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## **Acupoint Stimulation in Treating Psychological Disorders: Evidence of Efficacy**

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# Acupoint Stimulation in Treating Psychological Disorders: Evidence of Efficacy

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Energy psychology is a clinical and self-help modality that combines verbal and physical procedures for effecting therapeutic change. While utilizing established clinical methods such as exposure and cognitive restructuring, the approach also incorporates concepts and techniques from non-Western healing systems. Its most frequently utilized protocols combine the stimulation of acupuncture points (by tapping on, holding, or massaging them) with the mental activation of a targeted psychological issue. Energy psychology has been controversial, in part due to its reliance on explanatory mechanisms that are outside of conventional clinical frameworks and in part because of claims by its early proponents—without adequate research support—of extraordinary speed and power in attaining positive clinical outcomes. This paper revisits some of the field's early claims, as well as current practices, and assesses them in the context of existing evidence. A literature search identified 51 peer-reviewed papers that report or investigate clinical outcomes following the tapping of acupuncture points to address psychological issues. The 18 randomized controlled trials in this sample were critically evaluated for design quality, leading to the conclusion that they consistently demonstrated strong effect sizes and other positive statistical results that far exceed chance after relatively few treatment sessions. Criteria for evidence-based treatments proposed by Division 12 of the American Psychological Association were also applied and found to be met for a number of anxiety-based conditions, including PTSD. Neurological mechanisms that may be involved in these surprisingly strong findings are also considered.

*Keywords:* acupoints, efficacy, Emotional Freedom Techniques (EFT), exposure, Thought Field Therapy (TFT)

The stimulation of acupuncture points (acupoints) as a component of psychotherapy traces to psychologist Roger Callahan's formulation of Thought Field Therapy (TFT) in the 1970s (Callahan & Callahan, 1996). Variations of Callahan's original protocols have subsequently been introduced under the umbrella term "energy psychology," with the most popular and widely practiced of these being "EFT" or Emotional Freedom Techniques (Craig, 2011). Most psychotherapists utilizing acupoint stimulation integrate the procedure into their own psychological framework and methods (Mayer, 2006). Acupoint stimulation can also be applied on a self-help basis, and practitioners routinely recommend to their clients that the technique be used as homework as well as in the treatment setting.

Reports of unusual speed, range, and durability of clinical outcomes by practitioners utilizing an energy psychology approach have been provocative (Feinstein, 2009a). Proponents assert that

the stimulation of selected acupoints, simultaneous with the mental activation of targeted psychological issues, is a major clinical breakthrough, while skeptics counter that the reported outcomes are improbable and certainly have not been substantiated with adequate data or established mechanisms of action. This paper will review the claims leading to this controversy and consider current empirical evidence bearing upon them.

## Extraordinary Claims

The early advocates of energy psychology reported rapid results with a wide range of psychiatric disorders (e.g., Callahan, 1985; Johnson, Shala, Sejdijaj, Odell, & Dabishevi, 2001; Sakai et al., 2001). These assertions, publicly stated prior to corresponding research support or persuasive explanatory models—combined with odd-looking procedures such as tapping on the skin—led to emphatic skepticism in the clinical community (e.g., Devilly, 2005; Herbert & Gaudiano, 2001; Lohr, 2001; McNally, 2001). Three early large-scale pilot studies were particularly provocative because their purported speed and success rates surpassed any treatment in the clinical literature for the conditions being addressed.

In one of these studies, a group of clinicians at Kaiser Permanente in Honolulu followed the progress of 714 patients being treated with TFT (Sakai et al., 2001). Sessions were of 30-50 min in length and patients received an average of 2.2 treatments. Paired pre- and posttreatment *t* tests of patient reports of subjective distress, the primary outcome measure utilized, showed statisti-

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cally significant improvement at the .001 level of confidence for 28 presenting problems or diagnostic categories (including, for example, anxiety, bereavement, chronic pain, depression, food cravings, obsessive traits, obsessive-compulsive personality disorder, panic disorder, phobias, and posttraumatic stress disorder) and at .01 for three other conditions (alcohol cravings, major depressive disorder, and tremors). While the investigators were careful to emphasize that their findings constituted only “preliminary data that call for controlled studies to examine validity, reliability, and maintenance of effects over time” (p. 1229), their report was met with strong criticism or outright incredulity from the professional community (e.g., Lohr, 2001).

A second preliminary study emerged after Joaquín Andrade, a physician trained in acupuncture and TFT, brought acupoint tapping for psychiatric conditions to a group practice running 11 clinics in Argentina and Uruguay. In an ongoing in-house investigation, his team tracked the progress of 5,000 anxiety patients over a 5–1/2 year period. Half were assigned to the clinics’ standard protocol for anxiety disorders, cognitive-behavior therapy (CBT) with antianxiety medication as needed. The other half received acupoint tapping with mental activation, but no antianxiety medication. Raters did not know which treatment a patient received. Improvement was found in 90% of the acupoint tapping group and 63% of the CBT group, with complete relief of symptoms at 76% for acupoint tapping and 51% for CBT. One-year follow-up samplings predicted that 78% sustained the benefits from acupoint tapping and 69% from CBT. Perhaps the most striking finding is that in a substudy of 190 of the patients who were treated successfully, an average of three acupoint tapping sessions were required before the anxious condition was no longer present while an average of 15 CBT sessions were required (reported in Feinstein, 2004).

Even more provocative was a third large-scale investigation by Carl Johnson—a retired Department of Veterans Affairs (V.A.) psychologist and a diplomate of the American Board of Professional Psychology—based on his postretirement work with people who had been severely traumatized. Johnson learned of acupoint tapping toward the end of his career with the V.A. After retiring, he began bringing the approach to parts of the world that had sustained widespread disasters such as genocide or warfare impacting civilian populations. Using TFT, the treatment focused on reducing severe emotional reactions evoked by specific traumatic memories, which often involved torture, rape, and witnessing loved ones being murdered. Johnson’s initial report described his work with 105 people during his first five visits to Kosovo following the genocide, claiming strong improvement with 103 of them (Johnson et al., 2001).

Johnson went on to claim that 334 of 337 traumatized individuals—following treatment provided by him and his colleagues traveling to Kosovo, Rwanda, the Congo, and South Africa—were able to bring to mind their most traumatic memories from the disaster and experience no physiological/affective arousal. A marker in the successful treatment of PTSD is that the client is able to recall the precipitating event without being reactivated (van der Kolk, McFarlane, & Weisaeth, 1996/2007). The 337 individuals worked with 1016 traumatic memories, successfully resolving 1013 of them according to Johnson’s calculations. Johnson also reported that decreasing arousal to the horrific memories carried by civilian survivors of warfare and genocide produced global

improvements in the person’s ability to function. Most of Johnson’s treatments were done within a single session that lasted less than an hour. An 18-month follow-up in which approximately three fourths of the 105 individuals initially treated in Kosovo who were able to be tracked revealed no relapses. While acknowledging that such figures seem “too good to be true” and raised even his own skepticism and desire to see controlled studies, Johnson affirmed in a subsequent interview that the figures accurately reflect his observations and that he “recorded them exactly according to what happened” (recounted in Feinstein, 2008a, p. 131).

## Literature Search

The literature search for this report was performed using MEDLINE/PubMed, PsycINFO, Google Scholar, and references from the papers that were retrieved. Professional organizations and e-groups were a source of information on pending research, and relevant papers that are “in press” but not yet indexed were also examined. The search is current up to April 2012. Only articles written in English were included. Search terms were “energy psychology,” “Thought Field Therapy,” “Emotional Freedom Techniques,” “acupoint tapping,” “acupoint stimulation,” “acupuncture point tapping,” and “acupuncture point stimulation.”

To be selected, articles had to a) examine the use of acupoint tapping (the most widely used form of acupoint stimulation by energy psychology practitioners) within a psychotherapeutic or coaching framework, b) present clinical outcomes, and c) have been peer-reviewed. Of more than 3,000 entries in the psychological and acupuncture literature brought up by the search terms, 51 met these criteria (most acupuncture studies investigate the treatment of physical conditions outside of psychotherapeutic settings). Thirty-nine of them had been published or were “in press” since the first systematic review of energy psychology research four years earlier (Feinstein, 2008b). Of the 51 articles reviewed, seven presented case studies, eight presented systematic observations of multiple cases, 14 presented uncontrolled outcome investigations using standardized measures, and 22 presented controlled outcome investigations using standardized measures. Of this last group, 18 of the studies were randomized controlled trials (RCTs) while four did not use full randomization.

Each of the 36 studies that systematically measured outcomes of multiple treatments focused on TFT ( $n = 11$ ) or EFT ( $n = 25$ ). Two additional variations of energy psychology that use acupoint tapping were found in the case study and systematic observation reports. Because formal outcome studies have not been conducted on the other tapping protocols, TFT and EFT, which are closely related approaches, constitute the domain of treatment for this review. Both methods—in their manualized formats as used in controlled investigations—have the client a) mentally activate a problematic scene or emotion, b) give it a “subjective units of distress” (SUD) rating, c) tap a prescribed set of acupoints while d) mentally holding the scene or making verbal statements that evoke problematic emotions or restructure cognitions that are maintaining nonadaptive psychological patterns relevant to the emotion, and e) sequentially focus on multiple aspects of the situation being addressed. Both may also employ an auxiliary somatic intervention (called the “9-Gamut procedure”) which is believed to promote left-right brain integration and enhance information processing. The 9-Gamut procedure—which is done separately from any focus

on the presenting problem—is standard in TFT protocols and is introduced in EFT protocols when simpler routines are not producing the desired effect. The primary difference between TFT and EFT is in the number and choice of acupoints used. TFT employs different points depending on the client’s presenting problem (e.g., grief, anger, anxiety, depression, trauma, etc.) while EFT embeds many of the TFT sequences into a larger sequence that is applied regardless of the problem being addressed. Which protocol is more effective, if either, was not examined in any of the studies located by the literature search.

In addition to investigations of TFT and EFT, numerous other studies described psychological or behavioral outcomes after the stimulation of acupoints by means other than tapping (for instance, a Google Scholar search of the terms “acupressure” and “depression” yielded 6,460 entries on December 12, 2011). These approaches generally fall outside the domain of energy psychology as most commonly used (e.g., Gallo, 2004) and were not included in the review sample. A few non-tapping approaches to acupoint stimulation, while not meeting the review’s selection criteria and also not included in the review sample, are still mentioned in the subsequent discussion (e.g., Elder et al., 2007).

### A Hierarchy of Evidence

For the purposes of this review, outcome reports are categorized according to the following hierarchy:

#### Anecdotal Reports

Evidence for a new therapy almost always begins with case reports. If compelling case reports cannot be produced, neither the proponents of the method nor clinical researchers are likely to invest their resources in studying it further. The most striking feature about the case reports for acupoint stimulation is their numbers. The website <http://www.EFTUniverse.com>, for instance, presents more than 2,000 anecdotal reports describing the successful application of EFT. It is probably safe to say that no other therapeutic modality in history has as many written anecdotal reports that are readily available for review by the professional community.

#### Case Studies

More formal and systematic than anecdotal reports are case studies. Case studies not only present the clinician’s observations after applying a therapeutic modality with a given client but also use established pre- and postintervention assessments, detail multiple treatment variables, and/or place the case into an informative theoretical framework. Peer-reviewed case studies describing the use of acupoint stimulation with psychological difficulties are included in Bray, 2006; Burk, 2010; Craig, Bach, Groesbeck, & Benor, 2009; Diepold & Goldstein, 2009; McCarty, 2008; Sakai, 2010; and Swack, 2009).

#### Systematic Observation

The next step in a therapy’s path toward credibility usually includes reports that generalize about the outcomes when the therapeutic approach has been applied to multiple clients. This “systematic observation” takes a step back from anecdotal reports

and case studies to highlight patterns that can be ascertained. Reports of systematic observations often serve as pilot studies before designing more rigorous investigation. Peer-reviewed systematic observation reports of acupoint tapping for psychological problems are included in Dinter, 2008; Feinstein, 2008a; Feinstein, 2010; Feinstein & Church, 2010; Gallo, 2009; Lubin & Schneider, 2009; Schulz, 2009; Swingle, 2010).

#### Uncontrolled Outcome Studies

Of the investigations that used standardized outcome measures with multiple subjects but no control group, all 14 reported statistically significant changes from pre- to posttreatment. As with the preponderance of research on a new therapeutic modality, the investigators generally had an allegiance to the method being investigated and in some instances provided the actual treatment. Table 1 presents additional information on these studies.

#### Randomized Controlled Trials

Of the investigations that used standardized outcome measures and compared outcomes with a control group, all 22 reported statistically significant changes from pre- to posttreatment. A wait-list comparison group was used in 9 of the controlled studies and the other 13 used a comparison group that had a placebo or active therapeutic ingredient. Four of the 22 studies were not fully randomized, so a total of 18 RCTs were identified in the literature search. Table 2 presents additional information on the 22 studies that included a comparison group.

#### Evidence by Condition

Multiple studies of acupoint stimulation with nine conditions can be found in the literature, addressing PTSD, phobias, specific anxieties, generalized anxiety, depression, weight control, physical pain, physical illness, and athletic performance. The primary focus in this section is on investigations of PTSD, followed by brief discussion of the other eight conditions. Additional information about the studies cited can be found in Tables 1 and 2.

#### PTSD

Posttraumatic stress disorder is a severe anxiety condition that affects an estimated 3.6% of the United States population (Kessler, Chiu, Demler, Merikangas, & Walters, 2005)—currently 10.9 million people—at any given time. It is notoriously difficult to treat (Committee on Treatment of Posttraumatic Stress Disorder, 2008). In addition to reports of strong outcomes using TFT and EFT, the low number of sessions required for the successful resolution reported by Johnson (discussed above) calls for more rigorous investigation. Four RCTs and five outcome studies that did not use a comparison group provide evidence on the efficacy of brief acupoint-assisted therapy in treating PTSD.

One of Johnson’s colleagues, psychologist Caroline Sakai, was the principal investigator in a study involving 188 adolescents who had been traumatized and orphaned 12 years earlier by the genocide in Rwanda (Sakai, Connolly, & Oas, 2010). Most of them still exhibited symptoms of PTSD. The 50 who were given the highest scores on a standardized PTSD inventory completed by their caretakers met the study’s selection criteria and were administered

Table 1  
*Outcome Studies With Standardized Pre-/Post-Treatment Measures but No Comparison Condition*

Author (date)	Condition treated	Treatment	<i>n</i>	Measures	Main findings/comments
Church (2010)	PTSD	EFT	11	SA-45, PTSD Checklist–Military Version	Nine combat veterans and two family members, all reporting symptoms of PTSD, showed significant improvement after 10 to 15 sessions over 5 days. Gains held on 3-month follow-up.
Church & Brooks (2010)	Emotional distress	EFT	216	SA-45	Health care workers attending 4-hr EFT workshops showed significant improvement on all scales, including depression, anxiety, and somatization. Gains held on 3-month follow-up.
Church et al. (2009)	PTSD	EFT	7	SA-45	Six sessions with military veterans showed significant symptomatic decreases. Gains held on 3-month follow-up.
Darby & Hartung (2012)	Specific phobia (injections)	TFT	21	Fear Survey Schedule, SUD	A single session significantly reduced the fear of injections on 1-month follow-up.
Folkes (2002)	Trauma recovery	TFT	29	PTSD Checklist–Civilian Version	Low-income refugees living in the U.S. showed significant symptom reduction and less avoidance behavior after 1 to 3 sessions.
Hodge & Jurgens (2011)	Psoriasis	EFT	12	SA-45, Skindex-29 Questionnaire	A significant reduction in physical and emotional symptoms was found after a 6-hr EFT group training and on 3-month follow-up.
Lambrou et al. (2003)	Claustrophobia	TFT	4	EEG, Trait-State Anxiety Inventory	A highly significant reduction in self-reported symptoms after a 30-min session was accompanied by decreased trapezius muscle tension and normalized theta activity while facing a height in vivo.
Palmer–Hoffman & Brooks (2011)	Emotional distress	EFT	207	SA-45	Replicates Rowe (2005) and Church & Brooks (2010) in showing significant improvement on a range of emotional symptoms after EFT workshops. Gains held on follow-up.
Rowe (2005)	Emotional distress	EFT	102	SA-45	Participants in a weekend EFT workshop showed highly significant improvement on all scales. Gains held on 6-month follow-up.
Sakai et al. (2010)	PTSD	TFT	50	CROPS, PROPS	Highly significant reduction of PTSD symptoms after a single session in teens who were orphaned 12 years earlier during Rwanda's 1994 genocide. Gains held on 1-year follow-up.
Stone et al. (2009)	PTSD	TFT, etc.	48	CROPS	Significant reductions of PTSD symptoms in teen and young adult survivors of Rwanda's genocide were found after individual and group TFT sessions. Rapport building, relaxation, and other techniques were also used, confounding the findings.
Stone et al. (2010)	PTSD	TFT, etc.	28	CROPS	On a second visit to Rwanda, the same team treated orphan heads of households combining EFT, TFT, an acupressure technique, and other methods. Significant reductions in PTSD symptoms were found after individual and group sessions.
Swingle et al. (2004)	Trauma recovery (auto accidents)	EFT	9	AI, BDI, BAI, qEEG, STAI	Significant reductions in posttrauma symptoms followed two sessions but held for only five subjects 2.5 to 5 months following treatment. Brain wave patterns predicted those whose benefits would hold.
Temple & Mollon (2011)	Dental anxiety	EFT	30	SUD	Dental patients reported a significant decrease in anxiety when a 10-min EFT session was provided just prior to a dental procedure.

*Note.* AI = Avoidance Inventory; BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory; CROPS = Child Report of Post-Traumatic Symptoms; EEG = electroencephalogram; PROPS = Parent Report of Post-Traumatic Symptoms; qEEG = quantitative EEG; SA-45 = Symptom Assessment-45 Questionnaire; STAI = State-Trait Anxiety Inventory; SUD = Subjective Units of Distress.

Table 2

*Outcome Studies With Standardized Pre-/Post-Treatment Measures Using a Randomized (Unless Otherwise Stated) Comparison Condition*

Author (date)	Condition treated	Treatment controls	<i>n</i>	Measures	Main findings/comments
Baker & Siegel (2010)	Specific phobia (insects or small animals)	<b>EFT</b>	11	BAT, BSSPP, FOSAQ, Pulse rate, SUD	A 45-minute EFT session produced significant decreases in fear on most measures. The control conditions did not. Benefits persisted on follow-up more than a year after the treatment.
		SC	10		
		No Tx	10		
Benor et al. (2009)	Test-taking anxiety	<b>EFT</b>	5	Hopkins Symptom Checklist-21, Test Anxiety Inventory	WHEE combines EFT with bilateral stimulation. All 3 treatments produced significant improvement. EFT and WHEE required 2 sessions. CBT required 5 sessions for equivalent gains. Study was not fully randomized.
		WHEE	5		
		CBT	5		
Brattberg (2008)	Fibromyalgia	<b>EFT</b>	26	CPAQ, GSE, HAD, PCS, SF-36, SUD	An 8-week treatment program was administered over the internet with e-mail support. Improvement on pain, anxiety, depression, and other measures was highly significant for the treatment group.
		Wait list	36		
Carbonell & Figley (1999)	PTSD	<b>TFT</b>	12	Brief Symptom Inventory, Impact of Events Scale, SUD	All 4 conditions in this early study, despite numerous design flaws, produced reductions in anxiety measures that were sustained on follow-ups in the 4 to 6-month range. The TFT group required an average of 63 minutes per subject, as contrasted with 172 (EMDR), 254 (TIR), and 113 (V/KD) minutes. Randomization was not used.
		EMDR	6		
		TIR	9		
		V/KD	11		
Church (2009)	Basketball performance	<b>EFT</b>	13	Free throws, vertical jump height	Male and female college basketball players significantly improved free throw percentages after 15-minutes of EFT, compared to controls, but group differences on jump height were not significant.
		Inspirational talk by coach	13		
Church, De Asis, & Brooks (in press)	Depression	<b>EFT</b> Wait list	9 9	Beck Depression Inventory	Four 90-minute group EFT sessions with moderately to severely depressed college students in the Philippines reduced average depression scores from well above the moderate range to well below the depression cut-off.
Church, Piña et al. (2011)	PTSD	<b>EFT</b> Wait list	8 8	Impact of Events Scale	Abused teenage boys in a facility in Peru scoring an average of 36 on the IES (35 indicates a "probable diagnosis of PTSD") scored an average of 3 after a single EFT session. Scores for the wait list group were unchanged.
Church, Hawk et al. (in press)	PTSD	<b>EFT</b> Wait list		PCL-M, SA-45	PCL scores dropped from 61.4 to 34.6 after 6 EFT sessions (50 is the PTSD cutoff; 17 is the lowest score possible) and held at 36.5 on six-month follow-up.
Church, Yount et al. (in press)	Stress	<b>EFT</b> SC No Tx	28 28 27	SA-45, Salivary Cortisol Assay	Psychological symptoms decreased for both treatment conditions after a 1-hour session but significantly more for the EFT group. Significant drops in stress cortisol levels were found after EFT but not for the other two groups.

Table 2 (continued)

Author (date)	Condition treated	Treatment controls	<i>n</i>	Measures	Main findings/comments
Connolly & Sakai (2011)	PTSD	<b>TFT</b>	71	Modified PTSD Symptom Scale, Trauma Symptom Inventory	Survivors of the 1994 genocide in Rwanda received a single TFT session (average 41 minutes) conducted by laypersons trained in TFT. Highly significant improvement on all subscales held on 2-year follow-up.
		Wait list	74		
Irgens et al. (in press)	Anxiety	<b>TFT</b> Wait list	24 24	Fear Inventory, MINI, HAD, LSAS, SCL-90-R	Significant symptom reduction was found on most scales following 1 to 8 sessions ( $M = 3.6$ ) in comparison to the control group.
Jones et al. (2011)	Public speaking anxiety	<b>EFT</b> Wait list	18 18	PRCS, PRCA-24B, SRQ; STAI, SUD, TBC	Significant improvement was found on most of the scales after a 45-minute EFT session.
Karatzias et al. (2011)	PTSD	<b>EFT</b>	23	Clinician Administered PTSD Scale, HAD, PCL-C, SLS	Both treatment conditions showed highly significant improvements on self-report measures as well as interview assessments after a mean of 3.8 (EFT) or 3.7 (EMDR) sessions.
		EMDR	23		
Llewellyn-Edwards & Llewellyn-Edwards (2012)	Soccer performance	<b>EFT</b> Instructions from trainer	7	Kicks at goal from 13.5 meters	Significant improvement was found on goal kicks after a group EFT session focusing on obstacles to kick accuracy but not after a coaching session aimed at improving accuracy.
			8		
Pignotti (2005)	Emotional distress	<b>TFT</b> TFT variation	33	SUD	Each group in this loosely-designed dismantling study showed equal improvement after a single brief telephone session, with 97% of the 66 participants reporting the SUD going down to 0 regardless of order the points were tapped. Incomplete randomization.
			33		
Rubino (in press)	Test-taking anxiety	<b>EFT</b> DB/exposure Wait list	30	RTI, SA-45, Westside Test Anxiety Scale	Both treatments significantly reduced test-taking anxiety after 4 weeks of practice following a 2-hour training session in the method. High dropout rate, with 41 subjects completing the study.
			30		
			30		
Salas et al. (2011)	Specific phobias	<b>EFT</b> DB	11	BAT, Beck Anxiety Inventory, SUD	College students self-reporting specific phobias (heights, snakes, cockroaches, darkness, syringes) improved after a single brief session of either treatment, with EFT being statistically superior.
			11		
Schoninger & Hartung (2010)	Public speaking anxiety	<b>TFT</b> Wait list	28 20	Speaker Anxiety Scale, SUD	Highly significant reduction of anxiety and increase in measures of positive anticipation were found after a 1-hour session.
Sezgin & Özcan (2009)	Test-taking anxiety	<b>EFT</b> Progressive relaxation	35	Test Anxiety Inventory	Both treatments significantly reduced test-taking anxiety after two months of practice following an initial training session. EFT led to significantly greater improvement than the relaxation group.
			35		
Stapleton et al. (2012)	Food Cravings	<b>EFT</b> Wait list	49	BMI, Food Craving Inventory, PFS, SA-45	Reductions in food craving followed four 2-hour group sessions. Outcomes held at one year along with reduced body mass.
			47		

Table 2 (continued)

Author (date)	Condition treated	Treatment controls	n	Measures	Main findings/comments
Waite & Holder (2003)	Fear	EFT Variation 1 Variation 2 No Tx	NS	SUD	A total of 119 college students reporting specific phobias were assigned to 3 tapping groups or a no treatment group. Significant reductions in fear were reported for all 3 tapping variations but not for the control group. Randomization was not used.
Wells et al. (2003)	Specific phobia (insects or small animals)	EFT DB/Exposure	18 17	BAT, Pulse Rate, SFS, SUD	Both groups showed significant reductions in fear after a 30-minute session, with EFT being statistically superior to DB. Gains held on most measures 6 to 9 months after the treatment.

a single session of TFT. All 50 exceeded the PTSD cutoff score on the caregiver inventory. The inventory was structured around the *Diagnostic and Statistical Manual of Mental Disorders—4th edition, revised (DSM-IV-R; American Psychiatric Association [APA], 2000)* criteria for PTSD, designed for parents or other caregivers and translated into Kinyarwanda in a manner that was approved by the test designers. The inventory scores were corroborated by staff observations that these children suffered with enduring PTSD symptoms such as intrusive flashbacks, nightmares, difficulty concentrating, aggressiveness, bedwetting, and withdrawal during the 12-year period following the genocide. After a single treatment session of 20–60 min and brief relaxation training, only 6% of the adolescents still scored within the PTSD range ( $p < .0001$ ), and the staff reported dramatic observed decreases in PTSD symptoms. On 1-year follow-up, 8% scored within the PTSD range on the caregiver inventory. On a companion inventory administered directly to the adolescents, 72% scored within the PTSD range prior to treatment, 18% scored within this range immediately after treatment ( $p < .0001$ ), and 16% scored within the PTSD range on 1-year follow-up.

The strong outcomes treating traumatic stress in a single-session (the Rwanda orphanage study and the Johnson study) and the low number of sessions required to successfully treat anxiety in the South America study (average of three) are cause for skepticism in any therapist who has worked with these conditions. Further support for the reported outcomes has, however, been lent by two RCTs using single-session treatments. Connolly and Sakai (2011) followed their orphanage study with an investigation involving 145 adults who had survived the Rwanda genocide. Participants were randomly assigned to a single-session TFT treatment or a wait-list control condition. Pre/posttreatment scores on two standardized PTSD self-inventories were significant beyond the .001 level on all scales (e.g., anxious arousal, depression, irritability, intrusive experiences, defensive avoidance, dissociation, etc.), and the improvements held on 2-year follow-up.

The other RCT using a single-session treatment protocol was conducted with 16 abused male adolescents in Peru (Church, Piña, Reategui, & Brooks, 2011). The participants, who all scored above the PTSD threshold on a standardized self-inventory, were randomly assigned to an EFT treatment group or a wait-list group.

Each of the eight participants in the treatment group no longer met the PTSD criteria 30 days after the treatment session. None in the wait-list control group showed significant change.

Informal interviews by this author with investigators in the Rwanda and Peru studies revealed that they were not intending to prove that single-session treatment protocols would be adequate, only that they could produce a positive effect. In each study, practical considerations necessitated the brief treatment, and the investigators reported being surprised by the strength of the outcomes. Each acknowledged that additional sessions might have benefitted at least some of the participants. For comparison, a study investigating the use of EFT with PTSD that allowed subjects to receive up to eight treatment sessions reported strong positive outcomes and voluntary termination of treatment after an average of 3.8 sessions (Karatzias et al., 2011).

To provide a sense of how a single acupoint tapping session appeared to be effective in treating chronically traumatized adolescents, the following account is from the principal investigator of the Rwanda orphanage study (Sakai, 2010). She describes the treatment of one of the 47 (of 50) participants whose scores went from above to below the PTSD cutoff, a 15-year-old girl who was 3 years old at the time of the 1994 genocide:

She'd been hiding with her family and other villagers inside the local church. The church was stormed by men with machetes, who started a massacre. The girl's father told her and other children to run and to not look back for any reason. She obeyed and was running as fast as she could, but then she heard her father "screaming like a crazy man." She remembered what her father had said, but his screams were so compelling that she did turn back and, in horror, watched as a group of men with machetes murdered him.

A day didn't pass in the ensuing 12 years without her experiencing flashbacks to that scene. Her sleep was plagued by nightmares tracing to the memory. In her treatment session, I asked her to bring the flashbacks to mind and to imitate me as I tapped on a selected set of acupuncture points while she told the story of the flashbacks. After a few minutes, her heart-wrenching sobbing and depressed affect suddenly transformed into smiles. When I asked her what happened, she reported having accessed fond memories. For the first time, she could remember her father and family playing together. She said that until then, she had no memories from before the genocide.

We might have stopped there, but I instead directed her back to what happened in the church. The interpreter shot me a look, as if to ask,

“Why are you bringing it back up again when she was doing fine?” But I was going for a complete treatment. The girl started crying again. She told of seeing other people being killed. She reflected that she was alive because of her father’s quick thinking, distracting the men’s attention while telling the children to run.

The girl cried again when she reexperienced the horrors she witnessed while hiding outside with another young child—the two of them were to be the only survivors from their entire village. Again, the tapping allowed her to have the memory without having to relive the terror of the experience.

After about 15 or 20 minutes addressing one scene after another, the girl smiled and began to talk about her family. Her mother didn’t allow the children to eat sweet fruits because they weren’t good for their teeth. But her father would sneak them home in his pockets and, when her mother wasn’t looking, he’d give them to the children. She was laughing wholeheartedly as she relayed this, and the translator and I were laughing with her.

We then went on to work through a number of additional scenes. Finally, when she was asked, “What comes up now as you remember what happened at the church,” she reflected, without tears, that she could still remember what happened, but that it was no longer vivid like it was still happening. It had now faded into the distance, like something from long ago. Then she started to talk about other fond memories. Her depressed countenance and posture were no longer evident.

Over the following days, she described how, for the first time, she had no flashbacks or nightmares and was able to sleep well. She looked cheerful and told me how elated she was about having happy memories about her family. Her test scores had gone from well above the PTSD cutoff to well below it after this single treatment session and remained there on the follow-up assessment a year later (pp. 50–51).

In an RCT using acupoint tapping with military veterans, 59 veterans suffering with symptoms of PTSD were randomly assigned to a treatment group or a wait-list control group (Church, Hawk et al., in press). Fifty-four of the initial participants completed the study, including 29 in the treatment group and 25 in the control group. Six hour-long EFT sessions were administered to each participant in the treatment group. The initial mean score on the military version of a standardized PTSD checklist was 61.4 for the treatment group and 66.6 for the wait-list group. The PTSD cutoff is 50. The mean score after six treatment sessions had decreased to 34.6 ( $p < .0001$ ), substantially below the PTSD cutoff. The mean score for the wait-list group a month after the initial testing was essentially unchanged (65.3). The control group was then offered treatment. A total of 49 participants, all of whom had initially scored above the PTSD cut-off, ultimately received 6-hour-long EFT sessions. Eighty-six percent no longer scored in the PTSD range following the treatment.

Four additional peer-reviewed studies of acupoint tapping with posttraumatic stress compared pre- and posttreatment scores on standardized self-inventories but did not use control groups. Each found significant reductions of PTSD symptoms. The statistical significance of the reduced posttreatment PTSD symptom scores were, respectively, at the .01 level (Church, 2010, based on treatments over a 5-day period with combat veterans), the .001 level (Church, Geronilla, & Dinter, 2009, six treatment sessions with combat veterans), the .001 level (Stone, Leyden, & Fellows, 2009, three consecutive group treatment days with genocide survivors,

also introducing rapport-building exercises and other techniques), and the .009 level (Stone, Leyden, & Fellows, 2010, using a similar treatment format as in the 2009 study with a different group of genocide survivors).

The first study comparing acupoint tapping with a treatment whose efficacy with PTSD had already been established was conducted by Scotland’s National Health Service (Karatzias et al., 2011). In addition to using an evidence-based comparison group, Eye Movement Desensitization and Reprocessing (EMDR), the study was also more rigorous in other ways, including its use of baseline assessments eight weeks prior to treatment as well as stronger pre-, post-, and follow-up assessments, such as a clinician-administered PTSD diagnostic interview along with the self-inventories. Both treatments showed large effect sizes, with the pre/post treatment differences attaining the .001 level of significance on all clinical measures.

Additional comparison studies are required to answer the important question of whether acupoint stimulation is equal to or superior to other treatments for PTSD. Particularly lacking in the literature are comparisons of acupoint stimulation with CBT, which is still considered the treatment of choice for PTSD in many clinical settings (Bryant et al., 2008). In the only comparison study involving acupoint stimulation and CBT, 91 subjects with PTSD following an earthquake in China were randomly assigned to CBT treatment alone or CBT with acupoint stimulation. Participants in both groups improved, but the improvement for those whose treatment included acupoint stimulation was significantly stronger ( $p < .01$ ) than the improvement for those who received CBT alone (Zhang, Feng, Xie, Xu, & Chen, 2011). While the study did not meet this review’s inclusion criteria because it used an electronic acupoint stimulator instead of tapping, it is mentioned here because it suggests that acupoint stimulation might improve outcomes when used in combination with established modalities.

### Specific Phobias

The first published RCT demonstrating the efficacy of acupoint tapping with an established *DSM-IV-R* (APA, 2000) diagnosis investigated the treatment of specific phobias, focusing on insects and small animals (Wells, Polglase, Andrews, Carrington, & Baker, 2003). The study compared EFT with diaphragmatic breathing, a physical intervention that is widely used in the treatment of anxiety disorders. The investigation was a “dismantling study” in that the protocols for both groups of subjects were identical except for the physical intervention: acupoint stimulation ( $n = 18$ ) or diaphragmatic breathing ( $n = 17$ ). While both groups showed symptomatic improvement after a single 30-min session, the acupoint group was statistically superior on four of five measures. A partial replication by Baker and Siegel (2010) with 31 subjects supported these findings while carefully controlling for methodological artifacts such as expectancy, regression to the mean, fatigue, and the passage of time. Another partial replication with 22 subjects (Salas, Brooks, & Rowe, 2011) also lent support for the Wells et al. findings.

### Public Speaking Anxiety

Preliminary reports have shown acupoint tapping to be effective in treating a variety of specific anxiety disorders (e.g.,

Darby & Hartung, 2012; Temple & Mollon, 2011). Two RCTs have shown acupoint tapping to produce statistically significant improvement with public speaking anxiety. Schoninger and Hartung (2010) tracked outcomes after a single TFT session of up to 30 minutes was administered to 48 individuals reporting a fear of public speaking. Participants were randomly assigned to a treatment group or a delayed treatment group. Global scores on both a standardized public speaking anxiety self-inventory and a standardized trait and state anxiety self-inventory improved at the .0005 level both pre/post treatment and between groups. Test scores for the treatment group showed significantly less shyness, confusion, physiological activity, and postspeech anxiety, as well as increased sense of poise, positive anticipation, and interest in giving a future speech. On follow-up interviews four months later, the treatment outcomes appeared to have held, according to participant accounts, with more effective self-expression in varying contexts frequently being reported, though standardized instruments were not administered. A subsequent investigation randomly assigned 36 subjects who reported anxiety when speaking in front of a group to a wait-list condition or a 45-min EFT session (Jones, Thornton, & Andrews, 2011). The treatment group showed statistically significant decreases on standardized checklists for public speaking anxiety, communication apprehension, and trait and state anxiety, as well as a significant decrease in indicators of anxiety on an observer behavioral checklist.

### Test-Taking Anxiety

The academic performance and self-esteem of approximately one college student in three is negatively impacted by test-taking anxiety (Rubino, in press). Two RCTs have examined the effects of EFT on test-taking anxiety. Sezgin and Özcan (2009) compared two self-applied treatments for test-taking anxiety with high school students preparing for a university entrance exam in Turkey. Seventy of 312 students, whose scores on a standardized test-taking anxiety inventory met the selection criteria, were randomly assigned to an EFT group or a progressive relaxation group and taught how to self-apply the procedure at home. The students were asked to use EFT or progressive muscle relaxation three times per week for the following 2 months, particularly at times when feeling anxiety about the test. The test-taking anxiety inventory was then readministered (still prior to taking the entrance exam). Both groups showed a significant improvement in scores on the inventory, but the improvement for the EFT group (mean pretreatment score of 53.9 decreased to 33.9) was significantly greater than the decrease (56.3 to 44.9) for the relaxation group ( $p < .05$ ). Rubino (in press) randomly assigned 150 college students to an EFT group, a diaphragmatic breathing with imaginal exposure group, or a wait-list group. Both treatment groups significantly improved on standardized pre/post test-taking anxiety inventories in comparison to the control group. Another investigation of test-taking anxiety, a small pilot study using two standardized pre/post treatment inventories, showed acupoint tapping to attain in two sessions benefits that required five sessions of CBT (Benor, Ledger, Toussaint, Hett, & Zaccaro, 2009).

### Depression, Generalized Anxiety, and Other Psychological Symptoms

An RCT investigating the use of EFT in treating depressed college students (Church, De Asis, & Brooks, in press) showed that after four 90-minute group sessions, average scores on the Beck Depression Inventory went from well into the range of moderate depression (23.4) down to well below the depression cutoff (6.1). The strong statistical significance and large effect size in this study corroborate a series of uncontrolled studies tracking reductions in depression and other measures following group EFT treatments. A surprising finding reported by Rowe (2005), for instance, was that attending an EFT workshop produced significant, lasting reductions in the severity of participants' psychological symptoms as measured on a standardized self-report. Rowe used the Derogatis Symptom Checklist (short form, the SA-45) to measure global changes in psychological functioning after participation in an 18-hr weekend EFT workshop where participants self-applied the method as a way of learning it. The SA-45 was administered to 102 participants 1 month prior to the workshop, at the start of the workshop, at the end of the workshop, 1 month after the workshop, and 6 months after the workshop. A highly significant decrease ( $p < .0005$ ) was found from preworkshop to post-workshop on all the SA-45 measures of psychological distress (depression, anxiety, obsessive-compulsive, somatization, hostility, paranoia, interpersonal sensitivity, phobic anxiety, and psychoticism). The lowered distress scores persisted at the 6-month follow-up. Subsequent studies by Church and Brooks (2010) and Palmer-Hoffman and Brooks (2011) that built on this design supported and expanded Rowe's findings. Church and Brooks (2010) administered the SA-45 to 216 health care workers at five separate conferences. Each participated, as part of the conference, in a 4-hr EFT workshop that included 2 hr of training and 2 hr of self-application. As with Rowe, the pre/post test differences were highly significant ( $p < .001$ ) for all nine SA-45 symptom scales as well as on a global severity index. Also, as with Rowe, most of the improvements held on follow-up. Palmer-Hoffman and Brooks (2011) administered the SA-45 to the participants in four additional EFT workshops ( $n = 207$ ), each led by a different practitioner, and also found strong pre/post differences immediately after the workshop ( $p < .001$ ) and on follow-up. A feature of their study was that, unlike Rowe (2005) and Church and Brooks (2010), the founder of EFT, Gary Craig, did not conduct any of the workshops, so the effects were independent of the founder's direct influence.

### Pain and Physical Illness

Given increasing recognition of the role of emotional factors in pain and illness (Porcelli & Sonino, 2007), acupoint stimulation has been applied with a wide range of physical conditions. For instance, some 270 case reports of EFT successfully reducing physical pain are described on <http://www.EFTUniverse.com> (retrieved December 12, 2011). Five peer-reviewed studies of acupoint stimulation with pain or illness are briefly described here. Twenty-six women diagnosed with fibromyalgia who had been on sick leave for at least 3 months were taught EFT using an Internet-based training program (Brattberg, 2008). They were also provided personal e-mail support but no face-to-face interaction. At the end

of the 8-week treatment program, they showed significant improvement, as compared to a wait-list group, in measures including pain, anxiety, depression, vitality, social function, activity level, and performance problems with work due to physical limitations. In a second study, 12 individuals with psoriasis, the most prevalent autoimmune disorder in the United States, participated in a 6-hr EFT workshop (Hodge & Jurgens, 2011). Statistically significant improvements were found on pre/post assessments of psoriasis symptoms as well as other health issues and emotional difficulties, including reduced anger, worry, stress, and self-consciousness. Better sleep, improved relationships, and fewer medical treatments were also reported on 3-month follow-up. The Church and Brooks (2010) study of 216 health care workers included a 20-min sequence using EFT to focus on physical pain. A 68% reduction in self-reported physical pain on an 11-point Likert-type scale was found immediately following the self-applied tapping. Kober et al. (2002) taught paramedics to hold acupoints following minor injuries that nonetheless required that the patient be transported to the hospital. While their investigations did not meet this review's inclusion criteria because the acupoints were held instead of tapped and did not include other elements of TFT/EFT protocols, they are still instructive. The research team compared treatment outcomes with two randomly assigned control conditions: no-intervention or holding points that are not acupuncture points. Acupoint stimulation resulted in a significantly greater reduction of anxiety ( $p < .001$ ), pain ( $p < .001$ ), and elevated heart rate ( $p < .001$ ) than the other two conditions, and a related team replicated the findings (Lang et al., 2007).

### Weight Control

One of three Americans is obese, a condition which leads to heart disease, stroke, Type 2 diabetes, and certain types of cancer (Centers for Disease Control and Prevention, 2011). Investigating acupoint tapping to reduce food craving, Stapleton, Sheldon, and Porter (2012) randomized 96 participants into a treatment group that participated in four 2-hr Group EFT sessions and a wait-list group. Following treatment, reductions were found in food craving and ability to restrain from cravings ( $p < .05$ ), which persisted on 1-year follow-up along with statistically significant reductions in weight and body mass. Church and Brooks (2010) also included a component on food cravings in their treatment design and reported a surprising 83% pre/post reduction. Elder et al. (2007) investigated the effects of holding selected acupoints in addressing weight regain after successful weight loss in programs at Kaiser Permanente. Again, while holding rather than tapping acupoints did not meet this review's inclusion criteria, the study is still pertinent. Maintaining weight loss is one of the largest challenges in weight management. Ten hours of treatment were provided over a 12-week period. The acupoint treatment was followed by minimal weight gain (average of .1 kg) at 24 weeks. This outcome was strongly superior to one of the two comparison treatments ( $p < .001$ ) and also outperformed the other, though not quite reaching statistical significance ( $p < .09$ ).

### Athletic Performance

While professional athletes and others concerned with peak performance are increasingly utilizing acupoint stimulation (46

cases of improved athletic or artistic performance are described on <http://www.EFTUniverse.com>, retrieved December 12, 2011), only two controlled trials have been published. In an RCT by Church (2009), 26 high performance (PAC-10) male and female college basketball players were randomly assigned to an experimental group that received a 15-min EFT session or a control group that received a coaching session of similar duration. Pre- and post-intervention performance was measured on free throws and vertical jump height. The timeframe of treatment and data collection simulated an actual basketball game. On the posttest, vertical jump height had not significantly changed, but players who received the EFT intervention improved an average of 20.8% on free throws while the control group decreased an average of 16.6%, a difference that was significant at the .03 level. In another RCT with athletes, 15 female soccer players in the United Kingdom were randomly assigned a Group EFT session or group coaching with their trainers. The focus for each group was on improving percentages on penalty kicks ("dead-ball" kicks at distance of 13.5 m from the goal). Improvement in the scores of the players receiving EFT was significantly higher than changes in the scores of the players receiving standard coaching (Llewellyn-Edwards & Llewellyn-Edwards, 2012).

### Quality of the RCTs

The existing literature represents a relatively early stage in efforts to establish the efficacy of energy psychology protocols. Many of the investigations described in this review were conceived as pilot studies and were conducted by proponents of the method being studied. Most had minimal budgets, with only a handful of the 51 reports (e.g., Baker & Siegel, 2010; Brattberg, 2008; Karatzias et al., 2011; Wells et al., 2003) having been based on work that was funded by a major institution.

Nonetheless, the 18 RCTs retrieved in the literature search comprise a body of evidence whose published reports can be examined according to established criteria for reporting randomized clinical trials (e.g., Jadad & Enkin, 2007; Schulz, Altman, & Moher, 2010). All 18 studies utilized standardized pre/posttreatment measures and randomized the assignment of subjects to experimental or control conditions. Four additional studies which included comparison conditions did not employ adequate randomization methods (identified in Table 2) and are not included in this discussion. The 18 RCTs are reviewed here according to their use of external or objective measures (vs. exclusive reliance on self-reports), placebo or active ingredient (vs. wait-list) comparison conditions, blinding, follow-up investigation, and effect size.

### Use of External or Objective Measures

All 18 studies utilized self-inventories. The subjective nature of self-reports, however, and their susceptibility to expectancy, motivational biases such as allegiance effects, lack of introspective access to the variables being examined, and other factors influencing the retrieval of information from memory open them to concerns about their reliability as outcome measures (Hofmann, Gawronski, Gschwendner, & Schmitt, 2005). In addition to self-inventories, nine of the studies also assessed outcomes using external or objective measures, such as structured clinician-

administered diagnostic interviews; salivary cortisol assays; pulse rate during exposure to a feared stimulus; observed avoidance of a feared stimulus; observed signs of speaker anxiety such as pacing, swaying, and extraneous arm and hand movements; body mass index after a period following treatments to reduce food cravings; basketball free throw percentages, and so forth. In all cases where external or objective measures were used, the pre/posttreatment changes they assessed were in the same direction as changes in the self-report measures, and they were approximately equivalent in terms of statistical significance ( $p$  levels). For the studies using self-report measures only, the  $p$  levels for their strongest major findings were .05, .05, .001, .001, .001, .001, .001, .001, and .001, respectively. For the studies using external or objective as well as self-report measures, the  $p$  levels for their strongest major findings were .05, .05, .03, .005, .001, .001, .001, and .001, respectively, with one study not providing a  $p$  score in establishing significance.

In this sampling, studies whose designs were stronger (i.e., more discriminating) still produced strong outcomes. Conversely, these findings suggest that if external or objective measures had been used in the nine studies that relied only on self-reports, the pre/posttreatment changes indicated by the self-reports are likely to have been corroborated by more objective measures. This supposition of convergent validity is consistent with correlations between self-reports and clinician-administered scales (e.g., Keen, Kutter, Niles, & Krinsley, 2008; Ruggiero, Ben, Scotti, & Rabalais, 2003) when the self-report inventories meet conditions such as strong conceptual correspondence between measures (Hofmann et al., 2005).

### Use of Placebo or Active Ingredient Comparison Conditions

Wait-list control groups allow the changes in individuals who received the treatment being investigated to be compared with individuals who did not receive the treatment. While ensuring that any observed effects are due to the intervention, rather than variables such as the testing procedure or spontaneous improvement over the passage of time, wait-list comparison groups do not control for placebo effect, suggestion, or expectation. Comparison conditions that control for these factors utilize placebo or active-ingredient treatments. Nine of the 18 RCTs in the sample included a placebo or active-ingredient control condition, with the other nine using only a wait-list control condition (see Table 2). Statistical significance in outcomes ( $p$  levels) were slightly stronger but roughly equivalent for the studies that used only a wait-list ( $p$  levels for their strongest major findings were .05, .001, .001, .001, .001, .001, .001, .001, and .001, respectively) than for studies that used a placebo or active ingredient treatment ( $p$  levels for their strongest major finding were .05, .05, .05, .03, .005, .001, .001, and .001, respectively, with one study not providing a  $p$  score in establishing significance).

### Blinding

Since it is generally impossible in investigations of psychotherapy to conceal from the therapist the nature of the treatment, the most common forms of blinding involve the study participants and taking steps to ensure that those collecting and analyzing outcome

data not know if it is associated with the experimental or control condition. Discussion of blinding methods utilized was found in 9 of the 18 RCTs. Statistical significance in outcomes ( $p$  levels) were marginally stronger for the studies that reported the use of blinding methods ( $p$  levels for their strongest major findings were .03, .005, .001, .001, .001, .001, .001, .001, and .001, respectively) than for those that did not ( $p$  levels for their strongest major finding were .05, .05, .05, .05, .001, .001, .001, and .001, respectively, with one study not providing a  $p$  score in establishing significance). While only a slight difference, it is in the opposite direction of what would be expected if the lack of blinding resulted in stronger positive outcomes. In fact, in a triple-blind study, Church, Yount et al. (in press) produced robust outcomes after devising methods to blind the therapists, the subjects, and the evaluators.

### Follow-Up Investigation

The durability of treatment benefits can be determined by assessing the condition originally measured after a specified period of time. Eight of the 18 RCTs included follow-up investigation, with seven of these repeating the original pre/post treatment measures and one (Schoninger & Hartung, 2010) relying only on follow-up interviews. Schoninger and Hartung found that 28 of 31 participants reported sustained improvement 5 months after the treatment. Wells et al. (2003) reported that improvements on a behavioral avoidance test were sustained 7 to 10 months after treatment while scores on self-inventories regressed but stayed significantly stronger than pretreatment scores. Baker and Siegel's (2010) partial replication of Wells et al. also found sustained improvement on the same behavioral avoidance test (follow-up period averaged 16.5 months) and that self-inventory gains declined on follow-up but remained significantly stronger than pretreatment scores. Stapleton et al. (2012) reported significant ( $p < .05$ ) improvement in weight, body mass index, food cravings, subjective power of food, craving restraint, and various psychological symptoms 12 months after treatment for food cravings. Karatzias et al. (2011) found that improvements on diagnostic interview and self-report scores after PTSD treatments held on 3-month follow-up. Connolly and Sakai (2011), investigating outcomes in PTSD symptoms among genocide survivors, found sustained improvement on 2-year follow-up. Irgens et al. (in press) reported that improved post-treatment anxiety scores held on 3-month and 12-month follow-up. Church, Hawk et al. (in press) found that treatment gains remained on 6-month follow-up. Each of the studies that conducted follow-up investigation found sustained improvement over time.

### Effect Size

Significance levels ( $p$  scores) show the probability that the difference between two sets of data (such as the difference between pretreatment and posttreatment test scores within one treatment group or changes in test scores between two groups) are not due to chance. Significance levels do not, however, reflect the size of such differences. Determining the magnitude of an effect is accomplished by a calculation of the effect size, often as "Cohen's  $d$ " or "eta squared" (Cohen, 1998). Seven of the eight studies that reported Cohen's  $d$  (Baker & Siegel, 2010; Church, De Asis et al.,

in press; Irgens et al., in press; Karatzias et al., 2011; Salas et al., 2011; Schoninger & Hartung, 2010; Wells et al., 2003) had at least one salient clinical outcome with  $d > .8$ , indicating large effect sizes. The other study (Stapleton et al., 2012) reported a moderate effect size. For eta squared, 0.0099 constitutes a small effect size, 0.0588 a moderate effect size, and 0.1379 a large effect size (Cohen, 1998). All four studies that calculated eta squared (Connolly & Sakai, 2011; Jones et al., 2011; Rubino, in press; Sezgin & Öcan, 2009) had at least one salient clinical outcome measure with eta squared in the large effect size range. Four of the six studies for which effect size was not provided did furnish enough data to calculate Cohen's  $d$ , which was computed by the current writer (available upon request). Cohen's  $d$  was larger than .8 on at least one salient clinical outcome measure for all four studies. In summary, a large effect size was found for 15 of the 16 studies where effect size could be determined, and a moderate effect size was found for the other one.

### Evaluation of the Included RCTs

While the 18 RCTs found in the literature search consistently suggest that acupoint stimulation leads to strong clinical outcomes for a variety of conditions, further research is needed to address many remaining questions. Additional replications or partial replications, such as Baker and Siegel (2010) and Salas et al. (2011), would better control for experimenter bias and other nonspecific factors. Further dismantling studies, such as Wells et al. (2003) and Baker and Siegel (2010), are needed to identify the active ingredients in energy psychology protocols. Dismantling studies could also answer questions that would guide clinicians, such as whether the acupoints used in EFT or those used in TFT are superior; whether specific points are more effective for specific conditions; whether the 9-Gamut procedure is necessary; or how the verbal and somatic dimensions of energy psychology protocols are most effectively integrated. Additional comparison studies, such as Karatzias et al., 2011, are needed to show how energy psychology protocols perform in head-to-head clinical trials with other established treatments. Karatzias et al. also provide the first glimpse into whether the strong outcomes reported in existing studies will be found by disinterested investigators utilizing the rigorously designed studies that can be expected as the broader psychological community scrutinizes energy psychology interventions.

To date, the existing body of evidence focuses primarily on questions of efficacy. All 18 RCTs identified in the literature search reported positive outcomes on at least one salient clinical measure that exceeded the .05 level of significance. The .001 level was exceeded in 11 of the 18 studies. Effect sizes were large in 15 of the 16 studies in which they were determined and moderate in the remaining study. Significance level and effect size complement one another in statistically establishing an underlying effect for an observed clinical outcome (Ellis, 2010). The 18 RCTs all meet established significance thresholds and showed strong effects in the 16 studies where effect size was calculated. Ways of addressing expectancy and allegiance demand characteristics, blinding, and control conditions, specifically in investigations of energy psychology protocols, have been thoughtfully discussed in the field's literature (Baker, Carrington, & Putilin, 2009). More rigorous blinding,

control for experimenter bias, and ensuring fidelity to prescribed treatment protocols will further inform existing findings. At this point, however, comparisons between; a) studies that used external or objective outcome measures and studies that relied only on self-report measures; b) studies that used placebo or active ingredient control conditions and those that did not; c) studies that used blinding and studies that did not; and d) studies that conducted follow-up investigations and those that did not, suggest that the findings reported in the 18 RCTs can be accepted with reasonable confidence.

### Mechanisms

Beyond the question of whether acupoint tapping is effective is the question: If it works, how does it work? The mental health field is still trying to reconcile the strong research support for the effectiveness of EMDR (e.g., Foa, Keane, & Friedman, 2009) in treating trauma-based disorders with its strange-looking physical procedures (Bergmann, 2010). While EMDR integrates elements of other therapies in ways that can be explained within conventional frameworks—such as imaginal exposure, information processing, and cognitive restructuring—an essential element for the strength of its success seems to include bilateral stimulation through eye movements, alternating left-right tapping on the body, or listening to alternating left-right tones (e.g., Gunter & Brodner, 2008; Lee & Drummond, 2008). The mechanisms involved in this component of the treatment have still not been persuasively described or empirically established. What energy psychology adds to the puzzle is a second approach that utilizes somatic activation as a core procedure and which has demonstrated effectiveness in treating a range of disorders.

The most salient research finding for speculating on why acupoint stimulation may be effective in treating PTSD and other anxiety-based disorders emerged from a 10-year research program at Harvard Medical School investigating the effects of stimulating specific acupuncture points. Imaging studies showed that the stimulation of certain points with needles reliably produced prominent decreases of activity in the amygdala, hippocampus, and other brain areas associated with fear (Hui et al., 2000). Subsequent investigations by the same team provided “additional evidence in support of previous reports” that acupuncture is able to produce “extensive deactivation of the limbic-paralimbic-neocortical system” (Fang et al., 2009, p. 1196).

What makes the Hui and Fang studies so pivotal? In almost all acupoint stimulation protocols, the physical procedure is done simultaneously with the mental activation of a psychological problem or desired state. In this sense, energy psychology with PTSD and other anxiety disorders is an exposure technique (Feinstein, 2010). Bringing to mind an emotional trigger, problematic scene, or unresolved traumatic memory activates the amygdala, arousing a threat response. Stimulating selected acupoints, according to the Harvard studies, simultaneously sends deactivating signals to the amygdala. Repetition of the physical intervention resolves these opposing signals by reducing the arousal while the trigger is still mentally active. The hippocampus records that the memory or trigger is being safely engaged without a stress response, and the neural pathways that initiate the associated stress response are permanently altered. Being

able to encounter the memory or trigger without limbic arousal becomes the new normal.

While a vast oversimplification, this explanation fits both the clinical data and the brain image findings. Reducing limbic arousal in anxiety disorders and altering the neural pathways that maintain maladaptive conditioned responses are two of the primary brain processes that appear to be occurring in the range of favorable clinical outcomes reported above. Another effect experienced by the author and reported by other clinicians, but not yet empirically investigated, is that acupoint tapping paired with positive imagery or well-formulated suggestions appears to markedly increase the impact of the imagery or suggestion. Regarding the use of needles versus tapping, a double-blind study comparing penetration by acupuncture needling with nonpenetrating pressure that simulated the sensation of penetration found equivalent clinical improvements for each intervention (Takakura & Yajima, 2009), and informal studies have suggested that tapping may actually be superior to needling in the treatment of anxiety disorders (reported in Feinstein, 2004).

Beyond the effects of acupoint stimulation on neurological function are related biochemical and “energetic” processes. A hypothesis that has not been tested, but that is consistent with the healing traditions from which energy psychology draws its physical intervention strategies, is that stimulating a well-selected set of acupoints momentarily establishes internal balances that allow psychological issues to be raised, resolved, and reintegrated in ways not possible while internal systems are stressed. As the electrochemical effects of stimulating acupoints are being mapped, they are, in fact, proving to be consistent with ancient explanations used in acupuncture. For instance, Langevin and Yandow (2002) demonstrated a strong correspondence between the pathways on which acupuncture points are situated (described as “meridians” in acupuncture theory) and interstitial connective tissue. Oschman (2006) explains that the semiconductive properties of the body’s connective tissue appear to allow acupoint stimulation to rapidly send electromagnetic signals to specific areas of the body independent of the nervous system.

Biochemical effects of acupoint stimulation are also being identified, with neurotransmitters, endorphins, and other brain chemicals apparently being influenced by tapping (Ruden, 2005). Three investigations have demonstrated desirable changes in brain wave patterns following acupoint treatments (Diepold & Goldstein, 2009; Lambrou, Pratt, & Chevalier, 2003; Swingle, Pulos, & Swingle, 2004). In an EFT study by Church, Yount, and Brooks (in press), a single tapping session was not only more effective than a standard supportive counseling session in reducing self-reported distress, the treatment significantly reduced cortisol levels. Elevated cortisol levels are associated with accelerated aging, many organic diseases, and psychological conditions such as depression and anxiety. Cortisol levels were not reduced in control subjects who received supportive counseling or no treatment. The Church, Yount et al. (in press) study showed EFT to be markedly superior to supportive counseling in simultaneously improving both cortisol-related stress levels and self-reported psychological symptoms after a single treatment session.

Findings on the clinical significance of memory reconsolidation may also help explain how energy psychology interventions alter past conditioning. During the reconsolidation of memories that have been mentally activated, automatic fear responses are partic-

ularly vulnerable to modification via extinction training, such as exposure to conditioned cues (Schiller, Monfils, Raio, Johnson, LeDoux, & Phelps, 2010). In energy psychology protocols, traumatic or other formative memories are activated prior to acupoint tapping in order to obtain the SUD rating. Then the tapping is applied during the period while the memory is being reconsolidated. Fear conditioning is particularly labile for change during this period, so the deactivation signals sent to the amygdala by the acupoint tapping may have enhanced impact at such times. Although the initial SUD rating is taken for the purpose of providing a benchmark as treatment progresses, the memory activation it requires may in itself be an active ingredient in the treatment.

While current formulations are still sketchy, emerging knowledge about brain function, electromagnetic energies, and neurochemistry are converging so plausible explanations—such as the deactivation of amygdala arousal in treating anxiety disorders—are appearing. Complicating attempts to understand the mechanisms at play in acupoint stimulation, however, is the fact that its use in clinical settings is not usually as a stand-alone intervention. Although energy psychology can be conceived of as an independent, self-contained modality, most psychotherapists who learn the approach incorporate it into their existing clinical framework and repertoire. Acupoint stimulation lends itself quite readily to such integration, one of its greatest potential strengths for mental health practitioners. The key contribution that acupoint stimulation brings to other clinical frameworks seems to be in its apparent ability to shift neural pathways and associated maladaptive conditioning with unusual speed and precision.

## Discussion

Returning to the question posed in framing the paper: does the existing empirical evidence support early claims that acupoint stimulation leads to clinical outcomes that are unusually strong and rapid? Studies reporting that a *single* EFT or TFT session lowered scores of the vast majority of subjects on standardized measures from above to below PTSD cutoffs (Church et al., 2011; Connolly & Sakai, 2011; Sakai et al., 2010), with gains appearing durable when follow-up was conducted (Connolly & Sakai, 2011; Sakai et al., 2010), lean in that direction. While conclusive statements are premature until and unless more rigorous studies corroborate initial findings, the existing literature is consistent with the claims that acupoint tapping yields unexpectedly strong and rapid clinical outcomes with a range of conditions.

Not one disconfirming study has appeared (see Feinstein, 2009b, for discussion of how two early studies—Pignotti, 2005; Waite & Holder, 2003—have been interpreted by some as challenging the claims of acupoint practitioners. On closer examination, these studies actually provide evidence of a positive clinical effect, although the investigators attributed that effect to mechanisms other than the acupoint tapping). A notable trend in the research on energy psychology has been the increasing methodological rigor of the most recent studies (e.g., Baker & Siegel, 2010; Church, Yount et al., in press; Connolly & Sakai, 2011; Karatzias et al., 2011). Despite more sophisticated designs and increased levels of control, these studies have been consistent in providing strong efficacy evidence. As the level of rigor has increased in the research designs being used, early inferences from

the preliminary data—rather than being shown to be overly optimistic—are being corroborated with statistical validation.

The investigation of acupoint protocols for psychological conditions is still, however, in a relatively early stage, with three fourths of the studies meeting the inclusion criteria for this review having been published in the past 4 years. Beyond the design quality evaluations presented above, another way of assessing the current body of research is to compare it with the criteria for evidence-based treatments developed by the Society of Clinical Psychology (Division 12 of the APA) in its efforts to promote best practices.

To meet the Division 12 efficacy criteria as a “well-established treatment,” two independent research teams must have demonstrated in a peer-reviewed report that the treatment is either (a) more effective than a placebo treatment or (b) that it is equivalent to another treatment whose efficacy has been established (Chambless, 1998; Chambless et al., 1998). The treatment must also be standardized (usually meaning that practitioners adhered to manualized procedures) and the client population must be clearly specified so the study’s generalizability can be inferred. To be designated as a “probably efficacious treatment,” only one study meeting the above criteria is required. The “probably efficacious” criteria can also be met by two studies where the control condition is a wait-list group instead of a placebo condition or an established treatment. The two studies may be by the same investigator or different investigators. While Division 12 has not yet evaluated any of the evidence for energy psychology in published reports, clinical conditions for which acupoint stimulation protocols appear—based on the studies presented above—to meet the criteria for designation as a “well-established treatment” include phobias (Wells, et al., 2003; Salas, Brooks, & Rowe, 2011) and test-taking anxiety (Rubino, in press; Sezgin & Özcan, 2009). Acupoint protocols appear to meet the criteria for designation as a “probably efficacious treatment” for PTSD (Church et al., 2011; Church, Hawk et al., in press; Connolly and Sakai, 2011 ; Karatzias et al., 2011) and public speaking anxiety (Schoninger and Hartung, 2010; Jones, Thornton, & Andrews, 2011).

### Conclusion

A review of current evidence revealed that the use of acupoint stimulation in treating psychological disorders has been examined in a number of studies that met accepted scientific standards. These studies have consistently demonstrated strong effect sizes and other positive statistical results that far exceed chance after relatively few treatment sessions. Investigations in more than a dozen countries by independent research teams have all produced similar results. Speculation on the mechanisms involved suggests that tapping on acupoints while a presenting emotional problem is mentally activated rapidly produces desired changes in the neurochemistry involved in that problem. If favorable outcome research on energy psychology continues to accumulate—as recent developments would predict—and explanatory models for the observed effects continue to evolve, acupoint stimulation will offer clinicians a technique that can be used with confidence for quickly altering the neural pathways that underlie psychological problems.

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