Psychological Trauma in Veterans using EFT (Emotional Freedom Techniques): A Randomized Controlled Trial

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Abstract

This study examined the effect of Emotional Freedom Techniques (EFT), a brief exposure therapy combining cognitive and somatic elements, on post-traumatic stress disorder (PTSD) and psychological distress symptoms in military veterans receiving mental health services. Veterans meeting the clinical criteria for PTSD were randomized to EFT (n = 30) or a wait-list (n = 29; WL). The EFT intervention consisted of six hour-long EFT coaching sessions concurrent with standard care (SOC). PTSD was assessed using the PTSD Checklist-Military (PCL-M). Psychological distress was measured using the Symptom Assessment 45 (SA-45), which has 2 global scales and 9 subscales for conditions such as anxiety and depression. The WL and EFT groups were compared pre- and posttest (at 1 month for the WL group, after 6 sessions for EFT group). EFT participants had significantly less psychological distress on the global and on all but one of subscales on the SA-45 ($p<0.0002$) and the PTSD total score ($p<0.0001$) than WL participants at posttest. In addition, 90% of the EFT group no longer met PTSD clinical criteria vs. 4% in WL group at posttest. Following the wait-period, WL participants received the EFT intervention. In a within-subjects longitudinal analysis, 60% no longer met PTSD clinical criteria after 3 sessions. This increased to 86% after 6 sessions for the 49 subjects who ultimately received the intervention, and remained at 86% at the 3-month follow-up. In addition, statistically significant decreases in psychological distress and PTSD total scores were present after 6 sessions ($p<0.0001$). These gains remained stable at the 3-month follow-up. The results are consistent with other published reports showing EFTs efficacy at treating PTSD and co-morbid symptoms, and its long-term effects.

Keywords: veterans, PTSD, exposure therapy, trauma, EFT (Emotional Freedom Techniques).

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Some 300,000 US military personnel returning from the conflicts in Iraq and Afghanistan are estimated to be PTSD-positive (Institute of Medicine, 2006). PTSD is associated with co-occurring conditions such as depression, anxiety, and other mental health issues subsequent to deployment (Defense Health Board Task Force on Mental Health, 2007). Over 80% of PTSD sufferers meet diagnostic criteria for other psychological disorders (Breslau, Davis, Andreski, & Peterson, 1991; Clancy, Graybeal, Tompson, Badgett, Feldman, & Calhoun et al., 2006). In addition to psychological symptoms, PTSD patients are more prone to physical diseases, increasing the cost and complexity of caring for this population (Boston University, 2008). This complex of conditions must be addressed for PTSD treatments to be effective (Tanielian & Jaycox, 2008).

Some long-term studies have found PTSD to be an intractable chronic condition, and that even after following an aggressive intervention, “the treatment program’s impact on the course of illness had been negligible.” (Johnson, Fontana, Lubin, Corn, & Rosenheck, 2004; McFarlane, 2010). Others believe that it can be remediated (Foa, Keane, & Friedman, 2000). In examining studies of PTSD for efficacious treatments, the IOM (Institute of Medicine), cited a study by Monson et al. (2006) as one of the most encouraging for long-term PTSD sufferers (Institute of Medicine, 2007). The Monson et al. study examined 24 combat veterans diagnosed with PTSD who received 12 sessions of cognitive restructuring and exposure. This n is similar to that of the intervention group in the present study (30). After treatment, 40% of subjects in the Monson et al. study no longer met the criteria for PTSD. However, half showed no reliable improvement, and co-morbid symptoms such as behavioral avoidance did not improve significantly. Exposure therapy has also been judged efficacious in other examinations of PTSD, such as one conducted by the American Psychiatric Association (Benedek, Friedman, Zatzick, & Ursano, 2009). A meta-analysis by Bradley et al. (2005) found CBT (cognitive behavioral therapy), EMDR (eye movement reprocessing) and exposure therapies to be efficacious, while a meta-analysis by Seidler and Wagner (2006) found efficacy for EMDR and CBT. A combination of cognitive and exposure therapy for earthquake survivors showed a 60% drop in PTSD symptoms in a single session (Salcıoglu & Basoglu, 2010). The demand for PTSD treatments from veterans returning from

deployment has renewed investigations into efficacious treatments.

EFT (Emotional Freedom Techniques) is a brief exposure therapy with a somatic and a cognitive component. It borrows elements from established cognitive and exposure protocols, but adds the novel element of somatic stimulation. After recalling a traumatic incident, the subject identifies a score on a Likert-type scale from 0 (minimum) to 10 (maximum), referred to as Subjective Units of Distress or SUD (Wolpe, 1973). The subject pairs the traumatic memory with a self-acceptance statement, e.g., "Even though I had to shoot the kid who ran toward my Humvee wearing an explosive vest…" (memory), "I deeply and completely accept myself" (self-acceptance statement). The subject then taps on a sequence of points on the body. Repeated sequences of EFT tapping may be performed till the subject's self-report goes to a 0, indicating no emotional intensity associated with the traumatic memory. EFT was developed by Gary Craig and is described in *The EFT Manual* (Craig, 2008), which has been available as a free online download for over a decade, leading to standardized implementation. *EFT for PTSD* (Craig, 2009) reviews the clinical and research evidence applicable to this condition, and includes case histories and suggested protocols for implementing EFT with PTSD-positive clients. A research consensus method of EFT used in the present and previous studies is available online (www.SoulMedicineInstitute.org/EFT.pdf).

A pilot study of war veterans using a within-subjects, repeated measures design found that six sessions of EFT produced statistically significant reductions across the range of psychological symptoms, as well as reductions in PTSD scores from clinical to subclinical levels (Church, Geronilla, & Dinter, 2009). Gains were maintained on follow-up. A second pilot study examined the effects of a one week EFT coaching intensive with 10 to 15 sessions. This longer protocol was also found to reduce PTSD and co-occurring conditions (Church, 2010). These veterans were followed at one month, three months, and twelve months, and PTSD and other symptom scores remained reliably and significantly subclinical. EFT has also been found efficacious for treating PTSD in non-military populations (Swingle, Pulos, & Swingle, 2004; Church, Piña, Reategui, & Brooks, 2009), and other similar forms of energy psychology have been used for victims of human-caused and natural disasters (Feinstein, 2008a). Studies using EEG to note changes in the limbic structures of the brain during the recall of traumatic incidents have

also found energy psychology to result in downregulation of the stress response, with gains maintained on follow-up (Lambrou, Pratt, & Chevalier, 2003; Swingle, Pulos, & Swingle, 2004; Diepold, 2008). In addition to psychological symptoms, EFT has been used successfully to treat a wide range of organic diseases (Feinstein, Eden, & Craig, 2005).

A clinical dilemma found in evoking combat memories is the risk of retraumatization. Subjects asked to recall a traumatic incident may be retraumatized rather than desensitized by the experience (van der Kolk, McFarlane, & Weisaeth, 1996). This safety issue is typically minimized with energy psychology techniques (Mollon, 2007). An absence of client distress, and the rapid reduction of self-reported emotional intensity, is reported by clinicians using EFT (Mollon, 2008). Reduced affect has been observed even in studies that require war veteran clients to recall highly emotionally evocative combat memories (Church, 2010; Church, Geronilla & Dinter, 2009). A survey of clinicians found that when the danger of retraumatization is present, energy psychology methods were preferred (Schulz, 2009). Flint, Lammers and Mitnick (2005) have found EFT to be a safe intervention for traumatized individuals, and describe group methods, as well as individual psychotherapy protocols, for applying EFT when retraumatization is a risk.

The mechanisms of action of EFT and other energy psychology techniques involve a variety of physiological systems, coordinated by those that regulate stress in the body. Lane (2009) describes increased regulation of the HPA (hypothalamus-pituitary-adrenal) axis. Oschman (2005) describes the semiconductive properties of connective tissue, and the transmission of stress-reducing signals through this matrix during energy therapy sessions. LeDoux (2002) describes the threat-assessment neurological wiring in the brain, and how traumatic memories may condition the amygdala to respond, resulting in the “hostile takeover of consciousness by emotion.” Sabban and Kvetnansky (2001) describe the regulatory functions of the Immediate Early Genes, especially genes such as C-fos and EGR-1, which reach peak expression during stress. Church (2009) summarizes the evidence for the silencing of these and other stress-specific genes during effective behavioral interventions for PTSD, and the increased reuptake of stress hormones such as cortisol and epinephrine, during EFT interventions.

When successful counterconditioning occurs, memories are reconsolidated in the neuroplastic structures of the midbrain, but are now newly paired with proximate non-stressful cues (Davis, Bozon, & Laroche, 2003). Successful psychotherapy produces measurable changes in these brain structures (Felmingham, Kemp, & Williams, 2006). Diepold and Goldstein (2008) used EEG to measure brain states, and found that as subjective emotional intensity of traumatic memories reduced following energy psychology treatment, the neural frequencies associated with stress also reduced.

Craig (2008), Gallo (1999), and other originators of energy psychology suggest that these methods are effective because their prescribed tapping points correspond to the endpoints of the acupuncture meridians. Decreases in amygdala and hippocampus activity have been observed in fMRI measurements following acupuncture stimulation (Dhond, Kettner, & Napadow, 2007). Hui et al. (2000) found that acupuncture sends signals directly to the amygdala and other emotional management structures in the brain, reducing hyperarousal. Associations between the stimulation of acpuncture points and increased regulation of midbrain fear-modulation structures been demonstrated in other studies (Hui, Liu, Marina, Napadow, Hasselgrove, & Kwong et al., 2009; Fang, Jin, Wang, Li, Kong, & Nixon et al., 2009), pointing to the potential efficacy of acupucuture stimulation for anxiety disorders.

Studies examining the epigenetic effects of stress stimuli have found them to trigger the expression of a cascade of regulatory genes that affect other physiological processes (Sabban & Kvetnansky, 2001; Davis, Bozon, & Laroche, 2003; Thayer, 2000). A randomized controlled trial of acupuncture for PTSD compared it to cognitive behavioral therapy and to a wait list (Hollifield, Sinclair-Lian, Warner, & Hammerschlag, 2007). The study found “large treatment effects.” Taken together, these studies provide evidence for the efficacy of acupoints in downregulating affect, and mediating stress neurophysiology.

While acupuncture uses needles, studies of other methods of stimulating meridian endpoints have found non-needling methods to be indistinguishable from needling in their effects on brain function. A randomized controlled trial compared acupuncture with pressure on acupoints without puncturing the skin (Cherkin, Sherman, & Avins, 2009). It

found that somatic stimulation produced the same results as needling. Ultrasound has also been found to produce the same results as acupuncture needling, adding to the evidence for the efficacy of non-needling methods (Jones, Bae, Wilson, So, & Kidney, 2004). EFTs protocol of tapping on acupuncture meridian endpoints is hypothesized by its proponents to produce effects similar to acupuncture. A review of eight studies examining the effect of energy psychology techniques on PTSD suggests that "(a) tapping on selected acupoints (b) during imaginal exposure (c) quickly and permanently reduces maladaptive fear responses to traumatic memories and related cues." (Feinstein, in press).

Because of its utility in reducing affect during the recall of traumatic events such as the flashbacks, nightmares and intrusive thoughts typical of PTSD, EFT is used in many outpatient facilities treating veterans, as well as some Veterans Administration hospitals and VA centers (Iraq Vets Stress Project, 2009). The efficacy of EFT in reducing symptoms that are often co-morbid with PTSD, such as anxiety, depression and phobias, has been demonstrated in several studies (Rowe, 2005; Wells, Polglase, Andrews, Carrington & Baker, 2003; Church & Brooks, in press). The brevity of treatment time frames in these studies, ranging from one to six sessions, as well as its general effect on psychological and physical symptoms, makes EFT a candidate for formal trials to determine efficacy for the complex of conditions that confront returning war veterans. The purpose of the current study was to evaluate these effects using a randomized controlled design.

Methods

Subjects

Subjects were recruited through online announcements, and referrals from individual clinicians throughout the United States. To be eligible for the study, subjects were required to meet the clinical criterion for PTSD (≥ 50) on the PTSD-Checklist Military (PCL-M) (National Center for PTSD, 2008). All subjects were also required to be under the care of a Veterans Administration clinician or other licensed healthcare facility, as the EFT coaching intervention was delivered as a complementary and

supportive supplement to the Standard of Care (SOC). Subjects were excluded if they scored 4 or more on a 5-point scale on two questions on the SA-45 related to physical violence. All military deployments were eligible for the study, e.g., Operation Iraqi Freedom, Vietnam, WWII, etc. Participants were randomly assigned to a wait list (SOC) or experimental (EFT) group using permuted block randomization (www.randomizer.org). EFT providers received a block of ten random assignment designations from a blind offsite biostatician. Subjects completed an informed consent form. The study was reviewed for human subject protections, approved by Copernicus IRB, and posted on ClinicalTrials.gov.

Results from a six session pilot study (N = 7) (Church, Geronilla, & Dinter, 2009) allowed an assessment of the sample size required for statistical significance to be made. Results from the first nine subjects in the current study (EFT n = 4, SOC/WL n = 5) confirmed the power analysis by demonstrating statistical significance with a small n, indicating a robust treatment effect. Implementation fidelity was monitored through written session plans and monthly teleconferences.

A total of 149 veterans were initially recruited for study participation. Of these 74 were not interested in participating in the study and 16 were found ineligible at screening. Fifty-nine subjects were randomized to either WL (n = 29) or EFT treatment group (n = 30). Four participants in the WL group dropped out prior to the second assessment and one EFT participant dropped out after 3 EFT sessions. In the combined sample (including the WL participants who received EFT after the waiting period n=20), post-3-session data was available for 50 participants, 30 in the EFT group and 20 in the WL group. Forty-nine participants completed the assessments following 6 EFT coaching sessions, 29 in the EFT group and 20 in the WL group. Three-month follow-up data was obtained for 42 participants, 17 in WL group and 25 in EFT group. The reasons given by participants for dropping out included (a) uncomfortable levels of emotion when being asked to recall old memories, (b) unwillingness to fill out forms, such as the PCL-M (which is also used by the Veterans Administration) which require recalling potentially retraumatizing incidents, and, (c) “not enough time.” No adverse events, or increase in participant distress, were reported. Of the 49 who completed 6 EFT sessions, 42 were available for 3 month follow-up. The 7 lost to follow-up did not respond to requests to complete the required

assessments. Data for both the EFT group, and the combined post-intervention WL and EFT groups, are reported. The CONSORT flow chart is appended as Figure 1.

Measures

Subjects completed a set of assessments at baseline, during the intervention after three sessions, and at the end of the intervention after six sessions. The WL group completed assessments at the end of the 30-day wait period. Follow-up assessments were obtained at 3- and 6- months. The present study reports the results through the 3-month follow-up. The significant outcomes noted, suggesting that EFT may be an unusually effective intervention for veterans with PTSD, have prompted the publication of this data prior to full 6 month follow-up data becoming available.

Symptom Assessment 45 (SA-45). The SA-45 is a short form of the Symptom Checklist (SCL-90) (Davison, Bershadsky, Bieber, Silversmith, Maruish, & Kane, 1997; Maruish, 1999). Two global scales assess symptom severity (Global Severity Index; GSI) and symptom breadth (Positive Symptom Total; PST). There are nine subscales: anxiety (anx), depression (dep), hostility (hos), interpersonal sensitivity (int), obsessive-compulsive behavior (o-c), paranoia (par), phobic anxiety (pho), psychotism (psy), and somatization (som). T-scores based on normed data for non-clinical populations are calculated. Scores greater than 60 are considered in the clinical range.

PTSD Checklist Military (PCL-M). The PCL-M self-assessment (Weathers, Litz, Herman, Huska, & Keane, 1993) is used by the military as a PTSD assessment tool. It has seventeen items, with a scale ranging from 1 to 5. The 17 items correspond to the PTSD diagnostic criteria of the DSM-IV.

Insomnia Severity Index (ISI). The (ISI) (Bastien, Vallières, & Morin, 2001) is a 5-item scale used to determine clinical insomnia. Items are rated on a 5-point scale and summed for a total score. Severe clinical insomnia is defined as a score of 22 or more. Scores ranging between 15-21 are defined as moderate severity clinical insomnia, while scores between 8-14 are considered subthreshold and scores less than 8 are not considered as clinically significant insomnia. Insomnia frequently co-occurs with PTSD (Lamarche & De Konick, 2007).

Background information. Deployment area and number of tours was obtained. Deployment areas included Gulf War I (GW-I), Operation Iraqi Freedom (OIF), Operation Enduring Freedom (OEF), Vietnam, World War II, and Panama. For sample description purposes participants were classified as Gulf War era (GW-I, OIF, OEF) vs. other eras. A health history form was created to obtain background health and lifestyle information. Physical exercise, recreational drug use, cigarette usage, and alcohol consumption in the past month was obtained. Each item was rated on a 5-point scale. Exercise was rated as the number of times per week in the past month (0, 1, 2, 3, 4 or more). Recreational drug use was recorded as the number of times used in the past month (0, 1-3, 4-6, 7-9, 10 or more). Smoking was rated as the average daily number of cigarettes (0, 1-10, 10-20, 20-40, 40 or more). Alcohol use was rated based on daily use in the past month (0, 1-3, 4-6, 7-9, 10 or more). For sample description purposes exercise, recreational drug use, alcohol use, and smoking were dichotomized as yes/no variables. The number and type of current prescription medications was obtained. Current pain in a specific body area was rated on an 11-point Likert-type scale from 0 (no pain) to 10 (maximum pain). These data are summarized in this report, but analyzed in detail separately.

EFT Intervention

EFT coaching was performed by 14 providers, who each coached between 1 and 12 veterans. Providers were required to possess an EFT competency credential, to complete human subjects' protection training provided by the investigators, and to pass the CITI competency examination. Providers were also required to deliver EFT as client-assessed peer-to-peer coaching, to avoid the power differential implicit in a therapist-client relationship, and to support the therapeutic alliance between the client and their existing SOC healthcare provider. Experimental subjects received six one hour sessions of EFT over the course of a month. Following the waiting period, WL participants received the intervention.

Subjects were asked to compile lists of traumatic combat memories prior to or at the first session. During sessions, subjects performed one or more sequences of EFT tapping on themselves until the SUD emotional intensity of each memory was 0, or as close to 0

as could be obtained given the limited time frame.

EFT sessions focus on specific traumatic incidents, rather than global generalizations such as “depression” or “fear.” SUD is the primary measure of progress, rather than observer-rated measures. EFT is typically self-applied, and one focus of coaching is to teach the client to self-apply EFT during stressful events, nightmares, flashbacks, or intrusive memories that occur between sessions. Rather than lengthy and detailed recapitulation of distressing incidents, EFT measures progress through the SUD score. EFT does not require the client to disclose the incident; a high SUD is sufficient to initiate intervention.

Results

Participant Characteristics

The sample (N = 59) was predominantly male (89%) with an average age of 52 years old (range 24-86 years old). Slightly less than half of the participants were deployed in the current Gulf War era (41%). The average number of deployment tours was 1.2 (range 1-3 tours). All participants scored in the clinical range on the PCL-M and SA-45 symptom severity index. The PCL-M average score was 64 (range 50-85). Symptom severity (GSI) scores ranged between 61 and 85, with an average of 72. One participant scored just below the clinical cut-off for symptom breadth (PST) with scores ranging between 59 and 81 and an average score of 71.

In terms of health and lifestyle status, most participants reported exercising (74%) and little recreational drug use (14%). Almost one-third reported smoking (32%) and less than half reported any alcohol use (46%). Most of the study participants met the criteria for severe (41%) or moderately severe (42%) clinical insomnia. The average number of prescription medications was 3 (range 0-14 medications).

T-tests and chi-square analyses were conducted to examine baseline differences between the WL and EFT groups on baseline characteristics and primary outcome measures. There were no significant differences between the groups on the primary outcome measures (GSI, PST, PCL-M). In terms of the baseline characteristics, the two groups were comparable on all measures with the exception of number of prescription

medications used at baseline. The WL group was taking significantly more medications. Trends between the groups on smoking and alcohol use were also observed. The EFT group reported less smoking and alcohol consumption than the WL group.

WL-EFT Groups Pre-Post

Statistical approach. Linear mixed-effects models were conducted on PCL-M total score and SA-45 global scales and symptom domains with patient-specific intercepts. Group, time (WL: pre-test, 30-day wait assessment $n = 25$; EFT: pretest, after 6-sessions, $n = 29$) and their interaction were independent variables. There was a statistically significant difference between the groups on the number of days between the two assessment points ($t(32) = -6.15$, $p<0.001$; WL Mean ±SD: 29.1 ±6.3; EFT Mean ±SD: 58.6±24.9). Therefore, all analyses controlled for time between the initial assessment and follow-up. Due to the number of SA-45 scales, a Bonferroni correction for multiple tests was utilized to calculate an adjusted alpha level ($p<0.0045$) for the group by time interaction in each model. To adjust for 3 planned pairwise comparisons (WL pretest vs. posttest; EFT pretest vs. posttest; WL posttest vs. EFT posttest) in models with statistically significant group by time interactions, an adjusted alpha level of $p<0.017$ was used. A chi-square analysis was conducted on PCL-M dichotomized as clinical vs. non-clinical at follow-up by group. The results are based on participants with complete data (Total $n = 54$, WL $n = 25$; EFT $n = 29$).

Results. The group by time interaction was statistically significant ($p<0.0001$) for the PCL-M total score, the SA-45 global scales (GSI, PST), and all SA-45 symptom scales with the exception of psychotocism. The WL vs. EFT posttest comparison was statistically significant in the PCL-M, GSI, PST models and the anxiety, depression, hostility, interpersonal sensitivity, phobic anxiety, and somatization symptom domains. The paranoia comparison was not significant. The pre-posttest comparison for the EFT group was statistically significant for the PCL-M total score and all SA-45 scales. The pre-posttest comparison for the WL group was not significant in any of the models. The results are presented in Table 2.

In the chi-square analysis of the dichotomous PCL-M clinical criteria, a statistically significant difference was found ($\chi^2(1) = 39.40$, $p<0.02$). Twenty-six (89.7%) of the EFT

participants no longer met the clinical criteria for PTSD, while only one (4%) of the WL participants no longer met the clinical criteria.

EFT Group Change Over Time

Statistical approach. Linear mixed-effects models were conducted on PCL-M total score, SA-45 global scales and symptom domains, and ISI total score with patient-specific intercepts modeled over time periods (pre-test, after 3-sessions, after 6-sessions, 3-month follow-up). Time between sequential assessments was controlled for in the model to adjust for the possible effect of time due to the intervention delay in WL group. Group, and the interaction between group and time period, was also included in the model, to identify any changes in outcome due to the delayed intervention in the WL group. Due to the number of SA-45 scales, a Bonferroni correction for multiple tests was utilized to calculate an adjusted alpha level ($p<0.0045$) for the time main effect in each model. Frequency of participants no longer meeting the PCL-M clinical cut-off at each time point is also presented. All participants with at least 2 data points were included in the analyses.

Results. The results of the EFT change analyses are presented in table 3. There was a statistically significant main effect for time ($p<0.0001$) in each of the SA-45 models, the PCL-M total model, and the ISI total model. Statistically significant improvements between the pre-test and each subsequent assessment assessments were found in each model. Differences between the 3-session and 6-session ratings were statistically significant in all models with the exception of psychoticism. The difference between the 3-session assessment and 3-month follow-up was statistically significant in all models with the exception of anxiety and hostility. No statistically significant differences were found between the 6-session assessment and the 3-month follow-up. These results indicate ongoing improvement in symptoms through the end of EFT intervention that were maintained at the 3-month follow-up.

In addition, there was a main effect for group in the hostility model ($F(1,134)=6.1$, $p<0.0145$)) and the ISI model ($F(1,134)=5.05$, $p=0.026$). The WL group had lower hostility overall than the EFT group (Mean ±SE WL:58.6 ±1.0; EFT:61.9 ±0.9). In terms of the ISI, the WL group had a higher level of insomnia than the EFT group (Mean ±SE

WL:15.98 ±1.0; EFT:12.78 ±1.0). A statistically significant group by time effect was found in both the interpersonal sensitivity model ($F(3,134)=3.1$, $p<0.03$) and the paranoia model ($F(3,134)=2.8$, $p<0.04$). Both groups demonstrated improvement over time; however the rate of change varied between the groups. In the interpersonal sensitivity model, the EFT group demonstrated greater improvement sooner, while the reverse pattern occurred in the paranoia model.

Table 1. Participant Characteristics by Group Prior to Intervention

Variable Mean (SD)	WL *n*=29	EFT TX *n*=30	Total Sample *N*=59	Test Statistic	Sig.
Age	54.2 (11.2)	49.3 (16.1)	51.7 (14.0)	t(52) = 1.36	0.18
Male *n* (%)	25 (86.2%)	28 (93.1%)	53 (89.8%)	$X^2(1) = 0.82$	0.37
Deployment *n* (%)					
- Gulf War Era	9 (32.1%)	15 (50.0%)	24 (41.4%)	$X^2(1) = 1.90$	0.17
- Other	19 (67.9%)	15 (50.0%)			
Tours	1.1 (0.3)	1.2 (0.5)	1.2 (0.4)	t(44) = -1.55	0.13
PCL-M	65.5 (8.9)	63.0 (8.9)	64.2 (8.9)	t(57) = 1.09	0.28
GSI	72.3 (5.4)	73.2 (5.7)	72.7 (5.5)	t(57) = -0.62	0.54
PST	70.9 (4.7)	71.1 (4.4)	71.0 (4.5)	t(57) = -0.20	0.84
Any exercise *n* (%)	19 (67.9%)	23 (79.3%)	42 (73.7%)	$X^2(1) = 0.96$	0.33
Any smoking *n* (%)	12 (42.9%)	6 (20.7%)	18 (31.6%)	$X^2(1) = 3.24$	0.07
Any alcohol *n* (%)	16 (57.1%)	10 (34.5%)	26 (45.6%)	$X^2(1) = 2.95$	0.09
Any drug use *n* (%)	4 (14.3%)	4 (13.8%)	8 (14.0%)	$X^2(1) = 0.00$	0.96
Insomnia *n* (%)					
- Severe	15 (51.7%)	9 (30.0%)	24 (40.7%)	$X^2(3) = 5.53$	0.14
- Moderate severe	12 (41.4%)	13 (43.3%)	25 (42.4%)		

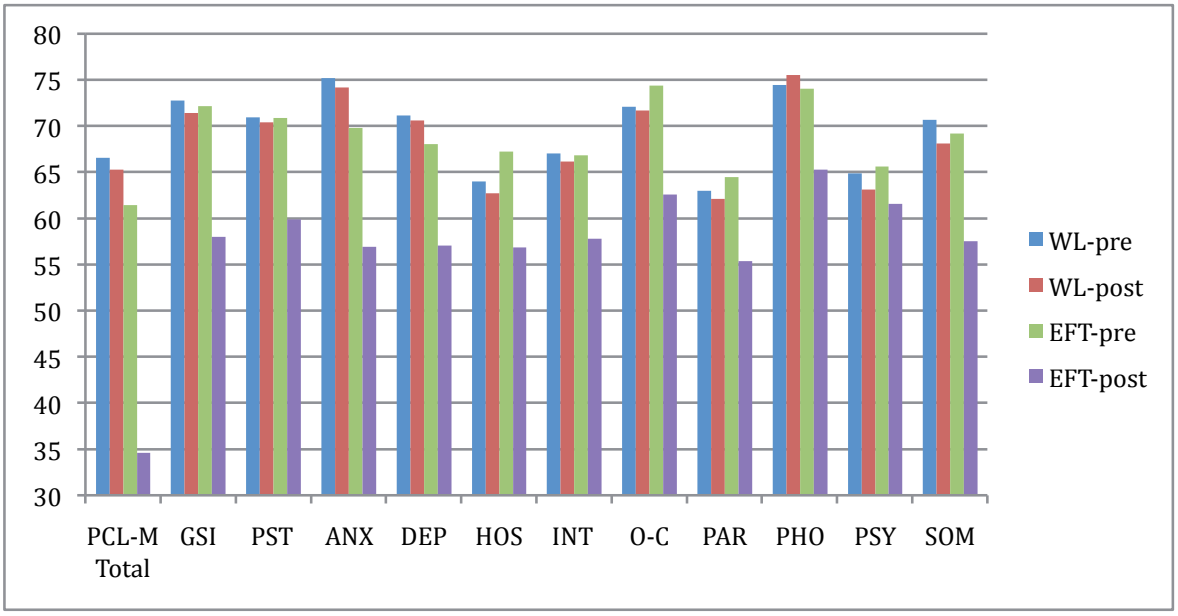
- Subthreshold	2 (6.9%)	6 (20.0%)	8 (13.6%)		
- None	0 (0%)	2 (6.7%)	2 (3.4%)		
RX medications	4.5 (4.0)	1.6 (2.1)	3.0 (3.4)	t(36) = 3.36	0.01

Table 2. Symptom Score Means Pre- and Post-Intervention for EFT Completers (*n* = 29), and Baseline and 30 Day for WL Completers (*n* = 25)

Variable	WL-pre	WL-post	EFT-pre	EFT-post	F(1,51)	Sig.
PCL-M Total	66.57 (2.3)	65.31 (2.3)*	61.44 (2.1)$^{+}$	34.62 (2.1)*$^{+}$	109.8	0.0001
SA-45 Global Scales						
GSI	72.84 (1.5)	71.43 (1.6)*	72.20 (1.4)$^{+}$	57.99 (1.4)*$^{+}$	52.9	0.0001
PST	70.98 (1.5)	70.43 (1.5)*	70.89 (1.3)$^{+}$	59.89 (1.3)*$^{+}$	32.4	0.0001
SA-45 Symptom Domains						
ANX	75.13 (2.4)	74.21 (2.4)*	69.83 (2.2)$^{+}$	56.94 (2.2)*$^{+}$	16.0	0.0002
DEP	71.18 (1.5)	70.59 (1.5)*	68.03 (1.3)$^{+}$	57.07 (1.3)*$^{+}$	38.5	0.0001
HOS	64.04 (1.5)	62.73 (1.5)$^{\#}$	67.28 (1.4)$^{+}$	56.86 (1.4)$^{\#+}$	39.0	0.0001
INT	67.04 (1.8)	66.19 (1.8)$^{\#}$	66.87 (1.6)$^{+}$	57.83 (1.6)$^{\#+}$	22.1	0.0001
O-C	72.12 (1.8)	71.73 (1.8)$^{\#}$	74.41 (1.6)$^{+}$	62.58 (1.6)$^{\#+}$	24.2	0.0001
PAR	63.01 (1.9)	62.14 (1.9)	64.48 (1.7)$^{+}$	55.38 (1.7)$^{+}$	18.7	0.0001
PHO	74.43 (1.8)	75.51 (1.8)$^{\#}$	74.03 (1.6)$^{+}$	65.28 (1.6)$^{\#+}$	28.7	0.0001
PSY	64.87 (1.5)	63.11 (1.5)	65.62 (1.4)	61.62 (1.4)	2.3	0.1346
SOM	70.71 (1.8)	68.10 (1.9)$^{\#}$	69.19 (1.7)$^{+}$	57.53 (1.7)$^{\#+}$	23.8	0.0001

*EFT-post < WL-post, $p<0.0001$; $^{\#}$EFT-post < WL-post, $p<0.010$; $^{+}$EFT post < EFT pre, $p<0.0001$

Figure 2. Mean Pretest and Posttest Symptom Score for EFT and WL Groups



In terms of PCL-M clinical symptom scores, after 3 sessions 60% of the combined WL + EFT sample (30 out of 50) no longer met the cut-off for PTSD. At the end of the intervention, 86% (42 out of 49) no longer met the PTSD clinical diagnostic cut-off. This remained stable at the 3-month follow-up, with 86% (36 out of 42 in the combined sample) no longer meeting the criteria for PTSD.

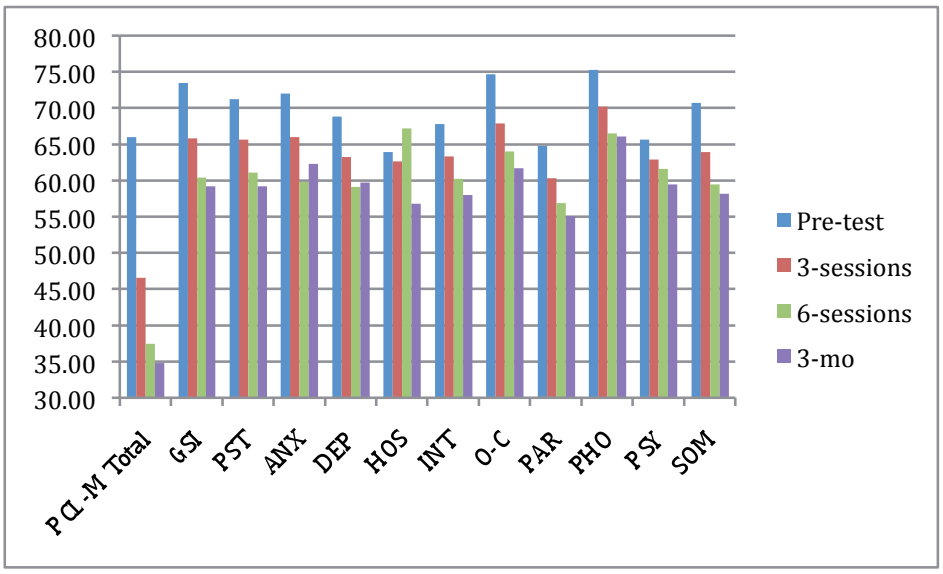
Table 3. Time Main Effects – Means (Standard Errors) for Both EFT and Post-intervention WL Combined

Variable	Pre-test	3 sessions	6 Sessions	3-month	F(3,134)	Sig.
PCL-M Total	66.11 (2.1)	46.70 (1.8)	37.53 (1.9)	34.88 (2.9)	81.3	0.0001
ISI Total	20.04 (1.0)	15.18 (0.86)	10.94 (0.89)	11.38 (1.4)	40.8	0.0001
SA-45 Global Scales						
GSI	73.54 (1.3)	65.91 (1.1)	60.45 (1.2)	59.33 (1.9)	43.3	0.0001

PST	71.30 (1.3)	65.76 (1.1)	61.20 (1.1)	59.33 (1.8)	26.1	0.0001
SA-45 Symptom Domains						
ANX	72.06 (1.8)	66.11 (1.5)*	59.90 (1.6)	62.35 (2.6)*	19.3	0.0001
DEP	68.90 (1.5)	63.32 (1.4)	59.19 (1.4)	59.80 (2.0)	25.2	0.0001
HOS	64.04 (1.5)	62.73 (1.5)*	67.28 (1.4)	56.86 (1.4)*	39.0	0.0001
INT	67.88 (1.2)	63.45 (1.1)	60.30 (1.1)	58.06 (1.6)	22.1	0.0001
O-C	74.76 (1.6)	67.93 (1.3)	64.08 (1.4)	61.82 (2.2)	20.6	0.0001
PAR	64.89 (1.3)	60.43 (1.2)	56.93 (1.2)	55.14 (1.8)	18.7	0.0001
PHO	75.33 (1.3)	70.24 (1.3)	66.58 (1.2)	66.13 (1.7)	25.4	0.0001
PSY	65.75 (0.9)	62.99 (0.8)*	61.70 (0.8)*	59.59 (1.3)	8.4	0.0001
SOM	70.83 (1.4)	64.02 (1.2)	59.58 (1.3)	58.22 (2.0)	29.87	0.0001

Pretest < 3-session assessment, p<0.005; Pretest < 6-session assessment p<0.0001; 3-session assessment < 6-session assessment p<0.004; Pretest < 3-month assessment, p<0.007; 3-session < 3-month assessment p<0.04; 6-session assessment < 3-month assessment non-significant in all models.
*denotes non-significant difference between means

Figure 3. Graph of PCL-M Total, ISI Total, and SA-45 Means Over Time for Both EFT and Post-intervention WL Combined



Besides the reduction in PTSD symptoms noted, participant values for the cluster of conditions observed to co-occur with PTSD, such as anxiety and depression, also dropped. Insomnia also improved significantly in the EFT group. Participant gains were noted to remain reliably stable over time for the conditions assessed in the study.

Case Histories

The following are informal anecdotal accounts that represent a range of the experiences encountered by the providers, and treated with EFT, in the course of the present study.

Case History 1: Vietnam Nurse

Subject's body was so sensitive that she was unable to tolerate EFT tapping on any part of it without getting violently nauseous. Subject reported many incidents of physical abuse starting in early childhood, and was so physically sensitive that she was easily triggered by physical stimuli. She couldn't wear socks or shoes, and couldn't tolerate physical touch by others. Her companion, reporting that their life situation was "unbearable," and that she was "in complete desperation," arranged for coaching.

Subject's intolerance to touch presented a challenge to finding a way to let her apply EFT. She found that she was able to tolerate tapping between her eyebrows, so that was the only point used in the first session, which focused on fear and safety issues.

Half way through the second session, she noticed that she could now tap on every EFT point, including the collar bone point, which had previously been her most sensitive spot. During this and subsequent sessions, the client worked with three specific war memories, and two physical symptoms, among other issues.

(1) Subject had rescued some Vietnamese village people, elderly and children and was treating them in her field hospital. A US Army sergeant came in and ordered her to discharge them immediately because the space was required to treat American service personnel. The subject outranked the sergeant, and refused. A that point, he withdrew his service revolver from its holster and put the barrel to her head. He said he was going to kill the villagers one way or the other, and her only choice was whether or not she was going to die first.

Realizing the rage he was in, she knew she had no choice, and rescuing the villagers was completely out of her control. She knew that the only thing she could do was to allow for them to go in peace and with dignity, with no fear or panic, in the tradition of their culture. To insulate them to the violence of the sergeant, she very gently pulled the IVs out of their arms, allowed the children to gather around the elders for support, and encouraged them to leave the hospital as a group. Once outside, they were shot by the sergeant.

The nurse never recovered emotionally from the experience. She blamed herself for being responsible for the killing. She continued to have nightmares about the incident even decades later.

During the EFT session, subject tapped on the separate scenes of this traumatic event. She began to feel a sense of connection with the villagers, and come to an understanding that they were actually grateful for her. They had witnessed the gun at her head and they knew that there was nothing more she could do. They didn't blame her but appreciated that she did the best she could. After this cognitive shift, the nightmares about the incident did not recur.

(2). The subject lives close to a military base. Helicopters frequently fly overhead, and she would go into involuntary panic at the sound. After several rounds of EFT, subject said that she now simply noticed the sound of the helicopters, without panic or agitation.

(3). One of the subject's most traumatic memories was of an incident in which the hospital she was working in was bombarded by friendly fire and collapsed on her. At the time the bombardment began, she had been walking down a corridor. Two children were present, and she grabbed them and threw herself over them, protecting them with her body while the hospital roof collapsed. She was the only person pulled out alive from the rubble. She spent many months in hospital and rehabilitation following the incident. She had frequent nightmares about the scene. After EFT, the memory no longer held emotional triggers. She was able to recount the incident calmly, without the emotional upheaval that she reported before.

(4) Subject had an allergic reaction whenever she consumed ice cream. She used

EFT for the substance itself, and for her symptoms. Subject recounted that, in Vietnam, there were two things that wounded men requested: steak, and ice cream. Both were difficult to obtain, and represented the comforts of home. When subject would eat ice cream, she felt connected with the pain that she had witnessed. After EFT, the allergy subsided.

(5) Subject had a hearing impairment, due to scar tissue from various injuries. She identified shutting off her hearing as a defense mechanism, and repeated application of EFT was required. After EFT, her hearing improved to the point where she could hear the clicking of the keys on her computer keyboard.

Case History 2: Vietnam Combat Veteran

Subject had a violent, alcoholic father. He was drafted to serve in Vietnam. He worked on two specific memories, among others:

(1) The first night in Vietnam, he woke up horror, realizing he was in imminent danger, when an enemy artillery bombardment began at 2:30 am. The camp was completely unprepared, with plywood floors and no security, and the draftees had not yet been issued weapons with which to defend themselves. Their anger at the army for not being prepared for them and keeping them safe was enormous. The subject remembered drinking a bottle of scotch whiskey and smoking a pack of cigarettes the first night, while a friend of his, newly married, sobbed helplessly. The recruits slept uneasily under their beds. The artillery fire resumed every night at 2:30 am. Before the first EFT session, subject would wake up every morning at this time. After EFT, he was able to sleep through the night.

(2) Some of the workers in the camp were Vietnamese. They pretended to be friendly, but their families were connected to the enemy, and the subject discovered that they were secretly passing information about the base to the Vietcong. So he and the other recruits were never safe. Subject felt a sense of betrayal, and being unsafe, ever since, and was able to reduce his SUD score around these issues with EFT.

Other Combat Memory Examples

EFT is effective at reducing SUD score for specific memories rather than global

issues. The following are examples of specific memories on which EFT reduced SUD scores to 0:

(1) An Iraq veteran described an incident in which the Humvee in which his best friend was the driver, hit an Improvised Explosive Device or IED, and was unable to extricate himself. He burned to death. The veteran used EFT for the incident. He then began to spontaneously recall the funerals of other people who had loved him. After reducing his SUD score for each one, he began to relax.

(2) Another Iraq veteran was the driver of a transport truck, and in charge of transporting the men inside safely. At night, he had a very limited field of vision through the vehicle's armor. The lack of peripheral vision made the drive very stressful for him. His passengers yelled at him for his inadequate driving, and he felt overwhelming anger for their resentment while he was so stressed, and trying to do a good job. He performed EFT for these memories, as well as for finding forgiveness, and tapped while imagining the other soldiers asking for forgiveness, using phrases like, "Sorry man for yelling at you. It wasn't personal," coupled with the EFT self-acceptance statement.

(3) A former Vietnam officer described ongoing threats from his subordinates. He described huge tension between white and black soldiers. He had stood up for a Vietnamese woman who was about to be raped, and prevented the rape by his comrades. As a result, he was harassed by his compatriots for months.

One of his soldiers went into a rage after drinking heavily and pointed his rifle through the tent door at the soldier while he was asleep. The officer handcuffed his opponent outside the bar until he sobered up. From that moment on, the soldier tried to shoot the officer wherever his back was turned. The officer did not have a safe moment until the subordinate was killed in a firefight.

(4) Another Veteran shot a 9 year old girl who was pointing a rifle on him. He said, "I only saw the rifle! I was trained to shoot when somebody point a rifle at me! I found out later that it wasn't loaded. She is always with me, smiling, and she never says a word. I have asked for forgiveness, I have asked my life to be taken for hers, but it hasn't. I have to live with this memory every day, and I always see her. I wish I'd never come back from Vietnam." The little girl was with him as a flashback for 44 years, quietly

smiling at him. After EFT, she now disappeared. Most veterans report severe childhood trauma in addition to combat trauma. Issues include sexual abuse, parental alcoholism, physical abuse, poverty, and neglect. Some reported that releasing childhood trauma was more effective than releasing war memories in producing a reduction in emotional distress levels.

Discussion

The case load of veterans from the Iraq and Afghanistan conflicts, added to the existing population of Vietnam veterans, has lent new urgency to the search for effective methods of reducing PTSD symptoms in a treatment time frame consistent with the demands on an overstretched cohort of clinicians. A six session protocol of EFT, as well as other brief treatment protocols, has been efficacious in previous trials with statistically significant results in veteran populations (Church, Geronilla, & Dinter, 2009, Church 2010). The present study extended these findings by testing them against a randomized wait list control group, with a larger population of subjects, in a wider variety of settings, and with a diversity of EFT providers. The inclusion criteria were deliberately set to be as broad as possible, in order to permit greater generalizability of the results.

The study has a number of clinical implications. One is the durability of subject gains. In all studies of energy psychology that included long-term follow-up, results have held up over time (Feinstein, 2008a). Long-term improvements were also observed in trauma victims in disaster areas (Feinstein, 2008b), and in healthcare workers who self-applied EFT (Church & Brooks, in press). Besides the long-term improvements found in previous EFT studies noted above, Rowe (2005) found that participant gains were maintained over time in a general population, and Wells et al (2003) found that phobias, after being extinguished by a single EFT treatment, remained so on follow-up. The results of the current study are consistent with previous published findings that the gains subjects experience after EFT endure over time. It also demonstrates the same drops in participant scores, from clinical to subclinical levels, obtained in the pilot trials. If EFT is applied by clinicians to PTSD-positive patients, rehabilitation may be durable.

In this study, EFT was delivered as a supplement to the care provided to these subjects by their primary caregivers, usually a Veterans Administration hospital. EFT

coaching was overtly supportive of the therapeutic alliance between the subject and the primary caregiver. Coaches did not diagnose or treat any condition, or attempt to diagnose PTSD according to observer-rated DSM-IV criteria. While coaches did not diagnose, the majority of subjects reported previous diagnoses of PTSD by their primary caregivers. Most subjects were recruited based on referrals by Veterans Administration psychiatrists and psychologists. Often, after seeing one treatment-resistant client successfully coached, such clinicians referred additional difficult cases to the study. A strength of coaching is that it is client-rated; to facilitate client-focused outcomes of research, self-reports are recommended (Glasgow, Magid, Beck, Ritzwoller, & Estabrooks, 2005).

The study found good tolerance and acceptance of EFT by veterans. Other studies have found veterans to be resistant to treatment, with only 30% of VA clients completing a recommended treatment regimen within a year of their PTSD diagnosis (Seal, Maguen, Cohen, Gima, Metzler, Ren, Bertenthal et al., 2010). The current study noted improvements after 3 sessions, and further improvements in 6, providing veterans with fast and concrete relief of symptoms. Other research has also shown that the more EFT is applied, the greater the improvement (Church & Brooks, in press). The low dropout rate in the current experimental group also indicates acceptance of EFT interventions when delivered as peer-to-peer coaching. By providing veterans with immediate gains, EFT may make this population more amenable to compliance with prescribed VA PTSD treatments.

A provider group of coaches, rather than mental health professionals such as licensed psychotherapists and clinical social workers, was chosen to determine whether PTSD symptoms could be effectively remediated by providers without mental health licensure, mimicking the front-line staff available to hospitals, such as physician’s assistants, health counselors, drug and alcohol counselors, and trained volunteers. Though EFT is efficacious when applied by such practitioners, the authors of this study hypothesize that it may be more effective when combined with rapport, insight, pattern recognition, Socratic questioning, mindfulness, and the full range of tools possessed by the experienced and trained mental health professional. EFT sessions, though they evince Carl Rogers’ “necessary and sufficient” conditions for successful treatment, essentially

use the EFT method to quickly reduce affect.

The authors of this study argue that such affect-reduction techniques form the starting point for more elaborate and in-depth mental health interventions, and are not a substitute for these. After EFT, the client now has awareness that his or her life will not be overwhelmed by the recall of traumatic memories, and possesses a tool to relieve this emotional anxiety when it appears between therapeutic sessions. Such tools give the client confidence, and lessen dependence on strategies such as denial and self-medication with drugs and alcohol to cope with the aftermath of trauma. Many veterans report unwillingness to visit Veterans Administration hospitals, and avail themselves of care, because “I went there and it did no good.” They may associate therapy with retraumatization. EFT, by providing such subjects with immediate gains even confronted with their most painful specific memories, gives them some assurance that they may learn to navigate their way back to health, and restore confidence in the course of treatment prescribed by a mental health professional. The providers in this study also emphasize that six sessions is a bare minimum of time to begin to treat complex PTSD, and was not sufficient for every single veteran to be PTSD negative after this course. During supervision teleconferences during the study, providers formed a consensus that seven to twelve sessions was the recommended dose.

Thirdly, although the focus of the EFT intervention was combat memories associated with PTSD symptoms, co-occurring conditions such as anxiety and depression also improved. EFT can thus be useful for the matrix of conditions often found in PTSD sufferers.

Fourthly, unresolved emotional trauma correlates highly with physical diseases, including cancer, heart disease, diabetes, and hypertension. These risk factors are not alleviated by the passage of time (Felliti, Koss, & Marks, 1998). A study of apparently healthy Vietnam veterans found that anger, depression and hostility predicts a rise in protein risk markers for cardiovascular disease (Boyle, Kalehzan, Sund, Ficek, & Schatzberg, 2007). PTSD has been associated with neurological changes that are resistant to treatment (Vasterling & Brewin, 2005). Dysregulation of the autonomic nervous system has been linked to both psychological and physiological disorders; Thayer (2005)

regards it as “the final common pathway linking negative affective states and conditions to ill health.” Reducing emotional traumas using EFT coaching may protect against later health consequences.

Fifth, the benefits of PTSD treatment can spread far beyond the traumatized individual; families and communities that might otherwise be disrupted (McFarlane & van der Kolk, 1996/2007) can be spared the consequences of transferred PTSD (Church, 2010).

Finally, the cost burden of disease on the VA system and society may thus be reduced by early and effective treatment of emotional trauma. A RAND corporation study found that PTSD and comorbid conditions will cost the US treasury over $6 billion in the two years post-deployment, and over $7 billion in the subsequent decade (Tanielian & Jaycox, 2008). Conversely, treating Iraq and Afghanistan war veterans with PTSD effectively pays for itself in less than two years. The social benefits of routine post-deployment EFT treatment might far outweigh the costs.

EFT may also be a suitable candidate for memory extinction and reconsolidation studies. While EFT employs aspects of the established evidence-based techniques of exposure and cognitive challenge, it adds the somatic signal of tapping. This signal is incongruous with a hyperarousal of fight-or-flight physiology. It pairs the traumatic memory with a physiologically incongruous input of tapping, sending a confounding signal to the body. Current research in the mechanisms of memory retrieval during stress suggest that memories are reconsolidated in conjunction with proximate cues from the current environment (Davis, Bozon & Larouche, 2003; LaDoux, 2002). In the language of evolutionary biology, “you would not be tapping if you were being chased by a tiger.” This interrupts activation of the body’s Hypothalamic-Pituitary-Adrenal (HPA) stress axis. EFTs pairing of a combat trauma with a self-acceptance statement plus a physiological stimulus indicating safety is hypothesized to reconsolidate the memory in such as way to as render it non-traumatic. Somatic stimulation has been demonstrated to reduce affect more than interventions that do not include a somatic component (Baker, Carrrington & Putilin, 2009; Waite & Holder, 2003). Extensions of this study might investigate whether EFT is more effective on traumas of recent origin.

There are several limitations to this study. Coaching, by its nature, uses client self-rating rather than clinician-rated scales. The PCL-M self-report used in this study, however, demonstrates convergent validity with clinician-rated assessments of PTSD (Monson et al, 2006). An extension of the current study that included clinician ratings, coach ratings and client ratings would determine if the three types of assessments agree.

Secondly, the design did not include a third group, with an active intervention such as CBT, to control for nonspecific factors such as therapist attention and client expectancy that are present in any therapeutic setting. However, it should be noted that of the many studies of PTSD reviewed in the Institute of Medicine report as well as the American Psychiatric Association meta-analyses (Bradley et al, 2005; Benedek et al, 2009), many of them with precisely this type of active control, none provides the degree of client gains noted above. In one of the most “hopeful” studies identified by the Institute of Medicine, 60% of subjects were still PTSD-positive after treatment (Monson et al, 2006).

The benefits of EFT treatment for PTSD are therefore considerable. EFT can be used to treat many veterans quickly, using limited resources. EFT presents a low risk of retraumatization; it can be learned by a client in a few minutes; it can be delivered by a physician’s assistant, life coach, or auxiliary personnel, and it can be self-applied by the client for traumatic memories that intrude between therapeutic session. EFT is also efficacious when applied in groups (Rowe, 2005; Church & Brooks, in press), suggesting further research on group EFT as a proactive resilience-building resource for veterans prior to deployment, and an effective post-deployment strategy, before the conditioned response of traumatic recall can take neurological root.

Conclusions

The current study utilized a randomized controlled design, contrasting a Wait List / Standard of Care (SOC) control group with a group treated with six sessions of EFT (Emotional Freedom Techniques) coaching. EFT was applied by life coaches as supplementary care, supportive of the SOC being provided by subjects’ primary care providers. The wait list group’s results were unchanged over time, while the EFT group demonstrated statistically significant drops in PTSD, from clinical to subclinical scores,

as well as improvement in the severity and breadth of a range of comorbid psychological problems such as depression and anxiety. The results of the present study are consistent with previous trials showing that brief EFT interventions improve PTSD as well as co-occurring conditions, with gains maintained over time. EFT was applied as coaching to demonstrate its utility as a front-line intervention by occupational categories with very basic levels of clinical training. Taken together with prior research showing EFTs efficacy for treating PTSD symptoms, the results of this study indicate that a six session protocol of EFT warrants clinical application in institutions that treat large numbers of veterans and other populations with PTSD. Further research will determine if group EFT interventions produce effects similar to those noted in one-to-one delivery, and whether higher levels of mental health training of providers, or longer courses of EFT, correlate with greater effects.

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Figure 1: CONSORT Flowchart