Differential Gene Expression after Emotional Freedom Techniques (EFT) Treatment: A Novel Pilot Protocol for Salivary mRNA Assessment

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Abstract

Biopsychology is a rapidly expanding field of study since the completion of the Human Genome Project in 2003. There is little data measuring the effect of psychotherapeutic interventions on gene expression, due to the technical, logistical, and financial requirements of analysis. Being able to measure easily the effects of therapeutic experiences can validate the benefits of intervention. In order to test the feasibility of gene expression testing in a private practice setting, this study compared messenger ribonucleic acid (mRNA) and gene expression before and after psychotherapy and a control condition. With four non-clinical adult participants, it piloted a novel methodology using saliva stored at room temperature. A preliminary test of the interleukin-8 (IL8) gene in both blood and saliva was performed in order to determine equivalency in the two biofluids; convergent validity was found. Following saliva test validation, a broad, genome-wide analysis was performed to detect differential gene expression in samples collected before and after treatment with Emotional Freedom Techniques (EFT), an evidence-based practice combining acupressure and cognitive exposure. The control treatment was non-therapeutic social interaction. To establish a baseline, participants received the control first, followed a week later by EFT. Analysis of samples was performed at three time points: immediately before treatment, immediately after, and 24 hours later. Differential expression between EFT and control was found in numerous genes implicated in overall health ($p < 0.05$). Further, the differentially expressed genes in this study were shown to be linked to immunity, pro or anti-inflammatory, as well as neuronal processes in the brain. Ten of the 72 differentially expressed genes are identified as promising targets for downstream research. The data show promise for the future use of salivary samples to determine the effects of therapy; this pilot protocol also illustrated the challenges and limitations of novel technologies employed in biopsychology.

Keywords: epigenetics, DNA, mRNA, gene expression, protein synthesis, brain plasticity, neurogenesis, biopsychology

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Psychology is a broad field with many procedures and schools of thought regarding the treatment of mental and emotional problems. As the field broadens with ever-evolving eclecticism and fine-tuning of psychotherapeutic techniques and modalities, more questions arise that pertain to the biological mechanisms behind client recoveries and transformations following treatment and self-maintenance. It is theorized that any novel experience, including experiential psychotherapeutic interventions, can impact gene expression in humans, resulting

in brain changes. This phenomenon is known as neurogenesis or brain plasticity (Siegel, 1995; Kandel, 1998, 2001; Montag-Sallaz, Welzl, Kuhl, Montag, & Schachner, 1999; Rossi, 2002; Rutishauser, Mamelak, & Schuman, 2006). It has been argued that effective psychotherapy may be viewed as an epigenetic intervention, regulating stress genes such as those that code for cortisol and epinephrine, as well as regulating the autonomic nervous system (Feinstein & Church, 2010; Church 2013c).

The science behind the merging fields of biology and psychology has proliferated over the last decade with researchers in both fields integrating aspects of the other (Rossi, 2002; Rossi, Rossi, Yount, Cozzolino, & Iannotti, 2006; Siegel, 2012). Technologies have emerged in the fields of functional magnetic resonance imaging (fMRI; Petrella, Mattay, & Doraiswamy, 2008), endocrinology (Yehuda et al., 2009), and molecular biology (Yount, 2013) that permit the experimental testing of the effect that psychotherapy has on neurogenesis (Eriksson et al., 1998; Ackerman, Martino, Heyman, Moyna, & Rabin, 1998; Montag-Sallaz et al., 1998; Ramanan et al., 2005; Xiang et al., 2008; Boyke, Driemeyer, Gaser, Büchel, & May, 2008). Recent gene expression research has enabled investigators to study the effects of experiences such as psychotherapeutic interventions. The notion that environment and experience change the brain's neurological wiring has evolved from a hypothesis into an empirically demonstrated reality (Anderson et al., 2004; Erk et al., 2010; Hölzel et al., 2011).

Psychotherapy and Neuroplasticity

Psychotherapeutic modalities are broadly effective, with no one method showing clear superiority over others (Wampold, Mondin, Moody, Stich, Benson, & Ahn, 1997; Ahn & Wampold, 2001). Psychotherapy is also efficacious for physical conditions, with a great deal of evidence supporting the link between mental and physical health (Alexander, Arnkoff, & Glass, 2010; Church, 2013c). The American Psychological Association (APA) recognizes the benefits and effectiveness of psychotherapy, and suggests that psychotherapy should continue to be included within the primary health care system. Though evidence supports equivalency and comparability of psychotherapeutic interventions, experiential and somatic therapies have been shown to yield improvements in much shorter treatment time frames (Greenberg & Watson, 1998; Karatzias et al., 2011; de Roos et al., 2011; Church, 2013a, 2013c). These interventions typically include techniques that induce the relaxation response (RR) to lower emotional distress, anxiety, or insomnia. RR meditation, defined as a mind-body intervention, is known to offset the physiological effects of stress (Benson & Klipper, 1975).

Brain plasticity, or neurogenesis, is the lifelong ability of the brain to change, grow, and reorganize neural pathways based on new experiences and even injury (Eriksson et al., 1998; Rossi, 2002). Genetic processes have been shown to result in neuronal growth in the brain by increasing the number of synapses between neurons (Eriksson et al., 1998; Kandel, 1998, 2001; Neville & Bavelier, 2000). These are the processes responsible for neuronal brain growth by way of genetic processes, also known as brain plasticity. Plasticity may be triggered by adverse life experiences, such as trauma, loss, and injury. Plasticity may also be triggered by positive experiences such as novelty, learning, and psychotherapeutic interventions. Therapies that employ this effect may therefore be regarded as epigenetic interventions (Church, 2013c).

Experiences trigger protein synthesis mediated by messenger ribonucleic acid (mRNA), resulting in a cascade of physiological, neuronal, and structural changes (Strachan & Read, 1999). Combining the study of psychotherapy and the processes of neurogenesis is referred to as Interpersonal Neurobiology (Siegel, 2012). Empirical investigation in this area of study has been challenged due to the lack of a noninvasive method of sample collection. The validation of a biofluid collection protocol would allow the measurement of gene expression and the exploration of the effects of psychotherapy as an epigenetic intervention.

Epigenetics and Neuroplasticity

Genes are the mechanisms by which living organisms inherit features from their ancestors. The genotype is the genetic makeup of a cell, an organism, or an individual. The cell interprets the genetic code stored in DNA when the gene is expressed, and the properties of that expression give rise to the organism's phenotype and observable characteristics, including behavior.

Gene expression can be influenced by environment and experience resulting in phenotypic changes such as neurogenesis. mRNA is an

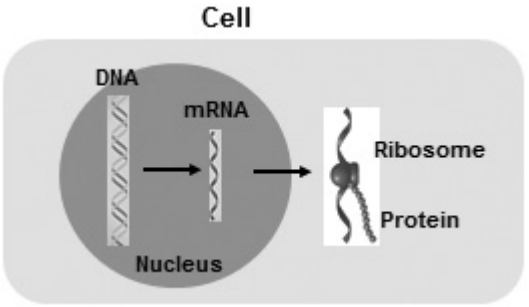


Figure 1. The blueprint in DNA for the synthesis of a protein is mediated by mRNA.

information carrier that codes for the synthesis of one or more proteins. Proteins can be synthesized using the information in mRNA as a template (Figure 1). Downstream genes can be upregulated or downregulated, turned on or off by messenger proteins.

Many factors determine whether a gene is on or off, such as the time of day, whether or not the cell is actively dividing, its local environment, and chemical signals from other cells. Upregulation and downregulation of genes affects the very wiring of the brain and body, predisposing the body toward the development of disease, or improving health, thinking, and memory (Church, 2013c; Montag-Sallaz et al., 1999; Ramanan et al., 2005; Pfenning, Schwartz, & Barth, 2007; Yehuda et al., 2009; Brocke et al., 2010).

Information transfer between DNA, RNA (both nucleic acids), and protein is multidimensional and occurs in several different ways. There are direct transfers of information between DNA, RNA, and proteins. DNA can be copied to DNA (replication). DNA information can be copied into mRNA (transcription). mRNA then carries a copy of DNA to other DNA, binding to it and triggering its expression (gene expression). In general, gene expression is regulated through changes in the number and type of interactions between proteins that collectively influence the transcription of DNA and the translation of RNA (Strachan & Read, 1999).

Telomeres are the molecular tails of DNA strands. Each time DNA replicates, a pair of telomerase molecules is lost (Sprung, Sabatier, & Murnane, 1996; Ning et al., 2003). Telomere tails shorten at a stable rate of about 1% per year, and are regarded as the most accurate biological marker of aging (Church, 2013c). Positive changes in lifestyle, such as meditation and a healthy diet, can ameliorate the oxidative effects of stress and preserve telomere length, mitigating the aging process. Telomere length has been correlated with age-related health decline as well as how health is negatively or positively affected by the environment, stressful experiences, and meditation (Kotrschal, Ilmonen, & Penn, 2007; Okereke et al., 2012; Ladwig et al., 2013; Epel, 2009; Epel, Daubenmier, Moskowitz, Folkman, & Blackburn, 2009; Jacobs et al., 2011).

Emotional Freedom Techniques (EFT)

Emotional Freedom Techniques (EFT) is an evidence-based psychotherapy self-help technique. It has been validated in over 100 studies, meta-analyses, and review papers accessible via an online bibliography (Research.EFTuniverse.com). EFT uses elements of exposure and cognitive therapies, and combines them with acupressure (i.e., fingertip stimulation of acupuncture points). It is described in a manual that has been available since the inception of the method, leading to its uniform application in research, training and certification (Craig & Fowlie, 1995; Church, 2013b). Studies have demonstrated its efficacy for a wide variety of psychological conditions and physical symptoms (Wells, Polglase, Andrews, Carrington, & Baker, 2003; Brattberg, 2008; Karatzias et al., 2011; Church, De Asis, & Brooks, 2012; Church, Yount, & Brooks, 2012).

Meta-analyses have found "large" treatment effects for anxiety, depression, and PTSD (Clond, 2016; Nelms & Castel, 2016; Sebastian & Nelms, 2016). The treatment time frames described in these reviews were brief, ranging from one session for phobias to between four and 10 sessions for PTSD. The treatment effects of EFT were found to extend over time. Systematic review papers have also described the efficacy of EFT for pain, traumatic brain injury, sports performance, fibromyalgia, and other physical conditions (Church, 2013b; Feinstein, 2012; Feinstein & Church, 2010). The effect sizes for EFT found in meta-anlyses are larger than those typically observed in conventional psychotherapy and psychopharmacology trials (Clond, 2016; Nelms & Castel, 2016; Sebastian & Nelms, 2016). Several dismantling studies have isolated the acupressure component of EFT from the conventional cognitive and exposure protocols that EFT shares with other therapeutic methods (reviewed in Church & Nelms, 2016). They find that the acupuncture point stimulation element of EFT is an active ingredient and not simply an

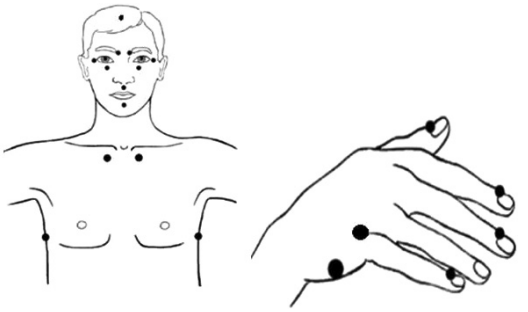


Figure 2. Acupressure points prescribed in *The EFT Manual* (Church, 2013b).

inert placebo. This is confirmed by studies using fMRI and other biological measures to investigate the brain's response to acupuncture; all show regulation of the brain regions and brain-wave frequencies associated with fear (Dhond, Yeh, Park, Kettner, & Napadow, 2008; Bai et al., 2009, 2010; Witzel et al., 2011; Liu et al., 2011). EFT has also been shown to regulate cortisol (Church, Yount, & Brooks, 2012). A study of the epigenetic effects of EFT in veterans with PTSD found regulation of six genes including those in the interleukin family that are linked to the stress response (Church, Yount, Rachlin, Fox, & Nelms, 2015).

Besides its cognitive, exposure, and acupressure tapping components, EFT uses a bilateral brain activation strategy called the 9 Gamut Procedure that is hypothesized to increase communication between the right and left hemispheres of the brain through the corpus callosum. Before and after the application of EFT, clients self-assess their degree of stress on an 11-point Likert scale. They then use EFT's "Basic Recipe" of acupoint stimulation while vividly recalling a traumatic event. This is followed by the 9 Gamut, then by a second application of the Basic Recipe (Figure 2).

The Viability of Saliva Sampling

Previously in gene expression research, blood samples were needed for profiling and analyses. Easily collected fluids such as saliva were dismissed due to several inadequacies. Saliva was considered to have too much extraneous DNA from viruses and bacteria to discriminate human gene expression (Kumar, Hurteau, & Spivack, 2006; Chiappelli, Iribarren, & Prolo, 2006). Before advances in purification and amplification technology, the quantity of mRNA obtainable from saliva was insufficient to measure significant changes (Bartlett & Stirling, 2003). Further, saliva mRNA samples degraded too quickly (Hu et al., 2008).

More recently, it has been established that saliva as a biological sample has the potential, as an easily collected body fluid, for human gene expression and experience research (Zubakov, Hanekamp, Kokshoorn, van Ijcken, & Kayser, 2008; Zubakov, Boersma, Choi, van Kuijk, & Wiemer, 2010). Technology now exists that allows for saliva collection from participants before and after psychotherapeutic intervention by way of in-vial mRNA purification. Storage, analysis, and comparison can be accomplished at room temperature rather than requiring frozen samples. The study used the Oragene saliva self-collection kit (OrageneRNA for Expression Analysis Self-Collection Kit, dnaGenotek, Ontario, Canada). The Oragene device consists of a proprietary fluid matrix in which samples are stored. This device is most commonly used in the medical and public health sectors for downstream isolation of genomic DNA. The manufacturer's directions are easy to follow; the stabilizing liquid is inside the lid of the vial. For the saliva sample, the participant spits into the tube, the lid is tightened, which releases the stabilizing liquid, and then gentle shaking mixes the stabilizer with the saliva.

The Oragene kit is to date the only all-in-one system for the collection, stabilization, and transportation of high-quality mRNA from saliva (Figure 3). This product literature claims that it yields "high quality total RNA." It is advertised as a noninvasive and easy-to-use self-collection tube that remains stable for months at room temperature; therefore, no sample freezing is necessary.

With recent advances in the field of molecular biology, it is possible to scan the entire genome for gene expression using a more cost effective high-throughput, multiplexed bead-based technology (Yang, Tran, & Wang, 2001; Krutzik &

Figure 3. Saliva sample collection vial.

Nolan, 2003; Elshal & McCoy, 2006; Jacobson, Oliver, Weiss, & Kettman, 2006; Bruse, Moreau, Azaro, Zimmerman, & Brzustowicz, 2008; Leng, McElhaney, Walston, Xie, Fedarko, & Kuchel, 2008). Prior to these advances, it was necessary to look at a very narrow selection of genes, sometimes only one at a time using RT-PCR (Real-Time polymerase chain reaction) technology, which is very costly.

The current study sought to elucidate the effect of psychotherapy on gene expression by measuring expression before and after a single session of EFT. The recent availability of noninvasive saliva tests offers the possibility of elucidating how psychotherapy works as an epigenetic influence on gene expression. The aim of this study was to observe the genetic response of healthy individuals to a psychotherapeutic intervention using saliva sample collection. A second objective was to investigate the feasibility of using saliva rather than blood as a biofluid suitable for conducting genetic research in a clinical setting, and delineate the parameters of a protocol to ensure successful data collection.

Method

Participants and Blinding

The study was approved by the Institutional Review Board (IRB) of Akamai University. Potential participants were English-speaking adults aged 18 to 65. Prior to enrollment, they were screened to verify nonclinical mental health status, and excluded if they scored above 20 on the Brief Symptom Inventory 18 (BSI 18; Derogatis, 2001), adapted for the purpose of this study to include "lifetime" instead of just the last 7 days. Of 24 potential participants screened, 10 were excluded on this basis. Of the remaining 14, five were selected based on their availability for the following two weekends. All provided informed consent.

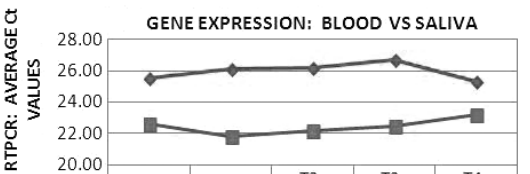
All study data were de-identified and coded to protect the participants' identities and facilitate impartial analysis of the samples. One participant was disqualified due to admission of a psychiatric diagnosis leaving a final $N = 4$. Sample vials were labeled with five-digit identifying codes determined by a random number generator (http://stattrek.com/statistics/random-number-generator.aspx), thus effectively blinding the molecular biology analysis. The key was not provided to the molecular biology team until after the samples were processed for mRNA extraction, gene detection, and gene expression.

Preliminary Proof of Methods Validation Test

No prior study collecting sufficient quantities of mRNA from samples stored in a preservation matrix at room temperature has been published in the literature. It was necessary to determine whether the mRNA level for a gene in saliva samples was comparable to the level in blood samples in order to demonstrate the feasibility of the planned study. Accordingly, a preliminary validation of the Oragene device was performed. This preliminary investigation tested logistics and procedure feasibility before the launch of the planned study.

For this validation, samples of blood and saliva were collected before, after, 2 hours after, 4 hours after, and 6 hours after a novel experiential psychotherapeutic intervention and stored at room temperature for 2 weeks. mRNA was then extracted from the samples according to manufacturer recommendations. mRNA expression from blood and saliva was quantified for the interleukin-8 (IL8) gene, a pro-inflammatory gene (Shahzad et al., 2010), from the samples using Real-Time PCR (RT-PCR). IL8 was one of the genes found to be significantly regulated by EFT in the prior gene expression study using blood samples analyzed with PCR (Church, Yount, Rachlin, Fox, & Nelms, 2016).

The preliminary validation test found that both saliva and blood were sensitive biofluids, exhibiting significant upregulation, relative to a twofold change threshold, of the IL8 gene from baseline (Figure 4). The Cycle threshold (Ct value) is the number of cycles of PCR amplification at which the signal of the target gene exceeds background noise (Shiao, 2003). mRNA encoding the IL8 gene extracted from saliva was detected at a Ct of 22.



	T0-B I	T1-A I	T2-2hrs A I	T3-4hrs A I	T4-6hrs A I
BLOOD	25.5	26.1	26.2	26.7	25.3
SALIVA	22.6	21.8	22.2	22.5	23.2

Figure 4. RT-PCR Ct values for IL8 gene expression of blood versus saliva. Time 0, BI = before intervention; Time 1, AI = after intervention; Time 2, AI = 2 hours after intervention; Time 3, AI = 4 hours after intervention; Time 4, AI = 6 hours after intervention.

IL8 mRNA from blood was detected at a Ct of 24. Lower Ct values indicate greater quantities of mRNA. It is expected for biofluids to have different expression patterns for a specific gene as a result of their differing constituents. The similarity of the results obtained from the two biofluids indicated the feasibility of using saliva for the planned study, and demonstrated the logistical feasibility of measuring differential gene expression before and after EFT.

Sample Collection and Analysis

After determining that saliva was a viable biofluid, the main study proceeded. Saliva samples were first collected under control conditions, and then, a week later, from the same participants before and after EFT. The control was 50 minutes of non-therapeutic conversation moderated by a non-therapist research assistant. The experimental condition was 50 minutes of EFT.

Study participants provided 1 ml of saliva by expectorating directly into the Oragene collection vial. Saliva samples were collected from all participants in both groups immediately before (T0), immediately after (T1), 4 hours after (T2), and 24 hours after (T3) the 50-minute treatment. A total of 40 samples were collected one week apart for control and experimental conditions. After collection, vials were sealed and stored at room temperature until RNA extraction.

As these are novel methods, it was decided that an initial trial of 12 samples on one chip would be attempted first. This was performed at the University of Texas Southwestern Microarray Core Lab. The first chip was processed 35 (+ or – 7 days) days after collection. By the time these results had been received and it was determined that quality mRNA had been quantified, only 12 of the next 24 samples passed quality controls. Extraction of the second chip occurred about 80 days after sample collection. dnaGenotek was contacted about the degradation of the samples, which their literature confirmed could be "stored at room temperature for months," and then stated that the expiration point of their collection vials should be considered 60 days.

Labeling, Hybridization, and Data Analysis

The Illumina Human HT-12-V4 BeadChip array is made up of randomly positioned silica beads, each containing hundreds of thousands of copies of a specific probe sequence. From each sample, 50 ng of total RNA was labeled with biotin and then hybridized using the Illumina chip. The chips were then scanned by an Illumina HiScan-SQ scanner. The level of hybridization was measured via Cy3-Streptavidin fluorescence. Data were normalized to background then analyzed using Illumina Genomestudio software (San Diego, CA). This platform was chosen for this study as it allowed for the detection of specific gene expression activity across the entire human genome at a fraction of the cost of using the RT-PCR procedure, yet with comparable detection capabilities.

Statistical Analysis

Using the Illumina Genomestudio software, gene expression data were pooled and compared across each condition and time point. Data from individual participants were normalized using quantile normalization. This is a method used to make the distribution, median, and mean of probe intensities the same for every sample. The normalization distribution is chosen by averaging each quantile across samples in order to generate an average signal (AVG-Signal). The data analysis included the p value and other descriptive statistics such as Standard Deviation, Standard Error, and t-test for each gene. The p value indicates the statistical significance that the detected signal on the chip was differentially illuminated when compared to the controls and background noise. Detection p value is a statistical calculation that provides the probability that the signal from a given probe is greater than the average signal from the negative controls. A p value < 0.01 indicates that a specific gene exhibited significant up- or downregulation from controls and background noise.

Genes that were differentially expressed between groups were identified by comparing the expression values of the genes. Differential expression was determined via Student's t-test for the treatment group in question. Differences between conditions (CC = control; EC = experimental) and time point with $p < 0.05$ were considered significant.

Of the 40 samples collected, only 24 samples were suitable for analysis based on extractable mRNA. Obtaining high quality mRNA was problematic due to sample degradation. There was variability in the number of detectable genes found in each sample, displayed in Table 1. This was most

Table 1. *Number of Genes Detected in Each Sample per Condition and Time Point out of 47,000 Genes*

Sample groups	CS	ES
T0	CS5T0: 6410	ES5T0: 416*
	CS4T0: 522*	
	CS3T0: 2781	ES4T0: 618*
	CS2T0: 1585	
	CS1T0: 425*	ES3T0: 3434
T1	CS5T0: 8548	ES5T1: 701*
	CS3T0: 4728	ES2T1: 9064
	CS2T1: 1504	ES4T1: 618*
T2	CS5T2: 10634	ES5T2: 9064
		ES3T2: 516*
T3	CS5T3: 7741	ES5T3: 570*
		ES4T3: 521*
	CS4T3: 709*	ES3T3: 427*
	CS3T3: 1267	ES2T3: 1576

Note: *These samples have a very low number of detectable genes.

likely due to the time lapse between collection and sample processing.

Samples obtained at Time 2, the time point 4 hours after the intervention, did not yield enough usable mRNA to be compared across conditions. The data for this time point have therefore been eliminated from the results due to the poor quality mRNA extraction from most of the samples. Participants were instructed on study procedures and collection times; however, instructions may not have been followed, as this was the only time point that was not observed by the research assistant. It is possible the participants ate, smoked, or chewed gum before collecting that particular sample.

Results

RNA Extraction and Validation

Samples were extracted following the steps listed in the Oragene purification protocol using TRIzol LS reagent (Invitrogen, Carlsbad, CA). Total RNA samples (1 µl) were analyzed for quality and purity by chip electrophoresis using Agilent's 2100 Bioanalyzer (Agilent Technologies, Santa Clara, CA) and reagents from the RNA 6000 pico kit. Table 2 shows the number of samples that passed extraction and validation for each time point and condition. The data from Time 2 (T2), 4 hours after the intervention, were eliminated from further analysis due to too few usable samples to compare.

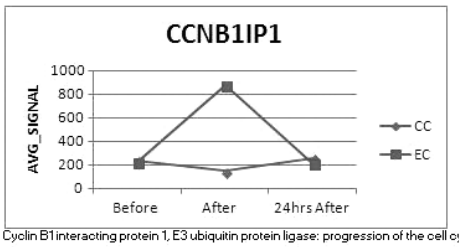
Differential Gene Expression

Differential gene expression was measured using the methods outlined previously. Because of the size and magnitude of the data generated (out of 47,000 genes), only 10 of the 72 differentially expressed genes will be mentioned for the results (Figure 5, Table 3). Downstream investigation is suggested for these 10 differentially expressed genes: CCNB1IP1 is also known as Cylin B1 interacting protein. It is involved with the progression of the cell cycle. CCNB1IP1 showed significant upregulation, 8-fold, immediately after EFT compared to the control condition ($p < 0.02$). Expression of CCNB1IP1 has been linked to tumor suppression (Ma et al., 2013). COPS7A is a subunit of COP9 and is known as constitutive photomorphogenic signalosome subunit 7A. COP9 and its subunits play a role in protecting and repairing damaged DNA due to UV radiation (Füzesi-Levi et al., 2014). COPS7A showed significant upregulation, 5-fold, after EFT compared to control condition ($p < 0.02$). DAB2, Disabled-2, is a FOXP3 target gene for regulating

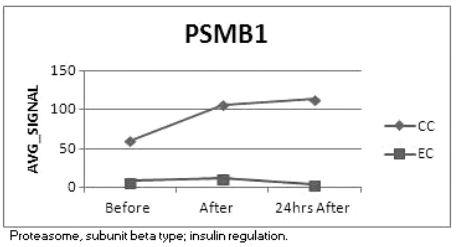
Table 2. *Sample Information*

Sample groups	Samples in CS group		Samples in ES group	
T0	5	CS5T0	3	ES5T0
		CS4T0		
		CS3T0		ES4T0
		CS2T0		
		CS1T0		ES3T0
T1	3	CS5T0	3	ES5T1
		CS3T0		ES2T1
		CS2T1		ES4T1
T2	1	CS5T2	2	ES5T2
				ES3T2
T3	3	CS5T3	4	ES5T3
				ES4T3
		CS4T3		ES3T3
		CS3T3		ES2T3

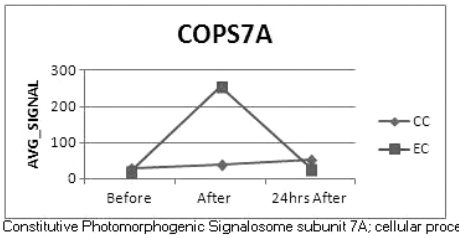
Note: Total 24 out of 36 samples were processed on Illumina Human HT-12 arrays.



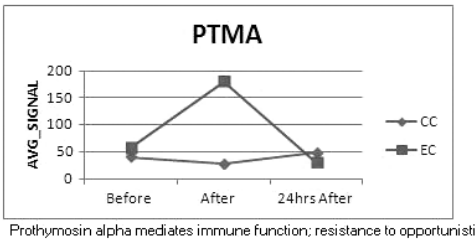
Cyclin B1 interacting protein 1, E3 ubiquitin protein ligase: progression of the cell cycle.



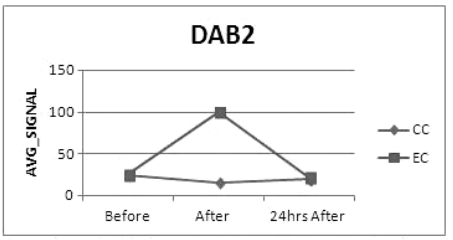
Proteasome, subunit beta type; insulin regulation.



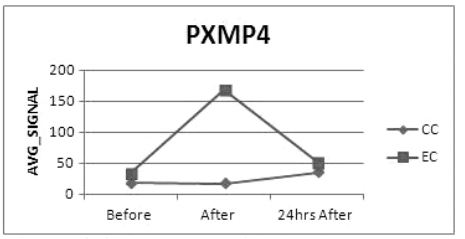
Constitutive Photomorphogenic Signalosome subunit 7A; cellular processes.



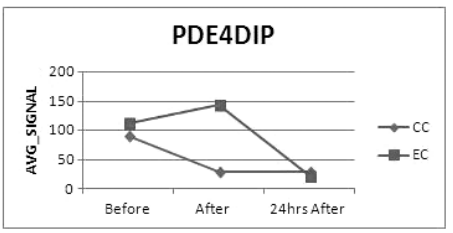
Prothymosin alpha mediates immune function; resistance to opportunistic infections.



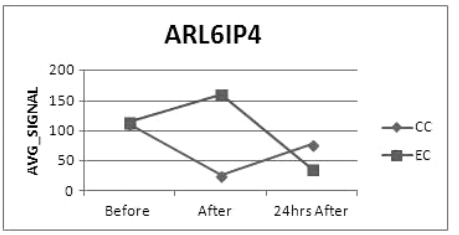
Disabled-2 is a FOXP3 target gene required for regulatory T cell function.



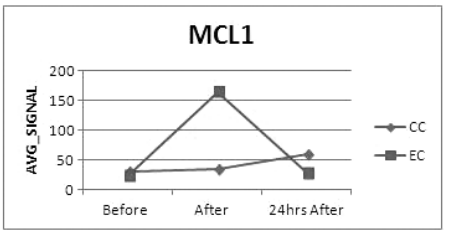
Peroxisomal Intrinsic Membrane Protein; tumor suppression.



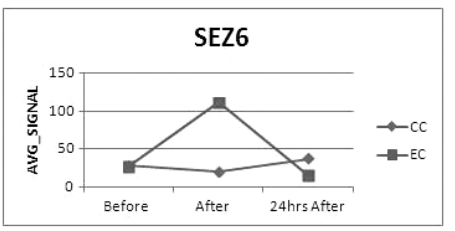
Phosphodiesterase 4D interacting protein; mood, memory & learning.



ADP ribosylation factor like GTPase 6 interacting protein 4; antiviral activity.



Myeloid Cell Leukemia 1: Mediates apoptosis (programmed cell death).



Seizure-related gene 6; enhanced synaptic connectivity.

Figure 5. Differential gene expression of 10 genes of interest and basic function: Average signal (AVG_SIGNAL) of control condition (CC) compared to experimental condition (EC).

T-cell function. DAB2 has tumor suppression and anti-cancer effects. Loss of DAB2 expression in breast cancer can be detrimental to prognosis (Xu, Zhu, & Wu, 2014). Downregulation of DAB2 switches TGF-B (tumor growth factor-B) from a tumor suppressor to a tumor promoter (Hannigan et al., 2010). DAB2 showed significant upregulation, 3-fold, after EFT compared to control condition ($p < 0.02$). PDE4DIP, phosphodiesterase 4D interacting protein has implications for mood, memory, and learning (Kim, Cho, Lee, & Webster, 2012; Shapshak, 2012). PDE4DIP upregulated 2-fold immediately after EFT ($p < 0.02$). MCL1, Myeloid Cell Leukemia 1, mediates apoptosis (programmed cell death). MCL1 is named and known for the role it plays in cancer promotion when it is

Table 3. *Summary of 10 Genes and Translational Functions*

Gene	Discovered function(s)	References
CCNB1IP1	Tumor suppression	Ma et al., 2013
COPS7A	Protects against UV radiation	Groisman et al., 2003; Füzesi-Levi et al., 2014
DAB2	Cancer tumor suppression	Tong et al., 2010; Hannigan et al., 2010; Xu, Zhu, & Wu, 2014
PDE4DIP	Implications for mood, memory, and learning	Kim, Cho, Lee, & Webster, 2012; Shapshak, 2012
MCL1	Neuronal survival after DNA damage. Suppression, cancer prevention	Xingyong et al., 2013; Lestini et al., 2009
PSMB1	Increases type 2 diabetes insulin resistance. Upregulation related to anticancer	Yamauchi et al., 2013; Keutgens et al., 2010
PTMA	Mediates immune function by increasing resistance to opportunistic infections. Antiviral properties when upregulated	Su et al., 2013; Bowick et al., 2010
PXMP4	Cancer tumor suppression	Zhang et al., 2010
ARL6IP4	Resistance and recovery from emotional stress and antiviral activity	Wu et al., 2013; Carhuatanta, Shea, Herman, & Jankord, 2014
SEZ6	Enhances synaptic connectivity in the brain by promoting dendritic arborization (branching) of neurons	Gunnersen et al., 2007

overexpressed (Lestini et al., 2009; Ertel, Nguyen, Roulston, & Shore, 2013). With moderate expression, however, MCL1 has been found to help neuronal survival after DNA damage (Xingyong et al., 2013). MCL1 showed significant upregulation after EFT compared to control condition ($p < 0.004$). PSMB1, Protaesome subunit beta type-1, is a multicatalytic proteinase complex with a highly ordered ring-shaped 20S core structure. PSMB1 is known to play a role in insulin resistance when overexpressed (Yamauchi, Sekiguchi, Shirai, Yamada, & Ishimi, 2013). PSMB1 remained constant throughout the experiment, unlike the control condition, which was variable ($p < 0.002$). PTMA, Prothymosin alpha, mediates immune function by increasing resistance to opportunist infections. PTMA showed significant upregulation, 5-fold, after EFT compared to control condition ($p < 0.04$). PXMP4, Peroxisomal Intrinsic Membrane Protein, has been found to have cancer tumor suppression properties when expressed (Zhang et al., 2010). PXMP4 showed significant upregulation, 5-fold, after EFT compared to control condition ($p < 0.04$). ARL6IP4, ADP ribosylation factor like GTPase 6 interacting protein 4, is known for resistance and recovery from emotional stress and antiviral activity (Wu et al. 2013; Carhuatanta, Shea, Herman, & Jankord, 2014). ARL6IP4 upregulated 2-fold after EFT ($p < 0.002$). SEZ6, seizure related gene 6, has implications for enhancing synaptic connectivity in the brain by promoting dendritic arborization, (branching) of neurons (Gunnersen et al., 2007). SEZ6 showed significant upregulation, 3-fold, after EFT compared to control ($p < 0.05$). A basic PubMed search on 32 of the 72 genes differentially expressed in the immediately after EFT condition compared to control condition yielded some very interesting possibilities for how EFT might affect immunity and inflammation systemically (Table 4). Also immediately after EFT, genes were expressed that are known to code for structural neurogenesis and brain plasticity.

Discussion

This study piloted a novel methodology of using saliva to measure mRNA and gene expression before and after therapy in order to test the feasibility of using gene expression to examine the physiological correlates of effective treatment. A broad, genome-wide analysis was performed to detect differential gene expression from saliva samples collected before and after

Table 4. *Functions of 32 of the 72 Genes Differentially Expressed after EFT*

Symbol	ES-T1.diff pval	Gene function	Symbol	ES-T1.diff pval	Gene function
MAL	0.000140196	T cell/immunity	**SLK**	0.01066234	Oral cavity related
PVRL3	0.000726317	Growth/immunity	**RPL19P9***	0.01131552	Cancer tumor regulation
ARL6IP4*	0.002220663	Antiviral activity	**EFCAB6**	0.01169039	Hormone related
PSMB1*	0.002253853	Insulin regulation	**UCP3**	0.01271318	Energy & metabolism related
EIF2B2	0.002633457	Brain white matter regulator	**PPM1G**	0.01599931	DNA methylation; relates to brain function & behavior
DGKD	0.003499107	Cellular response to external stimuli	**KDM6B**	0.01679955	Encodes an epigenetic regulator promoting transcriptional plasticity
SBDS*	0.003522641	Blood cells development & differentiation	**DAB2***	0.01702478	Cancer tumor suppressor
FLJ45337*	0.004008878	CNS	**PDE4DIP***	0.01735445	Memory & learning
GNAI3	0.004695438	Brain pituitary function	**PACSIN2**	0.01792237	Mediates membrane sculpting
PRB3	0.006684133	Saliva related	**GPX1**	0.01820716	One of the most important antioxidant enzymes in humans
RFX2	0.007274315	Male fertility	**COPS7A***	0.0232078	Prevents UV damage
CNTNAP3*	0.008081845	Cell recognition in CNS	**CCNB1IP1***	0.02381662	Tumor suppressor
MEGF10	0.008235929	Brain synapse shape, implicated in mood changes	**SLC25A24***	0.03513861	Cancer promotion/autism & brain damage
LSM1	0.008412043	Regulation of stress response	**MCL1***	0.04546044	Neuronal survival after DNA damage
CASP1	0.009469124	Inflammation & immune response	**SEZ6***	0.04947686	Enhances brain synapse connectivity
NAPRT1	0.009792715	Nicotinic pathway signaling	**PXMP4***	0.04958648	Tumor suppressor

Note: *Stable AVG signal across all conditions and time points.

Table 5. *72 Genes Differentially Expressed in the Immediately after EFT Condition Compared to Control Condition*

Symbol	ES-T1.diff pval	Symbol	ES-T1.diff pval	Symbol	ES-T1.diff pval
MAL	0.000140196	**PDE4DIP**	0.01735445	**TRIOBP**	0.03726178
PVRL3	0.000726317	**PACSIN2**	0.01792237	**PNKP**	0.03818927
ARL6IP4	0.002220663	**GPX1**	0.01820716	**NDUFA4**	0.03842646
PSMB1	0.002253853	**LOC644908**	0.01976341	**HECTD1**	0.03899735
EIF2B2	0.002633457	**BRD2**	0.01978085	**PTS**	0.04000588
DGKD	0.003499107	**CNBP**	0.02002777	**MPPE1**	0.04160427
SBDS	0.003522641	**EML3**	0.02025446	**LOC100128908**	0.04251099
FLJ45337	0.004008878	**DBN1**	0.02191621	**BCL11A**	0.04295282
GNAI3	0.004695438	**CHMP2A**	0.02248847	**LPXN**	0.04303961
	0.005137144	**COPS7A**	0.0232078	**BRP44L**	0.04319492
PRB3	0.006684133	**CCNB1IP1**	0.02381662	**LOC442727**	0.0434711
RFX2	0.007274315	**HAUS4**	0.0239315	**PAQR8**	0.0436732
CNTNAP3	0.008081845	**LPP**	0.02496151	**FLI1**	0.04385494
MEGF10	0.008235929	**FLJ44290**	0.02684345	**PDE8B**	0.04456585
LSM1	0.008412043	**SLC38A2**	0.02692815	**MCL1**	0.04546044
CASP1	0.009469124	**REPS2**	0.02750115	**RILPL2**	0.04632794
NAPRT1	0.009792715	**CCRL1**	0.02955338	**STAT1**	0.04671226
SLK	0.01066234	**LOC100129553**	0.03140679	**LOC650005**	0.04722419
RPL19P9	0.01131552	**PTOV1**	0.03205068	**LOC649049**	0.0483591
EFCAB6	0.01169039		0.0336481	**WWP2**	0.0488626
UCP3	0.01271318	**DBNDD2**	0.03456545	**SEZ6**	0.04947686
PPM1G	0.01599931	**VPS37C**	0.03480522	**PXMP4**	0.04958648
KDM6B	0.01679955	**SLC25A24**	0.03513861	**DPEP3**	0.04997416
DAB2	0.01702478	**FCN1**	0.03625635	**MAFF**	0.05009715

EFT. A preliminary test using an important regulatory gene showed that noninvasive salivary assays can produce results similar to blood sampling. The time points of immediately before, immediately after, 4 hours after, and 24 hours after the intervention provided data that may be useful in developing a simple pre-post protocol. Immediately after EFT, 72 genes were found to be differentially expressed (Table 5). In 24 hours after EFT, 25 genes were found to be differentially expressed (Table 6).

The data indicate that it is possible to use saliva for gene expression studies using the novel methodology employed in this study. Also, many of the differentially expressed genes in this study are shown to be linked to immunity, pro- or anti-inflammatory, and neuronal processes in the brain and body (Kantor, Alters, Cheal, & Dietz, 2004). And further, based on the results of Dusek et al., (2008) and Bhasin et al., (2013), who used blood as the biofluid, it is apparent that emotional regulation elicits gene expression patterns that correlate with positive health states in a non-clinical population. Whereas meta-analyses demonstrate that EFT is an efficacious treatment for psychological conditions such as anxiety, depression, and PTSD, the results of this study are consistent with earlier studies such as Church, Yount, and Brooks (2012) and Church (2014) and indicate that EFT is an epigenetic intervention, regulating physiological as well as psychological health.

Using saliva as a viable biofluid for gene expression research is becoming more feasible as researchers have overcome purity and specificity problems (Kumar, Hurteau, & Spivack, 2006). In 2008, Zubakov, Hanekamp, Kokshoorn, van Ijcken, and Kayser, published research comparing

Table 6. *25 Genes Differentially Expressed in the 24 Hour after EFT Condition Compared to Control Condition*

Symbol	ES-T3.diff pval
LOC728126	0.000857072
CSRP1	0.002486051
CTDSP1	0.00287435
NDUFB8	0.004585848
LOC401115	0.005995638
ASS1	0.009637041
SDC1	0.01055176
ZDHHC7	0.0108301
C20orf3	0.01124804
LMF2	0.02383739
LOC644511	0.02745767
ADPGK	0.02803549
HLX	0.02855908
CCDC28A	0.0299089
LOC643357	0.03101086
SEC61G	0.03351247
YY1AP1	0.04316361
SFRS4	0.04444867
PTOV1	0.04462961
DCTN2	0.04591753
ATP6V0A1	0.04884839
SDF2L1	0.04910131
LOC730255	0.04998559
CENTD2	0.05004921
LOC644464	0.05011049

blood and saliva (with microarray and RT-PCR validation), successfully demonstrating time-wise sample-specific differential gene expression. In 2013, Pandit, Cooper-White, and Punyadeera sought to demonstrate a high-yield extraction method of mRNA from saliva using a protocol very close to the extraction methods used in the present study. The main difference was that samples were frozen immediately in dry ice. They succeeded in obtaining high-yield and high-quality mRNA from saliva. Furthermore, Xu et al., (2014) were able to identify tissue/sample specific gene expression based on target expression patterns from sample mixtures including saliva. This team's intention was to develop a highly selective and specific multiplex system for mRNA detection from multiple body fluids and tissues. This is useful in forensic applications where multiple fluids may be present or mixed at a crime scene but also supports the aim of this study and future studies in biopsychology.

The limitations of this study include small sample size, the delay in sample processing, sample degradation due to room temperature storage, and possible participant noncompliance at Time 2. The study is further limited by the lack of an active control such as cognitive behavior therapy. Future studies will account for the monitoring of participants at each time point to assure correct sample collection procedures are followed. Studies with a larger *N* will allow for more robust statistical analyses to be performed, such as ANOVA and Rank-Sum testing. All samples should be collected in the presence of study personnel, and frozen immediately following collection to minimize the degradation of mRNA and maximize the quantities of useable genetic material for downstream analysis. Further research should also compare EFT to other efficacious therapies, and include not only biological methods, but also valid and reliable psychological questionnaires. Significant interactions between the symptoms of anxiety and depression on the one hand and the expression of classes of genes such as immunity and inflammation genes on the other hand could be statistically explored.

Using the Oragene device required specific extraction methods that are published and accepted for the device. Oragene has special methods because the RNA must be extracted from the chemical matrix in addition to the saliva. Although saliva is now an acceptable medium for acquiring mRNA, this study had low mRNA detected in some samples as a result of the length of time the samples were stored at room temperature. These were novel methods for this study, but the delay beyond expiration was unexpected. Even with the delay in processing and sample collection device expiration, the fact that quality mRNA, pure and specific, was still able to be extracted from the samples supports the feasibility of conducting research with saliva to validate the effects of psychotherapeutic interventions. Future studies should include freezing the samples on dry ice for shipping to a core facility.

Once larger studies are conducted with solid quality controls and replicable results, the assessment of gene expression as a measure of therapeutic efficacy may become routine. With effective pre and post biological indicators, in

addition to valid and reliable psychometric tools, it could become much easier to measure psychotherapeutic treatment effectiveness. Recent research in epigenetics is exploring in detail how genes and the environment interact specifically related to the measurement of mental and physical health status as it correlates with DNA methylation (Zhang et al., 2010; Jin, Li, & Robertson, 2011; Mehta et al., 2013; Wankerl et al., 2014).

The novel methods employed in the present study also point to the possibility of individualized epigenetic treatment plans. While one client might, for instance, respond best to EFT and yoga, another might respond better to cognitive therapy and mindfulness meditation. Inexpensive and noninvasive salivary assays make personalized medicine possible. Salivary testing facilitates the feasibility of such personalized protocols since they are easily administered, especially compared to the alternative of repeated blood sample collection using a semipermanent cannula for peripheral blood collection (Wankerl et al., 2014). Once the protocols are identified and the costs fall due to increased manufacturing volume, salivary gene tests such as the ones used in this study might become a routine part of psychological assessment.

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A Survey of Energy Psychology Practitioners: Who They Are, What They Do, Who They Help

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Abstract

An online survey of the members of the Association for Comprehensive Energy Psychology (ACEP) was completed by 294 of the organization's 1,220 members (24%) in March 2016. The majority of respondents reported using acupoint tapping protocols as a core component in the successful treatment of generalized anxiety disorder, posttraumatic stress disorder (PTSD), phobias, and depression. All 106 of the respondents who had applied acupoint tapping for facilitating "peak performance" in contexts such as business, education, and sports reported the approach to have been "of great value" (68%) or "moderate value" (32%) for this objective, with none of the respondents having reported it to be of "little value." The survey also asked participants to estimate the number of sessions that are typically required to achieve each of seven "process outcomes" that are shared among various clinical approaches. For instance, the elimination of an unwanted physiological/emotional reaction to a specified trigger could typically be achieved in three or fewer acupoint tapping sessions according to 94% of the respondents, and within a single session according to 71% of the respondents. Two thirds of the licensed mental health professionals who reported that they use acupoint tapping protocols said they integrate them into existing therapeutic frameworks rather than use acupoint tapping as an independent modality. This finding suggests that the approach is portable and is being applied within the context of established therapeutic systems with the intention of more rapidly facilitating targeted neurological, emotional, and cognitive changes. In brief, the practitioner reports generated in the survey corroborate clinical trials and meta-analyses that suggest acupoint tapping protocols are rapid and effective with a range of conditions.

Keywords: acupoint tapping, biofield, chakra, Emotional Freedom Techniques, EFT, energy psychology, meridian, survey, Thought Field Therapy

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An online survey by the Association for Comprehensive Energy Psychology (ACEP) was sent to the organization's 1,220 members in March 2016. The survey was completed by 294 respondents (24%). Although this sample cannot be generalized to the organization's entire membership, no less to all practitioners of energy psychology, it does give the best data-based glimpse available into several questions about those who practice the method and how they practice it.

Findings

Demographics

Gender and age demographics for the ACEP respondents were: 82% female, 18% male; 16%

under 50; 26% between 50 and 59; 48% between 60 and 69; and 10% over 70. The degree to which these percentages might or might not reflect the larger community of energy psychology practitioners is particularly difficult to assess, and no implications are drawn about that question.

Use of Energy Psychology: Personal or Professional?

Ninety-two percent of the respondents use energy psychology in their work, which is unsurprising since they are members of the largest professional organization advocating the approach. The remaining 8% are members of ACEP because they apply the method in their personal life but not professionally (19 respondents) or are members only out of interest (3 respondents).

Professional Background

Of the respondents who use energy psychology in their work, 59% identified themselves as licensed mental health professionals and another 7% are licensed health care professionals who are not primarily psychotherapists. The remaining 34%, who are not licensed health care professionals, practice in a variety of roles and settings: as life coaches or specialized counselors, working with clinical issues under the auspices of an established mental health organization, or working in a business or other non-clinical context.

Of the licensed mental health professionals, 35% reported being psychologists, 33% mental health or marriage/family counselors, 20% social workers, 2% psychiatrists, and the remaining 10% listed "other."

Types of Energy Psychology Used

Eighty-seven percent of the respondents who use energy psychology in their work use acupoint tapping. Fifty-four percent work with the chakras (as well as acupoints in many cases), and 39% work with the aura (or biofield) in addition to any other energy systems. Sixty-four percent incorporate methods from energy medicine into their energy psychology work. Three percent do not use any "body-based procedures" in their energy psychology work. Of those who work with acupoints, 42% stimulate them in ways other than tapping in addition to or instead of tapping.

Is Energy Psychology the Practitioner's Primary Modality or an Adjunct to the Primary Modality?

Sixty-six percent of the licensed mental health professionals who use acupoint tapping identified it as an adjunct to their primary modality while 34% identified acupoint tapping as their primary modality. For the two thirds who did not identify acupoint tapping as their primary modality, the primary modalities they listed were: cognitive and/or behaviorally oriented psychotherapy (33%); psychodynamic-oriented psychotherapy (27%); spiritually oriented therapy (11%); here-and-now oriented approaches such as Gestalt or mindfulness (7%), supportive counseling (4%), and "other" (18%).

The response to this question by licensed mental health professionals was in stark contrast to the responses by non-licensed practitioners who use acupoint tapping. For this group, 65% listed acupoint tapping as their primary modality and only 35% listed it as an adjunct to their primary modality. This may be because, for many non-licensed practitioners, energy psychology is the only clinical modality in which they have been trained. For the third of the non-licensed practitioners who did not identify acupoint tapping as their primary modality, the primary modalities they listed trended toward body-oriented (e.g., Reichian, Rolfing, Rubenfeld) and spiritually oriented approaches rather than psychodynamic or cognitive-behavioral approaches.

Number of Sessions Required to Achieve Targeted Outcomes

Table 1 compiles the answers to a survey item that was worded: "Acupoint tapping may be used to target any of the following seven outcomes. For each, select from the Dropdown Boxes the answer that is most typical in your experience (assuming there are no major complicating aspects)."

Of the 235 respondents who use acupoint tapping in their practice, 209 replied to this set of questions. The responses of licensed and non-licensed practitioners were statistically similar, with marginally faster outcomes being reported by non-licensed compared to licensed practitioners. This may mean that non-licensed practitioners are slightly more effective or it may mean that those with more training are more critical in their self-evaluations.

Table 1. *Estimated Number of Sessions Required to Achieve Specific Targeted Outcomes*

Outcome	Typically requires less than an hour	Typically requires 2 to 3 sessions	Typically needs more than 3 sessions	I have not achieved this with tapping	I have not attempted this with tapping
Eliminate an unwanted physiological/emotional response to a specified trigger	**71%** (144/202)	**23%** (46/202)	**5%** (10/202)	**1%** (2/202)	**3%** (7/209)
Eliminate an unwanted physiological/emotional response to a traumatic or otherwise difficult memory	**29%** (58/200)	**46%** (92/200)	**23%** (47/200)	**1%** (3/200)	**4%** (9/209)
Eliminate a maladaptive belief about self or how the world operates	**30%** (60/197)	**35%** (68/197)	**30%** (60/197)	**5%** (9/197)	**6%** (12/209)
Eliminate a maladaptive behavior habit	**11%** (19/180)	**37%** (67/180)	**47%** (84/180)	**6%** (10/180)	**14%** (29/209)
Eliminate emotional obstacles to reaching a desired goal	**29%** (57/196)	**50%** (98/196)	**19%** (37/196)	**2%** (4/196)	**6%** (13/209)
Shift an unwanted baseline affective state (e.g., depression, generalized anxiety disorder)	**19%** (36/191)	**26%** (50/191)	**49%** (94/191)	**6%** (11/191)	**9%** (18/209
Establish and reinforce beliefs and behaviors that support a desired goal	**35%** (64/184)	**39%** (71/184)	**25%** (45/184)	**2%** (4/184)	**14%** (25/184)

Conditions that Respond to Energy Psychology Treatments

Table 2 shows responses to the survey item that asked: "Have you used acupoint tapping as a major element in the successful treatment (i.e., the condition is no longer present)" for each of the listed clinical conditions. Of the 205 respondents who answered this set of questions, 122 were licensed practitioners and 83 were non-licensed practitioners. Not specified was how the DSM diagnosis was determined or how treatment success was measured.

Table 2. *Reported Success in Treating Seven DSM Disorders*

Condition	All respondents	Licensed	Unlicensed
Generalized anxiety	**86%** (177)	**92%** (112)	**78%** (65)
PTSD	**70%** (144)	**80%** (97)	**57%** (47)
Phobias	**64%** (131)	**66%** (80)	**69%** (51)
Depression	**61%** (125)	**63%** (77)	**58%** (48)
Addictive behaviors	**42%** (87)	**38%** (46)	**49%** (41)
Schizophrenia	**3%** (7)	**2%** (3)	**5%** (4)
Bipolar disorders	**13%** (26)	**12%** (15)	**13%** (11)
Total # responding	205	122	83

Note: DSM = *Diagnostic and Statistical Manual of Mental Disorders*; PTSD = posttraumatic stress disorder.

Peak Performance

Acupoint tapping is sometimes paired with imagery of an ideal or "personal best" performance in working with athletes, actors, speakers, leaders, and others in non-clinical contexts to enhance peak performance. Slightly over half (106) of the 208 respondents who answered this question indicated that they have used acupoint tapping in this way. Of these, 68% reported that they have found acupoint tapping to be "of great value for enhancing peak performance," 32% reported it to be of "moderate value," and none of the respondents who use tapping for enhancing peak performance reported it to be of "little value."

Discussion

As research on clinical trials of energy psychology interventions, and most specifically on acupoint tapping protocols, continues to accumulate and inform the professional community about the nature and effectiveness of the approach, another window into the process is to ask practitioners about their clinical experiences. That was the purpose of the survey.

Achieving Targeted Outcomes

Seven "process outcomes"—that is, outcomes that are elements of the *process* of psychotherapy (as contrasted with outcomes that are defined in terms of the treatment of psychiatric disorders)—were identified by four recognized leaders within the energy psychology community and reviewed and confirmed by four others. These process outcomes were formulated in terms of the changes a clinician might target when applying an energy psychology protocol, such as eliminating unwanted physiological/emotional responses to traumatic memories or to problematic triggers. To be selected, each targeted outcome also had to be viewed by the consultants as being universal in that it is applicable to other psychotherapeutic modalities regardless of the specific methods or theoretical orientations involved. For each of these seven process outcomes, 94% or more of the respondents who had targeted that outcome using acupoint tapping protocols reported being able to achieve it.

Speed

How quickly were these process outcomes accomplished? Meta-analyses reviewing clinical trials of acupoint tapping show that large effect sizes for depression, PTSD, and other anxiety disorders have been achieved in relatively few sessions (Clond, 2016; Nelms & Castel, in press; Sebastian & Nelms, in press). For instance, seven of the 14 clinical trials reviewed by Clond achieved high effect sizes after a single session. Four PTSD studies (Church, Piña, Reategui, & Brooks, 2012; Connolly, Roe-Sepowitz, Sakai, & Edwards, 2013; Connolly & Sakai, 2011; Sakai, Connolly, & Oas, 2010) reported strong reductions in PTSD symptoms after a single acupoint tapping session. Though these assertions understandably raise suspicion among seasoned clinicians who work with PTSD, in the studies in which follow-up was conducted, the gains were found to be durable on established measures at one-year, and in one case, two-year follow-up. In none of these studies did the investigators claim that a single session is adequate for treating PTSD, but they did demonstrate that significant improvement and, more often than expected, a shift from significantly above to significantly below PTSD cutoffs on standardized inventories, could be achieved in just one session.

The current survey shows that reports from a spectrum of practitioners corroborate the clinical trials showing rapid therapeutic gains after the use of acupoint tapping protocols. Ninety-four percent of the respondents reported that "unwanted physiological/emotional responses to specified triggers" are typically eliminated in three or fewer sessions (and for 71%, in a single session). Also typically eliminated in three or fewer sessions, according to the respondents, were "unwanted physiological/emotional responses to a traumatic or otherwise difficult memory" (75%), "a maladaptive belief about self or how the world operates" (65%), and "emotional obstacles to reaching a desired goal" (79%). Beyond removing emotional obstacles to reaching a desired goal, 74% reported that beliefs and behaviors that support a desired goal could typically be "established and reinforced" within three sessions. The elimination of a "maladaptive behavioral habit" within three sessions was reported by 48% of the respondents. For "baseline affective states" such as depression or generalized anxiety disorder, 45% reported that these could typically be resolved within three sessions.

In summary, well over half the survey respondents reported that, in their experience,

five of these seven components of successful psychotherapy are typically achieved within three sessions and nearly half reported that the other two are typically achieved within three sessions.

A Complete Psychotherapy or a Freestanding Intervention?

Energy psychology is an umbrella term for several dozen branded approaches, each with its own set of procedures and protocols. An advisory board comprised of 27 of the founders of many of these approaches concluded that they all share two components (Feinstein, 2004):

1. The mental activation of a targeted memory, trigger, or goal while
2. Simultaneously (or nearly simultaneously) stimulating an "energy system," such as the body's chakras, biofield, or meridians (acupoint tapping stimulates the meridians).

Acupoint tapping is the most widely used method for carrying out this second component. Eighty-seven percent of the survey respondents reported the use of acupoint tapping in their work, and virtually all the published, peer-reviewed, randomized clinical trials of energy psychology interventions focus on acupoint tapping.

Thirty-four percent of the survey's licensed mental health professionals, regardless of previous clinical orientation, reported that energy psychology has become the primary modality they identify when describing their practice, but 66% do not consider it to be their primary clinical modality. Rather, they integrate it into their primary modality. This suggests that as well as being a complete system of treatment, as described by many of the established energy psychology approaches, such as Thought Field Therapy (TFT) or Emotional Freedom Techniques (EFT), acupoint tapping protocols (which often include a cognitive component, as described, for instance, in *The EFT Manual* [Church, 2013]) are being used as portable techniques that are being integrated into other clinical frameworks.

It may be, in fact, that acupoint tapping protocols are best viewed not only as central features of various comprehensive energy-oriented psychotherapies but also as freestanding somatic interventions, somewhat akin to breathing or relaxation techniques. Such interventions can be widely applied, independent of a clinician's identification with a particular approach or theoretical orientation. But the potential value of acupoint tapping may extend far beyond those of breathing or relaxation techniques because of the method's facility in shifting deep emotional learnings. The hypothesis that acupoint tapping protocols are able to rapidly and powerfully eradicate old neural pathways and establish new ones has been presented elsewhere, focusing on their inherent advantages for facilitating clinically relevant neurological processes such as limbic system deactivation and memory reconsolidation (Feinstein, 2015).

Although the number of psychotherapists utilizing acupoint tapping protocols is unknown, it is reasonable to speculate that it exceeds ACEP's 1,220 members by tenfold or more. The original *EFT Manual* by Gary Craig was downloaded by more than two million individuals (Church, Feinstein, Palmer-Hoffman, Stein, & Tranguch, 2014) and translated into 20 languages. An annual online "World Tapping Summit," first held in 2009, has been attracting more than 500,000 participants each year (Nick Ortner, personal communication, January 16, 2016). If one in 10 of the individuals who have downloaded *The EFT Manual* or participated in the summit are psychotherapists, the number of clinicians who have considered the technique is in the hundreds of thousands. If one in 10 of these has incorporated the approach into his or her practice, tens of thousand of clinicians are utilizing energy tapping protocols. It is also reasonable to estimate that a greater proportion of these clinicians are integrating energy psychology techniques into their primary modality (rather than considering such a technique their primary modality) than the 66% in the survey who reported that energy psychology is *not* their primary modality. ACEP members identify closely enough with energy psychology that they have elected to join its professional organization and would be more likely to list it as their primary modality. Two thirds of the survey respondents do not, however.

The survey results suggest that most clinicians using an acupoint tapping protocol are applying it as a somatic intervention within the context of the psychotherapeutic approach they were using when they learned about tapping. Conceptualizing the method as a rapid, effective, and portable intervention that targets key neurological, emotional, and cognitive processes in therapeutic change may

not only be accurate, it may also present a more inviting framework to the wider clinical community than earlier formulations.

Conditions That Respond to Tapping

For what clinical conditions are acupoint protocols indicated and where are they less effective or contraindicated? The survey presented a list of seven DSM disorders, asking whether the practitioner had used acupoint tapping as a major element in the successful treatment of each of them (i.e., "the condition is no longer present"). While this does not address the question of appropriate conditions for acupoint tapping in any depth, and it does not even attempt to explore contraindicated diagnoses, it does give an indication of the conditions in which the survey respondents have found the most success. Eighty-six percent (and 92% of the licensed practitioners) reported success with anxiety disorders. Seventy percent (and 80% of the licensed practitioners) reported success with PTSD. Sixty-four percent reported success with phobias, 61% with depression, and 42% with addictive behaviors. It is interesting that 13% reported success with bipolar disorders and 3% reported success with schizophrenia, conditions with deep neurological roots that are usually controlled with medication.

For the conditions in which a smaller proportion of practitioners reported success, combining energy-based interventions with other therapeutic modalities would seem particularly indicated. Facilitating such an integrative approach would be another advantage of conceptualizing acupoint tapping protocols as portable interventions rather complete systems for therapeutic change.

Facilitating Peak Performance

In addition to its uses in treating clinical conditions and other emotional challenges, energy psychology is being applied in business, education, community organizations, sports, and the performing arts. The survey asked about a single application for promoting enhanced performance: the combination of acupoint tapping with inner imagery of an ideal or "personal best" performance. Slightly more than half the respondents had used acupoint tapping in this manner. Sixty-eight percent of them found it to be "of great value for enhancing peak performance" and the remaining 32% reported it as having been of "moderate value." Though very little research has been conducted to investigate this application of acupoint tapping, if the practitioner assessments reported in the survey are accurate, enhancing personal performance is an area of strong potential for both licensed mental health professionals and non-licensed practitioners.

Conclusion

Acupoint tapping, as a form of or component of modern psychotherapy, was introduced in the early 1980s by psychologist Roger Callahan. Although the early proponents endured a rough reception from the clinical community, the approach is still growing in popularity three decades later, unlike most would-be clinical "breakthroughs." ACEP has been a central force in bringing professional standards and legitimacy to the method, and the survey responses from a sample comprising 24% of ACEP's membership provide a glimpse into the backgrounds of those delivering energy-based clinical services, how they are delivered, and who is benefitting from them.

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Mindful Energy Psychology: History, Theory, Research, and Practice

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Abstract

The dialectic between acceptance and the desire for change reflects a core paradox within psychology. Two clinical methodologies that at first glance appear to be diametrically opposed have been incorporated into an approach that harnesses a reciprocal synergy, seamlessly integrating a focus on acceptance with a focus on change. Mindfulness practices, which involve purposeful, nonjudgmental awareness and acceptance of the present moment, have been shown to promote general well-being as well as to alleviate many psychological and stress-related symptoms. Energy psychology, which utilizes both somatic and cognitive interventions, is believed to rapidly and with precision change the energetic and neurological underpinnings of a range of psychological disorders. Combining the two approaches into a "mindful energy psychology" resolves the acceptance/change paradox with an interplay that yields immediate, potent therapeutic benefits. This paper examines each approach and shows how they may be integrated into clinical practice.

Keywords: mindful, mindfulness, mindfulness-based therapies, energy psychology, mindful energy psychology, tapping, energy tapping, meridian tapping, Thought Field Therapy, TFT, Emotional Freedom Techniques, EFT, Midline Energy Technique, MET, Tonglen, trauma, posttraumatic stress disorder, PTSD

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Therapeutic methodologies that integrate mindfulness practices with Western psychotherapies have been emerging over the past several decades. Some of the best known include Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1982, 1990, 1994), Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002), Mindfulness-Based Relapse Prevention (Marlatt, Bowen, & Lustyk, 2012), Dialectical Behavior Therapy (DBT; Linehan, 1993), and Acceptance and Commitment Therapy (ACT; Hayes & Lillis, 2012). Other approaches that incorporate mindfulness have also been proposed. For example, Schwartz developed a treatment for obsessive-compulsive disorder (OCD) that relies heavily on teaching patients how to apply mindful awareness to alleviate obsessive thoughts and compulsions (Schwartz & Begley, 2002). In this integration, the patient is educated about OCD, the "brain glitch" involved, offered decentering such as "It's not me; it's OCD," and instructed to engage mindfully in an activity other than the compulsive behaviors for several minutes to sever the obsession-compulsion connection. Over time, this approach appears to result in changes in the brain, thus alleviating the "glitch" (Schwartz & Begley, 2002).

This paper describes another integration of mindfulness and psychotherapy: mindful energy psychology (MEP). (The term *mindful* is often substituted in this paper, conveying *watchful awareness*.) MEP brings concepts and techniques from mindfulness into energy psychology

protocols (Gallo, 1997, 2000, 2002, 2003, 2004, 2007; Gallo & Vincenzi, 2008). Before covering the specifics of mindful energy psychology, however, the essential concepts, basic techniques, and empirical grounding of mindfulness and energy psychology will be addressed.

What Is Mindfulness?

Originally derived from the Pali word *sati* (i.e., awareness or skillful attentiveness), mindfulness can be defined in various ways, but essentially it is a state of *awareness* characterized by nonjudgmental, accepting attention to your present-moment experience of thoughts, emotions, and bodily sensations (Kabat-Zinn, 1990). Each aspect of this definition—nonjudgment, acceptance, attention, awareness, and present moment—plays a significant role in the therapeutic power of mindfulness. Awareness and attention involve a conscious choice to make the present moment what is being directly experienced in consciousness, and acceptance involves a nonjudgmental stance in relationship to what is happening in the present moment. It encompasses thought, emotion, and bodily sensations as well as external phenomena. This phenomenological approach enhances understanding of the way thoughts and emotions regularly arise and fade, softening the grip of maladaptive feelings and cognitions.

While mindfulness can be cultivated through formal meditation practice, other activities can also be leveraged to promote mindfulness. Nonjudgmental attention to your body, to bodily movements such as walking or dancing, to the breath, to music, and to eating are ways of cultivating and harnessing the benefits of mindfulness. Germer (2005) emphasizes that mindfulness "is not about achieving a different state of mind; it is about settling into our current experience in a relaxed, alert, and openhearted way" (p. 16). However, since everyday consciousness may seldom involve direct and accepting awareness of moment-to-moment experience, exercising mindfulness is a unique state of mind.

Relaxation versus Open Awareness

While concentration meditation tends to induce deep relaxation, being the cornerstone of the relaxation response (Benson, 1975; Benson & Proctor, 2010), mindfulness practices are centered on attention and acceptance rather than relaxation. Although relaxation techniques have certain benefits, having clients practice a relaxation technique before or during exposure treatments could be counterproductive. For instance, when the client is asked to focus on an issue and rate its intensity on a 1–10 scale, a reciprocal inhibition effect (Wolpe, 1958) could possibly interfere. For example, it becomes difficult if not impossible to be relaxed and tense simultaneously, the relaxation nullifying the tension. By contrast, mindfulness encourages and enables clients to focus keenly on their issues and the associated emotional sensations. We can, however, make a distinction between feeling the emotion and focusing on it, with the latter involving standing back to observe the emotion rather than being immersed in it. This is often referred to as *decentering*, which involves being disassociated from rather than associated with the thoughts and emotions.

Applying Mindfulness to Psychotherapy

Psychotherapeutic approaches that integrate with mindfulness can do so in at least three ways. Germer (2005) labels these as the mindful therapist, mindfulness-informed psychotherapy, and mindfulness-based psychotherapy. A brief description of these three levels of integration is highlighted here.

A Mindful Therapist

At the most basic level of integration, a therapist practices mindfulness meditation and brings his or her insights into the therapeutic work. Regular practice of mindfulness meditation can profoundly affect the therapist's skill and effectiveness. Though it is beneficial to instruct clients in practicing mindfulness, any instructions to practice mindfulness may possibly sound hollow or even hypocritical if the therapist is not also practicing mindfulness (Germer, 2005). In addition, consistent with Korzybski's dictum that the map is not equal to the territory (Korzybski, 1958), obviously reading about and discussing mindfulness is not equivalent to the experience itself. Indeed therapists who practice mindfulness will have a deeper understanding and be more effective guides through the territory. Akin to this is the quality of the relationship, a factor that has been shown to be among the most significant success

factors in any therapy (Norcross, 2011). Further studies conducted since the 1990s point to the pivotal role that empathy plays in the success of any therapeutic approach (Fulton, 2005).

Empathy is a natural result of mindfulness meditation. As meditators become more aware and accepting of their own pain, they develop more compassion for themselves, which in turn results in a heightened ability to feel empathy for others. One comes to realize intimately that we all have our trials and tribulations (Fulton, 2005). Siegel (2010a) sums this up succinctly in noting that "our whole field of helping others, especially within psychotherapy, requires that we dive deeply into the nature of our subjective mental lives" (p. 16). Thus therapists who practice mindfulness develop organic skill in attending nonjudgmentally to the present moment with the client, and this promotes a deeper and empathic relationship with the client.

Mindfulness-Informed Psychotherapy

At the level of mindfulness-informed psychotherapy, the therapist applies mindfulness theory in practice, but does not teach clients mindfulness exercises. Morgan (2005) presents a protocol for treating depression that she describes as mindfulness-informed. Her treatment centers on questions that she asks clients to help them focus their attention mindfully. For instance, clients may be asked to report on and breathe into what is happening in the present moment. Other questions that subtly promote mindfulness can include: "Can you pay attention to the sensations you experience when feeling depressed? Where do you feel those sensations in your body? What is the quality of the sensations, the shape, even the color? Can you attend to those feelings without judgment, just observing and accepting them for the moment?"

Mindfulness-Based Psychotherapy

Mindfulness-based psychotherapy is a level of integration that includes the previous two levels, while the therapist additionally teaches mindfulness practices to clients. There are different ways of doing this.

At the most intensive end of the spectrum is Kabat-Zinn's MBSR, which encourages clients to commit to sitting in mindfulness meditation for 45 minutes a day in addition to an extended retreat (Kabat-Zinn, 1990, 1994), albeit encouraging briefer mindfulness moments as well. At the other end of the spectrum are less intrusive mindfulness techniques such as breath awareness, which can be applied as needed in everyday life. Indeed, one can practice mindfulness in all aspects of one's daily activities. Slowing down is a good first step. Germer (2005) points out that mindfulness can be an aspect of engaging in any activity more slowly and in greater detail. Another step is to resist the tendency to multitask. For instance, don't eat and watch television or text at the same time. And you can take periodic breaks from whatever you're doing to just tune into your breath or the sense of being present.

Teaching Mindfulness Practices to Clients

Mindfulness-based psychotherapy involves teaching mindfulness meditation practices (Germer, Siegel, & Fulton, 2005). The two key practices are regular sitting in mindfulness meditation and moment-to-moment awareness of emotions as experienced in daily life (Germer et al., 2005). As noted earlier, in mindfulness approaches, this is referred to as decentering, a stepping back from one's thought processes (Crane, 2009).

Regular meditation is the cornerstone of mindfulness practice. In many of the therapies, "regular" is a rather stiff requirement, as noted with the MBSR prescription of 45 minutes a day. This is a challenge for practitioners to address: How do we ensure compliance with a demanding meditation regimen? Nevertheless, regular meditation is what provides the most profound, long-lasting benefits. It is also the practice that is most likely to impact conditions that stem from deeply held core beliefs often associated with depression or anxiety. The beneficial effect of mindfulness meditation on the left prefrontal cortex (LPC) and associated regulation of negative emotions has been extensively researched (Davidson & Begley, 2012).

Decentering and Metacognitive Awareness

Decentering is an important skill for conditions in which a person becomes emotionally overwhelmed, such as borderline personality disorder, bipolar disorders, and obsessive-compulsive disorder. Decentering makes it possible for a person to step back from his or her thoughts and emotions when they arise, acknowledge and accept them, and then allow them to pass without engaging in

any compulsive action or reinforcing a negative core belief stemming from them. This is a process of simply and almost naively recognizing thoughts and emotions, and dropping them without struggle, without analysis or cognitive disputing. This aspect of meditation helps to access the deeper realization that we are distinct from our thoughts and emotions and do not have to be controlled by them, a commonsense metacognitive awareness that is not readily accessible during moments of strong emotional activation. By regularly practicing mindfulness in everyday life, a learning curve is cultivated that increases access to this skill in the most stressful and darkest moments.

Tonglen

A related ancient mindfulness meditative practice is Tonglen, a *lojong* (mind training) in the Tibetan Buddhist tradition, based on several of 59 slogans of Atisha that were later formulated in Tibet in the 12th century by Chekawa Yeshe Dorje (Chödrön, 2001). This is a spiritual practice that involves transcending mental habits that cause suffering. The approach involves leveraging suffering by accessing primal consciousness, treating everything as illusion, being grateful to everyone, and perceiving disaster as a wake-up call. The meditator breathes in suffering in the form of imagery and sensations and breathes out relief for all who are suffering the specific malady (including oneself), equalizing inbreaths and outbreaths so as to not emphasize either the relief or the suffering. In this way, the meditator also transcends the "worldly dharmas" that are seen as the basis of suffering. For example, while it is natural to prefer pleasure to pain, suffering is seen as a function of "ego clinging" to the notion that happiness is only possible through pleasure, success, and recognition. However, life is replete with both pleasure and pain, honor and disgrace, success and failure. Pema Chödrön (2001) offers several Atisha-fashioned slogans or affirmations that are in tune with Tonglen, guiding the meditator to connect with others who have similar problems and leveraging suffering to access compassion.

Positive Experiential and Neurologic Effects of Mindfulness

Extensive research has demonstrated the positive effects of mindfulness practices on various mechanisms, including attention regulation, emotional regulation, bodily awareness, and positive changes in self-perception and well-being (Hölzel et al., 2011). Studies employing fMRIs reveal positive effects in various areas of the brain as a result of mindfulness practices. These include the anterior cingulate cortex, which is implicated in attention regulation; insula and temporoparietal junction, which involve body awareness; dorsal prefrontal cortex (PFC), ventromedial PFC, hippocampus, and amygdala, which are associated with emotion regulation; and medial PFC, posterior cingulate cortex, insula, and temporoparietal junction, involved in changes in self-perception (Hölzel et al., 2011).

These findings should be tempered, however, with an understanding that mindfulness is not simply the result of brain anatomy and physiology. Many other factors come into play, such as the greater physiology of the body and even aspects that may not conform to our current understandings and theories, which might be currently considered esoteric. Nonetheless, the research on mindfulness has demonstrated its benefit in promoting a less rigid sense of self and a deep sense of well-being, which are essential goals of psychotherapy. It is also likely that with all effective therapy, regardless of the approach, mindfulness is an essential active ingredient, even when it is not overtly engaged.

Mindfulness-Based Therapies

Some of the better-known therapies that aim to integrate mindfulness and psychotherapy include MBSR, MBCT, DBT, and ACT. What follows is a brief exploration of these approaches.

Mindfulness-Based Stress Reduction (MBSR)

Jon Kabat-Zinn coined the term "mindfulness-based" and developed the first integrative approach, MBSR (Kabat-Zinn, 1982, 1990, 1994). His initial target population was chronic pain patients; however, the approach has been extended to other groups of patients, since stress is estimated to trigger 90% of all doctor visits in the United States (Fackelmann, 2005). To a large extent, stress is a function of thoughts and emotions with which the stressed person associates. As mindfulness involves decentering

or disassociating from the thoughts and emotional sensations, physiologically it also involves reduced blood and oxygen to stress centers in the brain, and shifting to the more evolved frontal lobes, especially the left PFC, where negative emotions can be modulated.

MBSR is generally offered in 2 to 2.5 hour group settings for 8 to 10 weeks. Participants are provided with information, guided through meditation exercises to promote acceptance and nonjudgmental attention to their physical and emotional states, and encouraged to practice meditation between sessions and to attend an all-day meditation retreat. There has been considerable research support for this approach, including at least 17 RCTs as of a 2011 review with nonclinical and clinical populations (Keng, Smoski, & Robins, 2011).

Mindfulness-Based Cognitive Therapy (MBCT)

A group of psychologists in the United Kingdom studied Kabat-Zinn's approach and began experimenting with combining MBSR and cognitive-behavioral therapy to treat depression. Naming their protocol Mindfulness-Based Cognitive Therapy, they chose mindfulness meditation because they did not find relaxation training to be effective in treating depression (Crane, 2009). Based on his own research, however, Herbert Benson does not agree with this assessment of relaxation training (Benson & Proctor, 2010).

Similar to MBSR, MBCT is also an intensive group program over 8 weeks (Segal et al., 2002). While the focus is on recognizing and disengaging from negative automatic thoughts that become associated with and increase the likelihood of recurrent depressive episodes, the approach differs from standard cognitive therapy in that categorizing, challenging, and replacing such thoughts is not the modus operandi. Instead MBCT focuses on helping clients transform their awareness of and relationship to thoughts and emotions (Teasdale et al., 2000). There has been mounting research support for MBCT, including at least 14 RCTs as of a 2011 review with clinical populations (Keng et al., 2011). This treatment has been found to be helpful in reducing incidences of recurrent depressive episodes (Keng et al., 2011) and has also shown promise with bipolar disorder, social phobia (Piet & Hougaard, 2011), and patients with epilepsy and depressive symptoms (Thompson et al., 2010).

Dialectical Behavior Therapy (DBT)

Linehan (1993) originally developed Dialectical Behavior Therapy as a treatment for chronic suicidal and self-injurious behaviors. These symptoms, in addition to chronic depression and fear of abandonment, are consistent with borderline personality disorder, an especially challenging affliction that has proven very resistant to treatment. DBT uses the mindfulness practice of moment-by-moment awareness in daily life and integrates CBT with Zen philosophy. The approach entails four components: individual, group, and telephone sessions, in addition to team consultation for therapists. The various practices help clients come to realize that emotions are temporary states rather than permanent traits, which can lessen their sense of being overwhelmed. An emphasis on exposure and acceptance is integral to DBT. Patients are also taught exercises to instill mindfulness skills, such as imagining thoughts and emotions as clouds floating through the sky, counting their breaths, and coordinating specific movements with breathing. The emphasis is on instilling mindfulness into daily activities. There has been considerable research support for DBT, including at least 13 RCTs as of a 2011 review with clinical populations (Bohus et al., 2004; Linehan et al., 2006; Keng et al., 2011). Also *The Buddha and the Borderline* by Kiera Van Gelder (2010) is an intimate account of how the author was treated for BPD and the pivotal role that DBT played in her treatment.

Acceptance and Commitment Therapy (ACT)

Acceptance is an important component of mindfulness. In ACT, "acceptance" refers to clients learning a nonjudgmental stance toward their thoughts and feelings, and "commitment" is the process of clients identifying their values and life goals and working to accomplish them. The basic ACT protocol involves **A**ccepting and being present with your reactions, **C**hoosing a valued direction, and then **T**aking action (Hayes & Lillis, 2012). ACT also entails experiential psychoeducational exercises that assist the client in learning rules about how the mind works and how to navigate the mind in the spirit of a martial artist. There has been considerable research support for ACT, including at least 11 RCTs with clinical and nonclinical populations as of a 2011 review (Keng et al., 2011).

Energy Psychology (EP)

Energy psychology (EP) is a theoretical and practice approach based on facilitating energy flow through the body-mind. Originally and predominantly, energy psychology techniques involve percussing or tapping on specific acupuncture points (acupoints) to treat psychological disorders (Callahan, 1985; Feinstein, 2010, 2012a, 2012b; Gallo, 2004). When applied therapeutically, EP is also often referred to as energy therapy or energy psychotherapy, although approaches of this genre often involve other diagnostic and therapeutic techniques, such as muscle testing, bodily positions, eye movements and positions, holding specific areas of the body such as chakras and neurovascular reflexes, as well as cognitive components such as affirmations and visualization (Gallo, 2002; Hover-Kramer, 2002; Feinstein, 2012b). Though there has been a proliferation of EP approaches, the initial one addressing psychological problems by tapping was developed by Roger Callahan, PhD, in the late 1970s (Callahan, 2001).

Although the case can be made that EP has ancient roots in acupuncture and meridian theory, the more recent history dates back to the 1960s, when George Goodheart, DC, developed applied kinesiology (Goodheart, 1987; Walther, 1988), an approach that employs manual muscle testing and holistic concepts to treat physical problems. Goodheart pioneered therapy localization, which involves the practitioner or patient touching specific bodily locations while applying manual muscle testing for diagnostic and treatment purposes (Kendall, Kendall, & Wadsworth, 1971).

While Goodheart reported a connection among specific muscles, reflexes, and meridians, others explored aspects of applied kinesiology to treat psychological problems. Diamond (1985) explored the meridian-emotion connection and the use of affirmations, music, and other media in treating psychological issues. Along similar lines, Callahan developed a treatment method, Thought Field Therapy (TFT), which involves attuning to or accessing psychological disorders such as phobias and traumas and then tapping on prescribed acupoints (Callahan, 1985; Callahan & Turbo, 2002; Gallo, 2004). Callahan's is a three-tiered approach, including specific treatment algorithms, diagnosis, and treatment via muscle testing, and treatment over the telephone through a protocol called voice technology. Eventually, other related approaches were developed by Craig (Craig & Fowlie, 1995; Craig, 2010), Gallo (2000, 2003, 2004, 2007), and others (Gallo, 2002; Diepold, Britt, & Bender, 2004; Mollon, 2008; Benor, Ledger, Toussaint, Hett, & Zaccaro, 2009). Some of the approaches discarded muscle testing and several other elements of TFT (Craig, 2010; Benor et al., 2009), while others continued to apply muscle testing and other elements to varying degrees (Gallo, 2000; Diepold et al., 2004; Mollon, 2008). For example, energy diagnostic and treatment methods (EDxTM) is an integrative approach that involves a wider array of treatment acupoints, algorithms, and diagnostic approaches; various ways of addressing self-sabotaging interferences (i.e., psychological reversal); a focus on thought recognition; protocols for core beliefs and peak performance; and several other aspects (Gallo, 2000, 2002).

Energy Psychology Research

In addition to studies suggesting that EP is effective in treating a variety of conditions, the efficiency of EP in treating trauma and posttraumatic stress disorder (PTSD) has been increasingly established over nearly two decades (Carbonell & Figley, 1996, 1999; Figley, Carbonell, Boscarino, & Chang, 1999; Diepold & Goldstein, 2000, 2008; Johnson, Shala, Sejdijaj, Odell, & Dabishevci, 2001; Sakai et al., 2001; Church, Geronilla, & Dinter, 2009; Sakai, Connolly, & Oas, 2010; Burk, 2010; Church, 2010, 2013; Feinstein, 2010, 2012a, 2012b; Church, Piña, Reategui, & Brooks, 2012; Church, Yount, & Brooks, 2012; Church, Hawk, et al., 2013; Church & Brooks, 2014). Studies using EP in treating PTSD are especially noteworthy, since PTSD has generally been considered a treatment-resistant and refractory condition. Some have argued that it may be incurable and should be regarded as a condition that can only be managed (Johnson et al., 2001; Phelps, 2009).

Though it is traditionally proposed in EP that trauma and other psychological problems entail blocked energy flow through meridians and other aspects of the bioenergy system, a position that the author finds intriguing, EP also likely eliminates the trauma by activating the implicit memory associated with amygdala neurons and permanently altering their connections or wiring (Hebb, 1949), reducing cortisol levels (Church, Yount, & Brooks, 2012), and also promoting memory reconsolidation by introducing significant novelty (Moscovitch & Nadel,

1997; Hupbach, Gomez, Hardt, & Nadel, 2007; Ecker, Ticic, & Hulley, 2012).

Diepold and Goldstein (2000, 2008) reported on evaluation of an EP trauma case study with quantitative electroencephalogram (EEG). Statistically abnormal brain-wave patterns were evident when the client thought about his trauma compared to a neutral baseline event. Quantitative EEG (QEEG) with the traumatic memory immediately after treatment and at 18-month follow-up revealed no abnormalities. This study supports the hypothesis that negative emotion has a measurable effect, and also objectively identified an immediate and lasting neuroenergetic change in the direction of normalcy and health after EP treatment.

Church, Yount, and Brooks (2012) examined cortisol levels in 83 subjects randomly assigned to a single session of Emotional Freedom Techniques (EFT; Craig & Fowlie, 1995; Church, 2013), talk therapy, or rest. Cortisol is the "master hormone" regulating many aspects of the body's stress response mechanisms, especially those associated with the autonomic nervous system. Therefore the researchers proposed that successful therapy would result in lower stress as reflected in reduced salivary cortisol. Their investigation found that cortisol levels in the rest and therapy groups decreased at approximately the same rate, but that cortisol in the EFT group decreased significantly more. The decrease in this physiological marker of stress was also significantly correlated with a decrease in anxiety, depression, and other psychological conditions.

As cortisol levels of PTSD patients are elevated as well, effective treatment with EFT would likely lower cortisol levels in such patients. The investigators then examined gene expression in 18 veterans with PTSD and found regulation of inflammation genes associated with stress after 10 EFT sessions (Church, Yount, Rachlin, Fox, & Nelms, 2016). A pilot study with four participants examining the entire genome before and after an hour of EFT versus a placebo of similar duration found 72 genes to be significantly regulated, including those implicated in immunity, inflammation, and tumor suppression (Maharaj, 2016). Effective psychotherapy with EP has been proposed as an epigenetic intervention (Feinstein & Church, 2010).

Johnson et al., (2001) reported on uncontrolled treatment of trauma victims in Kosovo with Thought Field Therapy during five 2-week trips in the year 2000. Treatments were given to 105 Albanian patients with 249 separate violent traumatic incidents. The traumas included rape, torture, and witnessing the massacre of loved ones. Total relief of the traumas was reported by 103 of the patients and for 247 of the 249 separate traumas treated. Follow-up data averaging 5 months revealed no relapses. While these data are based on uncontrolled treatments, the absence of relapse ought to pique our attention, since a 98% spontaneous remission from PTSD is unlikely.

Sakai et al., (2001) reported on an uncontrolled study of 594 applications of TFT in the treatment of 714 clients with PTSD and many other disorders. Paired *t* tests of pre- and post-treatment SUD were statistically significant at the 0.01 level in 31 categories.

In a 2006 through 2007 study, 50 orphaned adolescents with PTSD symptoms from the Rwandan genocide 12 years earlier were treated with a single TFT session, evidencing significant improvement on PTSD checklists at a <0.001 level. Improvements were maintained at 1-year follow-up (Sakai, Connolly, & Oas, 2010).

Several EP approaches have been subjected to experimental tests. Efficacy in reducing or eliminating symptoms of PTSD, as well as anxiety, depression, and phobias, has been demonstrated in several studies of EFT (Church, 2013, Feinstein, 2012b, Rowe, 2005; Wells, Polglase, Andrews, Carrington, & Baker, 2003; Church & Brooks, 2010, 2014).

An early EFT study focused on subjects who had been involved in motor vehicle accidents and who experienced PTSD associated with the accident (Swingle & Pulos, 2004). All subjects received two treatment sessions; all reported improvement immediately following treatment. Brain-wave assessments before and after treatment indicated that subjects who sustained the benefit of the treatments had increased 13–15 Hz amplitude over the sensory motor cortex, decreased right frontal cortex arousal, and an increased 3–7 Hz:16–25 Hz ratio in the occipital region.

Stone, Leyden, and Fellows (2009) found reductions in PTSD symptoms in genocide survivors in a different Rwandan orphanage, using two group sessions plus a single individual session with the most traumatized individuals.

Church, Piña, Reategui, and Brooks (2012) performed a randomized controlled trial with 16 abused male children aged 12 to 17 in a group home. The experimental group of eight received EFT, while the control group of eight received

no treatment. A 1-month follow-up was performed, which found that the PTSD levels of all eight of the EFT group had normalized, while no member of the control group had improved ($p < 0.001$).

EFT/EP reduced PTSD symptoms in two pilot studies with war veterans (Church, 2010; Church, Geronilla, & Dinter, 2009). In the first study, 11 veterans and their family members received a weeklong intensive consisting of 10 to 15 sessions. Their average PTSD scores dropped from clinical to subclinical levels, as did their other psychological symptoms such as hostility, psychosis, phobic anxiety, and depression. Three follow-ups, including at 1 year, found them stable, having maintained the gains they experienced in the weeklong intensive. In the second study, veterans received six sessions of EFT with similar results.

These studies led to a full randomized controlled trial with a much larger group of subjects (Church, Hawk, Brooks, et al., 2013). The results from this study again showed that symptoms in a wait-list control group did not diminish over time, while six sessions of EFT produced drops to subclinical levels of PTSD, with the average subject remaining subclinical at 3- and 6-month follow-up. The veterans were randomized to EFT ($n = 30$) or standard of care wait list ($n = 29$). Intervention consisted of six hour-long EFT sessions concurrent with standard care. The EFT subjects evidenced significantly reduced psychological distress ($p < 0.0012$) and PTSD symptom levels ($p < 0.0001$) after the intervention. Additionally, 90% of the EFT group no longer met criteria for PTSD, compared with 4% in the control group. After the wait period, the controls received EFT. In a within-subjects longitudinal analysis, 60% no longer met PTSD criteria after three sessions, which increased to 86% after six sessions for the 49 subjects who received EFT. Benefits remained at 86% at 3 months and at 80% at 6 months. A replication of this study found similar results (Geronilla, McWilliams, & Clond, 2014). By comparison, a similar PTSD study of cognitive behavioral therapy showed that only 40% of veterans improved after treatment (Monson et al., 2006).

A meta-analysis of 18 randomized controlled trials including 921 subjects revealed a moderate effect size for EP (Gilomen & Lee, 2015). This study utilized conservative statistical methods, eliminating studies with large treatment effects; had those been included, the overall effect size would have been large. Later meta-analyses of EFT for specific conditions did indeed find large effect sizes: for anxiety (Clond, 2016), depression (Nelms & Castel, 2016), and PTSD (Sebastian & Nelms, 2016). These results point to the effectiveness and efficiency of EP treatments.

Reciprocal Synergy: Mindful Energy Psychology (MEP)

Mindful energy psychology is a theoretical and practice approach that integrates mindfulness and energy psychology. Since research supports the therapeutic effectiveness of both mindfulness practices and EP, an integration of the two is proposed to offer significant synergy. It is the author's observation that when EP techniques are applied most effectively, mindfulness stands as an essential therapeutic active ingredient. A reciprocal synergy also likely occurs, such that the benefits of mindfulness are accelerated and the benefits of EP are deepened when the two are combined.

An essential focus of EP has been the treatment and elimination of psychological problems as efficiently as possible. In many respects, this is consistent with a medical model. The issue being treated, such as depression or PTSD, is understandably considered to be problematic both to the client and therapist. So the somatic stimulation and related techniques of EP are ways of "attacking" the problem, "magic bullets" aimed at eliminating the unwanted malady. This does not, however, appear to be in line with mindfulness, which emphasizes nonjudgmental observation and acceptance without intention to eliminate anything. Mindfulness does not involve attempting to change anything; rather it involves a deep level of presence and acceptance.

So how can EP and mindfulness be reconciled? By their very nature, they appear to be at opposite ends of the spectrum, with it appearing paradoxical to hold an emphasis on acceptance or simply nonjudgmental observation of a state or condition within the same space of intending to eliminate it.

Resolving the Paradox

Paradoxes do not have to be eliminated or resolved. It is conceivable to allow for both change and acceptance. Recall the *Serenity Prayer*, a staple of 12-step programs such as Alcoholics Anonymous, which begins with the statement,

"God grant me the serenity to accept the things I cannot change; courage to change the things I can; and wisdom to know the difference" (Niebuhr, 1927). The paradox seems to arise when both acceptance and change are positioned simultaneously, when one tries to change and accept something at the same time. However, it is feasible to integrate acceptance and change.

While EP and many other approaches have been focused on eliminating symptoms, acceptance is another way to transcend a state or condition. In this regard, acceptance involves decentering or stepping back from the situation and observing it from a distinct perspective or distance, so to speak. Rather than acceptance, in some respects *observation* might more accurately describe the position, although acceptance is along these lines. Also note that trying to eliminate a problem can result in stress and struggle that serve to perpetuate the problem, to a large extent because the situation is being perceived as a problem. On the other hand, by relaxing into and observing the emotional state and its physical aspects (rather than bracing against it and wanting to change it) the issue is more directly attuned. This position can more deeply facilitate healing. Additionally, this helps the therapist and client to be less ego-involved, allowing for healing to occur on its own terms. This assumes that ego-clinging is an integral aspect of the condition and the suffering, even the perpetrator of it (Jigme, 2004).

Psychological Reversal

In line with the foregoing and common to any therapeutic approach, resistance or other kinds of interference can occur. Each therapy has its conceptualization of this phenomenon. Resistance can be viewed as a sign of getting into ripe therapeutic territory. Secondary gains can be factors interfering with progress, indicating that the issue has certain benefits that need to be addressed. Benefits may include counter beliefs such as loyalty to the family, believing that the problem affords some level of safety, the client believing that he or she deserves to have the problem, or any number of other criteria (Gallo, 2004). Also a problem in the therapeutic relationship is a systemic interpretation of resistance, perhaps indicating that the therapist has provoked resistance. Any of these factors will block direct access to the presenting issue and interfere with disengaging the interference.

From an EP perspective, the resistance or interference is often referred to as "psychological reversal" (Callahan & Turbo, 2002; Gallo, 2004). The assumption here is that there exists an energy blockage or reversal of polarity or energetic flow that prevents effective treatment of the presenting issue (Pasahow, Callahan, Callahan, & Rapp, 2015). This concept entails a number of permutations, and each of these can be seen as a nonacceptance or rejection of oneself and one's circumstance.

These phenomena are referred to as reversal partly because of a response to indicator muscle testing, which is akin to ideomotor signaling. For instance, the client attunes to an issue such as a phobia. Then an indicator muscle, such as the anterior deltoid or middle deltoid, is physically challenged. Generally, the muscle weakens (releases) in response to the stress. Then the client states, "I want to resolve this phobia" versus "I want to keep this phobia." Without a reversal, the muscle will test strong to "wanting" to resolve the phobia and weak to "wanting" to keep it. Given a reversal, the muscle response will be in the opposite direction, namely strong to "wanting" to keep the phobia. Specific EP procedures are generally effective in correcting the reversal (Gallo, 2000, 2004). For example, the client taps on the ulnar side of either hand (i.e., the small intestine–3 acupoint) while verbalizing several times, "Even though I have this problem, I deeply and completely accept myself."

Although standard corrections for psychological reversal contain mindfulness elements, reversals are more congruently treated from a mindful energy psychology perspective. The therapist maintains an attitude of acceptance congruent with the client engaging in specific tactile stimulation while being mindful and making a self-acceptance statement and possibly also a statement of acceptance of the issue being addressed in treatment. For example:

> "I accept myself with this [name condition]."
> Or "I accept myself with this [name condition] and I accept this [name condition]."

In some respects, the transmuting of psychological reversal is similar to the theoretical position of Carl Rogers (1961) regarding self-acceptance leading to change: "The curious paradox is that when I accept myself just as I am, then