Barabasz, M., Christensen, C., & French, B. (2013). Efficacy of single-session abreactive ego-state therapy for combat stress injury, PTSD, and ASD. *International Journal of Clinical and Experimental Hypnosis*, *61*, 1–19. doi:10.1080/00207144.2013.729377
- Beahrs, J. O. (1990). The evolution of posttraumatic behavior: Three hypotheses. *Dissociation*, *3*, 15–21.
- Benish, S. G., Imel, Z. E., & Wampold, B. E. (2008). The relative efficacy of bona fide psychotherapies for treating posttraumatic stress disorder: A meta-analysis of direct comparisons. *Clinical Psychology Review*, *28*, 746–758. doi:10.1016/j.cpr.2007.10.005
- Bisson, J., & Andrew, M. (2009). *Psychological treatment of post-traumatic stress disorder*. Hoboken, NJ: John Wiley & Sons.
- Bisson, J. I., Ehlers, A., Matthews, R., Pilling, S., Richards, D., & Turner, S. (2007). Psychological treatments for chronic post-traumatic stress disorder:

- Systematic review and meta-analysis. *The British Journal of Psychiatry*, 190, 97–104. doi:10.1192/bjp.bp.106.021402
- Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to meta-analysis*. Chichester, UK: John Wiley & Sons. doi:10.1002/9780470743386
- Boutron, I., Moher, D., Altman, D. G., Schulz, K. F., & Ravaud, F. (2008). Methods and processes of the CONSORT group: Example of an extension for trials assessing nonpharmacologic treatments. *Annals of Internal Medicine*, 148, W–66. doi:10.7326/0003-4819-148-4-200802190-00008-w1
- Bradley, R., Greene, J., Russ, E., Dutra, L., & Westen, D. (2005). A multidimensional meta-analysis of psychotherapy for PTSD. *American Journal of Psychiatry*, 162, 214–227. doi:10.1176/appi.ajp.162.2.214
- Brom, D., Kleber, R., & Defares, P. B. (1989). Brief psychotherapy for posttraumatic stress disorders. *Journal of Consulting and Clinical Psychology*, 57, 607–612. doi:10.1037/0022-006X.57.5.607
- Bryant, R. A., Moulds, M. L., Guthrie, R. M., & Nixon, R. D. (2005). The additive benefit of hypnosis and cognitive-behavioral therapy in treating acute stress disorder. *Journal of Consulting and Clinical Psychology*, 73, 334–340. doi:10.1037/0022-006X.73.2.334
- Bryant, R. A., Moulds, M. L., Nixon, R. D., Mastrodomenico, J., Felmingham, K., & Hopwood, S. (2006). Hypnoterapy and cognitive behaviour therapy of acute stress disorder: A 3-year follow-up. *Behaviour Research and Therapy*, 44, 1331–1335. doi:10.1016/j.brat.2005.04.007
- Burri, A., & Maercker, A. (2014). Differences in prevalence rates of PTSD in various European countries explained by war exposure, other trauma and cultural value orientation. *BMC Research Notes*, 7, 407–417. doi:10.1186/1756-0500-7-407
- Cardena, E. (2000). Hypnosis in the treatment of trauma: A promising, but not fully supported, efficacious intervention. *International Journal of Clinical and Experimental Hypnosis*, 48, 225–238. doi:10.1080/00207140008410049
- Christensen, C., Barabasz, A., & Barabasz, M. (2013). Efficacy of abreactive ego state therapy for PTSD: Trauma resolution, depression and anxiety. *International Journal of Clinical and Experimental Hypnosis*, 61, 20–37. doi:10.1080/00207144.2013.729386
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.
- Cox, K. S., Resnick, H. S., & Kilpatrick, D. G. (2014). Prevalence and correlates of post-trauma distorted beliefs: Evaluating DSM–5 PTSD expanded cognitive symptoms in a national sample. *Journal of Traumatic Stress*, 27, 299–306. doi:10.1002/jts.21925
- Cukor, J., Spitalnick, J., Difede, J., Rizzo, A., & Rothbaum, B. O. (2009). Emerging treatments for PTSD. *Clinical Psychology Review*, 29, 715–726. doi:10.1016/j.cpr.2009.09.001
- Davidson, J. R., Book, S. W., Colket, J. T., Tupler, L. A., Roth, S., David, D., . . . Feldman, M. E. (1997). Assessment of a new self-rating scale for post-traumatic stress disorder. *Psychological Medicine*, 27(1), 153–160.
- Downs, S. H., & Black, N. (1998). The feasibility of creating a checklist for the assessment of the methodological quality both of randomised and non-randomised studies of health care interventions. *Journal of Epidemiology & Community Health*, 52, 377–384. doi:10.1136/jech.52.6.377
- Flammer, E., & Alladin, A. (2007). The efficacy of hypnotherapy in the treatment of psychosomatic disorders: Meta-analytical evidence. *International Journal of Clinical and Experimental Hypnosis*, 55, 251–274. doi:10.1080/00207140701338696
- Foa, E., Cashman, L., Jaycox, L., & Perry, K. (1997). The validation of a self-report of posttraumatic stress disorder: The Posttraumatic Diagnostic Scale. *Psychological Assessment*, 9, 445–451. doi:10.1037/1040-3590.9.4.445
- Foa, E. B., & Kozak, M. J. (1986). Emotional processing of fear: Exposure to corrective information. *Psychological Bulletin*, 99, 20–35. doi:10.1037/0033-2909.99.1.20
- Foa, E. B., Zinbarg, R., & Rothbaum, B. O. (1992). Uncontrollability and unpredictability in post-traumatic stress disorder: An animal model. *Psychological Bulletin*, 112, 218–238. doi:10.1037/0033-2909.112.2.218

- Fritz, C. O., Morris, P. E., & Richler, J. J. (2012). Effect size estimates: Current use, calculations, and interpretation. *Journal of Experimental Psychology General*, *141*, 2–18. doi:10.1037/a0024338
- Hoge, C. W., & Warner, C. H. (2014). Estimating PTSD prevalence in US Veterans: Considering combat exposure, PTSD checklist cutpoints, and DSM-5. *The Journal of Clinical Psychiatry*, *75*, e1439–e1441. doi:10.4088/JCP.14com09616
- Horowitz, M. (1974). Stress response syndromes: Character style and dynamic psychotherapy. *Archives of General Psychiatry*, *31*, 768–781. doi:10.1001/archpsyc.1974.01760180012002
- Lesmana, C. B., Suryan, L. K., Jensen, G. D., & Tiliopoulos, N. (2009). A spiritual-hypnosis assisted treatment of children with PTSD after the 2002 Bali terrorist attack. *American Journal of Clinical Hypnosis*, *52*, 23–34. doi:10.1080/00029157.2009.10401689
- Lynn, S. J., & Cardeña, E. (2007). Hypnosis and the treatment of posttraumatic conditions: An evidence based approach. *International Journal of Clinical and Experimental Hypnosis*, *55*, 167–188. doi:10.1080/00207140601177905
- Morgan, A. H., & Hilgard, J. R. (1978). The Stanford Hypnotic Clinical Scale for Adults. *American Journal of Clinical Hypnosis*, *21*, 134–147.
- Phillips, M. (1993). The use of ego-state therapy in the treatment of posttraumatic stress disorder. *American Journal of Clinical Hypnosis*, *35*, 241–249. doi:10.1080/00029157.1993.10403015
- Rolfesnes, E. S., & Idsoe, T. (2011). School-based intervention programs for PTSD symptoms: A review and meta-analysis. *Journal of Traumatic Stress*, *24*, 155–165. doi:10.1002/jts.20622
- Sava, F. A. (2013). *Psihologia validată științific. Ghid practic de cercetare în psihologie* [Evidence-based psychology. Practical guide for research in psychology]. Iași, Romania: Editura Polirom.
- Shakibaei, F., Harandi, A. A., Gholamrezaei, A., Samoei, R., & Salehi, P. (2008). Hypnotherapy in management of pain and reexperiencing of trauma in burn patients. *International Journal of Clinical and Experimental Hypnosis*, *56*, 185–197. doi:10.1080/00207140701849536
- Shapiro, F. (1995). *Eye movement desensitization and reprocessing: Basic principles, protocols, and procedures*. New York, NY: Guilford Press.
- Sherman, J. J. (1998). Effects of psychotherapeutic treatments for PTSD: A meta-analysis of controlled clinical trials. *Journal of Traumatic Stress*, *11*, 413–435. doi:10.1023/A:1024444410595
- Shih, M., Yang, T. H., & Koo, M. (2009). A meta-analysis of hypnosis in the treatment of depressive symptoms: A brief communication. *International Journal of Clinical and Experimental Hypnosis*, *57*, 431–442. doi:10.1080/00207140903099039
- Spiegel, H., & Spiegel, D. (2004). *Trance and treatment: Clinical uses of hypnosis*. Washington, DC: American Psychiatric Publications.
- Sundin, E. C., & Horowitz, M. J. (2002). Impact of Event Scale: Psychometric properties. *British Journal of Psychiatry*, *180*, 205–209.
- Sutherland, S. M., & Davidson, J. R. T. (1994). Drug therapy for post-traumatic stress disorders. *Psychiatric Clinics of North America*, *17*, 409–423.
- Taylor, S., Thordarson, D. S., Maxfield, L., Fedoroff, I. C., Lovell, K., & Ogradniczuk, J. (2003). Comparative efficacy, speed, and adverse effects of three PTSD treatments: Exposure therapy, EMDR, and relaxation training. *Journal of Consulting and Clinical Psychology*, *71*, 330–338. doi:10.1037/0022-006X.71.2.330
- Tiernan, B., Tracey, R., & Shannon, C. (2014). Paranoia and self-concepts in psychosis: A systematic review of the literature. *Psychiatry Research*, *216*, 303–313. doi:10.1016/j.psychres.2014.02.003
- Van der Kolk, B. A. (2006). Clinical implications of neuroscience research in PTSD. *Annals of the New York Academy of Sciences*, *1071*, 277–293. doi:10.1196/annals.1364.022

- Van Etten, M. L., & Taylor, S. (1998). Comparative efficacy of treatments for post-traumatic stress disorder: A meta-analysis. *Clinical Psychology & Psychotherapy*, 5, 126–144. doi:10.1002/(ISSN)1099-0879
- Watkins, J., & Watkins, H. (1993). Accessing the relevant areas of maladaptive personality functioning. *American Journal of Clinical Hypnosis*, 35, 277–284. doi:10.1080/00029157.1993.10403019
- Weitzenhoffer, A. M., & Hilgard, E. R. (1959). *Stanford Hypnotic Susceptibility Scales, Forms A & B*. Palo Alto, CA: Consulting Psychologists Press.

Meta-Analyse zur Effizienz der Hypnotherapie zur Erleichterung von PTBS-Symptomen

Tudor-Ştefan Rotaru und Andrei Rusu

Abstrakt: Ein systematischer Rückblick und eine Metaanalyse zur Effizienz der Hypnotherapie bei der Behandlung von PTBS nutzten Literatursuchen, um 47 Artikel aufzutreiben. Allerdings ging es nur in 6 um Untersuchungen, die die Effizienz von Hypnose-basierten Behandlungen testeten. Eine fixed-effects Metaanalyse wurde bei Postinterventionsbewertungsergebnissen und 4-Wochen-follow up-Untersuchungen angewandt. Es wurde ein großer Behandlungseffekt zugunsten der hypnosebasierten (speziell manualisierter abreaktiver Hypnose) Verfahren in den Studien gefunden, wie die Nachtest-Resultate ($d = 1,17$) aufzeigten. Die zeitliche Stabilität des Effektes bleibt stark, wie die 4-Wochen-follow up-Ergebnisse ($d = 1,58$) und auch die Langzeit-Auswertungen (z.B. 12 Monate) zeigen. Hypnose scheint bei der Erleichterung von PTBS-Symptomen effektiv zu sein.

STEPHANIE REIGEL, MD

Une méta-analyse de l'efficacité de l'hypnothérapie pour soulager les symptômes du TSPT

Tudor-Ştefan Rotaru et Andrei Rusu

Résumé: Un examen systématique et une méta-analyse de l'efficacité de l'hypnothérapie dans le traitement du TSPT fondé sur des recherches documentaires ont permis d'obtenir 47 articles. Cependant, seulement six de ceux-ci constituaient des expériences visant à déterminer l'efficacité des traitements fondés sur l'hypnose. Une méta-analyse à effets fixes a été appliquée aux résultats de l'évaluation post-intervention et aux suivis à quatre semaines. Un effet important en faveur du traitement thérapeutique basé sur l'hypnose (en particulier l'hypnose manuelle fondée sur l'abréaction) a été découvert dans les études comprenant des résultats post-test ($d = 1,17$). La stabilité temporelle de l'effet reste forte, comment l'indiquent les évaluations de suivi à 4 semaines ($d = 1,58$) et les évaluations à long terme (p. ex. 12 mois). L'hypnose semble être efficace pour soulager les symptômes du TSPT.

JOHANNE RAYNAULT
C. Tr. (STIBC)

Un meta análisis sobre la eficacia de la hipnoterapia en el alivio del TEPT

Tudor-Stefan Rotaru y Andrei Rusu

Resumen: Se realizaron búsquedas en la literatura para hacer una revisión sistemática y meta análisis sobre la eficacia de la hipnoterapia en el tratamiento del TEPT a partir de los 47 artículos encontrados. Sin embargo, solo 6 fueron experimentos que evaluaban la eficacia de los tratamientos basados en hipnosis. Se utilizó un metaanálisis de efectos mixtos para las evaluaciones postratamiento y seguimiento a 4 semanas. Se encontró un gran efecto a favor de los tratamientos basados en hipnosis (especialmente hipnosis abreactiva manualizada) para aquellos estudios que reportaron resultados postratamiento ($d = 1.17$). La estabilidad temporal del efecto se mantiene firme, como lo reflejan las evaluaciones de seguimiento a 4 semanas ($d = 1.58$) y las evaluaciones a largo plazo (e.g., 12 meses). La hipnosis parece ser eficaz en el alivio de síntomas del TEPT.

OMAR SÁNCHEZ-ARMÁSS CAPPELLO, PhD
*Autonomous University of San Luis Potosi,
Mexico*