Changes on Self-report Measures of Public Speaking Anxiety Following Treatment with Thought Field Therapy

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The effects of one 60-minute treatment with thought field therapy (TFT) on public speaking anxiety with 48 participants were studied. Participants were randomly assigned to treatment or delayed-treatment conditions and to one of 11 licensed therapists trained in TFT. Participants receiving TFT treatment showed decreases in public speaking anxiety and increases in positive measures related to anticipation of future public speaking experiences. Participants in the delayed-treatment condition showed no improvement while on a wait list, but after treatment showed similar effects on all measures.

Anxiety disorders comprise the most common category in the fourth edition of the Diagnostic and Statistical Manual of the Mental Disorders (DSM-IV; American Psychiatric Association, 1994). Approximately 29% of persons residing in the U.S. are estimated to have or to have had one or more diagnosable anxiety disorders at some time in their lives.

Approximately 10% to 20% of individuals with anxiety disorders have social phobia, which is an exaggerated fear of being in social settings or performing in public. Socially phobic persons mostly report that they are afraid of being evaluated or judged by others, or of becoming embarrassed. They usually realize their fear is excessive or unreasonable; nonetheless, they feel immediate anxiety when in the social situation. Most often, they avoid such situations. Avoidance is not always possible, however, because of the obligations that accompany work, or the expectations of friends and family. When social exposure cannot be avoided, the person with social phobia may experience both heightened distress and limited positive experiences. The form of social phobia called public speaking anxiety is the focus of this article.

Contemporary theory and practice regarding anxiety disorders

Four prominent contemporary approaches to anxiety disorders are psychodynamic (e.g., Michels, Frances, & Shear, 1985), cognitive (e.g., Meichenbaum, ), learning theory (e.g., Mineka & Zinbarg, 2006), and eye movement desensitization and reprocessing (EMDR, e.g., de Jongh & ten Broeke, 2009). There is spirited debate among the proponents of these approaches as to which is more effective or efficient, or better grounded in the methods of experimental psychology, or even which produces deeper change in the human psyche. Because there is little agreement as to which approach offers most benefit to anxious clients, practitioners are free to choose from among these, and perhaps 1,000 other psychological approaches.

There is also little agreement among theoreticians and practitioners as to what the criteria should be for determining and measuring psychotherapeutic benefit. One side of this
dispute, represented by L’Abate (2009), would suggest that we need not only to know whether a client is anxious, but to specify the nature and severity of the label *anxious*, determine the possible antecedents of a given person’s anxiety, and form a treatment plan that matches that specification. Ideally, a coherent theoretical formulation would both account for the etiology of anxiety disorders, and offer a guide for normal, anxiety-free, human development. Indices of normal development, and of treatment effectiveness when development does not occur as hoped, would then be predicted and measured, and comparisons would then be made among competing psychotherapies. Finally, physiological mechanisms of change would be postulated and examined.

This position is unknown in typical clinical practice. Most psychotherapists conduct treatment with no obvious link to either an underlying theoretical framework, or even to diagnosis (Norcross, Karpiak, & Lister, 2005). Clinicians tend to describe themselves as “eclectic” both theoretically and practically, a term that at once frees them from being scientifically accountable (since their practices involve a blend of practices that have never been studied in that particular combination) and leads to a psychotherapeutic Tower of Babel (since efforts to identify any unifying theories or even language that might allow for coherence discourse have long been abandoned) (L’Abate, 2009).

Recent efforts to bridge this gap between the scientific study of psychotherapy efficacy and the professional practice of psychotherapy appear in the *empirically supported treatment* literature (Norcross, 2001). This approach, in turn, has evolved as scientists promote that value of laboratory studies that allow for isolation of specific treatment components, and clinicians defend the importance of “common factors” in psychotherapy that tend not to be studied (Wampold, 2001; Levant, 2004).

The study reported in this article was an effort to contribute to bridging the science-practice gap further. The objective was to select a treatment group from among a clinical population experiencing public speaking anxiety, a real-life example of social anxiety, and to treat this group with thought field therapy, a time-limited intervention, while comparing treatment effects to reports from a non-treatment cohort group. Both sides of the dispute just summarized are inadequately represented. Theoretical foundations for the treatment are unfamiliar to western audiences, and are relatively under-formulated in the literature, and in this article. Diagnosis of anxiety was not formalized nor determined under usual reliability constraints. Additionally, change measures were limited to self-report, and no extended formal follow-up was conducted. There are also limitations from a clinician’s viewpoint. The treatment target was narrowly circumscribed and does not represent clinical practice where single-problem presentations are rarely encountered. Treatment was of 60 minutes duration, which does not necessarily parallel usual clinical experience. These limitations were intended so that a basic and preliminary question might be asked: “Does this treatment produce any benefit to a real-life client, compared to no treatment, under highly specific conditions?”

The energy psychology view of anxiety and other psychological disorders

The treatment approach studied was thought field therapy (TFT), one of several examples
of energy psychology (EP) that in turn derives from energy medicine (Feinstein, 2008; Feinstein & Eden, 2008). EP approaches are based on the assumption that there are subtle energies in the body that govern health and sickness. This general concept of energy systems has been used for millennia, and exists in the healing lore of many if not all cultures. Some EP proponents claim as many as eight major systems, including the biofield or aura, the chakras, and the meridians (Eden, 1998). Rubik (2002) reports evidence for the existence of the biofields, and Georgetown University scientist Candace Pert (2000) writes that the sites in the human body where receptor molecules tend to be most dense coincide with the ancient chakras. Regarding the meridians, DeVernejoul, Albarede, & Darras (1985) injected radioactive technetium into acupoints and traced the uptake of this isotope with gamma-camera imaging. They noted that the technetium migrated along classical acupuncture meridian pathways. Oschman (2000, 2003) summarizes additional experiments that illustrate the existence of subtle energies within the human body, and the manner of utilizing them for healing.

The energy field surrounding the heart has been detected as far as 15 feet away from the body (Baule & McFee, 1963). Other energies, such as the biomagnetic signals emanating from the hands of persons who practice therapeutic touch, have been measured with the superconducting quantum interference device or SQUID (Zimmerman, 1990).

The assumption that subtle energy exists is in dispute, however. McCaslin (2009), for example, stated that “nowhere in the history of psychology, medicine, anatomy, physiology, or biology is there any evidence that human beings have an energy field” (p. 253). And in his comments regarding TFT specifically, McNally (2001) suggested that EP is based on pre-scientific folk medicine, and that terms such as energy and fields are inappropriately used. Debates such as these parallel other psychotherapy controversies.

The question relevant to this article relates specifically to the hypothesized meridian system: is it possible to produce benefit for an individual via an intervention that appears to involve manipulation of the hypothesized meridian energy system? Related issues, not specifically addressed, have to do with the assumptions that that hypothetical subtle energy system does indeed govern health and sickness, and can be manipulated to benefit the individual.

The practice of TFT involves stimulation of the energy meridians that are assumed to account for the effectiveness of acupuncture. Common assumptions of acupuncture are that the body holds 365 specific energy points and that these points are organized into 12 bilateral meridian lines, plus two central vessels running up or down the midline of the body. Each of the resulting 14 meridians/vessels (hereafter called meridians) is said to be related to the functioning and health of a relevant body organ. For example, one line begins at a point on the bridge of the nose, just to the side of the eye. The second point on this meridian line is on the inside end of the eyebrow. The line continues up and over the top of the head, and down along the sides of the spine until it ends with a 67th point on the outside of the little toenail. This meridian has to do with bladder function and so is called the bladder meridian. The point on the inside of the eye is called bladder-1, and so on to bladder-67 (Gallo, 2000, 2005).
The assumption that energy fields govern health and sickness translates into the acupuncture postulate that health is promoted when the meridian lines flow freely and in the proper direction. An acupuncturist stimulates specified meridian points or sites depending on the nature of a patient’s complaint; the stimulation is assumed to release blocks or other interference with meridian energy. Simulation is generally produced by penetrating a site with a needle, though other modalities include burning herbs over the site or stimulating with electronic devices.

Chiropractor George Goodheart joined muscle testing with acupuncture practices to promote physical health through applied kinesiology, and psychiatrist John Diamond added various emotional and cognitive concepts to treat emotional problems (Diamond, 1979). Psychologist Roger Callahan extended the assumptions of energy field theory into psychotherapy practice (Callahan & Trubo, 2000). Given that the energy field governs health and sickness, and given that mental and emotional complaints, like all disturbance, reflect perturbations or blocks in the energy field, Callahan reasoned that stimulating certain meridian points would release energy blocks and produce psychological health. His psychotherapy patients did, in fact, report resolution of their longstanding problems when Callahan had them stimulate certain meridian points while thinking of the problem, a reference to Callahan’s conceptualization of the thought field. Callahan developed additional techniques (presumably) to correct energy flow when treatment benefit stopped, and to treat new problems that would arise. He found that his patients improved whether all 365, or a limited sample of, meridian points was utilized, and eventually identified 14 key points, one for each meridian. He also observed that tapping these points was as effective as inserting needles.

Callahan investigated the emotional correlates of meridians and their related organs and then discovered that he could treat a given presenting problem by having the patient stimulate meridian points related to that emotional problem. For example, the bladder is linked to psychological trauma, so the bladder-1 point just described would be stimulated to reduce trauma symptoms. Seeking ever greater treatment efficiency, Callahan noticed through trial and error that a specific presenting problem was best treated with a particular combination and sequencing of points. Psychological trauma, for example, seemed to respond best if the bladder-1 point were tapped first, then the points for stomach, spleen, and kidney – in that order. The resulting recipe or algorithm became central to TFT theory and practice (Callahan & Trubo, 2001; Gallo, 2000, 2005).

Assumptions about the need to follow algorithms in treatment have been controversial. An early student of TFT, Gary Craig, speculated that repeatedly stimulating all 14 of the meridian points or pairs of points would produce results similar to those expected with algorithms (Feinstein, Eden, & Craig, 2005). Craig then concluded that the complex TFT algorithms could be replaced by a singular “algorithm” involving the stimulation of all 14 points, in random and repetitive order, plus a series of other procedures. This generic or comprehensive algorithm would presumably benefit persons with virtually any presenting problem.
Another Callahan student, Monica Pignotti, reported putting these assumptions to a test (Pignotti, personal communication, March 15, 2004; Pignotti, 2005). Pignotti had initially observed high rates of success by clients using TFT to resolve “emotional distress”. Believing that algorithms were active and necessary components of TFT, she then conducted eight controlled, single blind studies comparing the use of TFT algorithms to the EFT procedure using a single algorithm involving all 14 points. She found no differences between the TFT and EFT approaches: 97% of patients in both treatment groups reported complete resolution of “emotional distress”, which included but was not limited to anxiety. Pignotti concluded that what was essential to treatment efficacy was stimulating the 14 key meridian points, not following a particular sample or sequencing of points as Callahan had recommended. Pignotti later concluded, citing no supportive data, that the high rates of success should be attributed to non-specific treatment factors (Pignotti, 2007; Pignotti & Thyer, 2009). She continued, however, to stand by her original observations that TFT and EFT treatment both produced high and similar rates of benefit to patients.

Research related to TFT

The first known report of widespread use of TFT was a 14-year study of some 31,400 patients in 11 allied treatment centers in Uruguay and Argentina (Feinstein, Eden, & Craig, 2005). Under the supervision of psychiatrist Joaquin Andrade, clients were randomly assigned for treatment with TFT, or with a combination of cognitive behavior therapy and medication. Pre- and post-ratings were made through self-reports, standardized measures (e.g., the Spielberger State-Trait Anxiety Index), double-blind clinical interviews, and brain imaging.

Andrade reported one-year follow-up with 29,000 patients. Positive clinical responses were obtained for 69% of patients treated with CBT/medication (mean = 15 sessions); positive results were reported for 78% of patients treated with TFT (mean = 3 sessions). Partial relapses were noted for 29% of the CBT/medication group, and 14% of the TFT group.

TFT was reported as significantly superior in the treatment of anxiety and stress disorders, PTSD, guilt, anger, shame, adjustment problems, and sleep disorders, as well as certain attention deficit and learning disabilities. Mild to moderate reactive depression and addictive disorders were also better treated with TFT, but less so. Medication and CBT were superior for patients with personality disorders, dissociation, and major depression. TFT provided no benefit for persons with bipolar disorder, chronic fatigue, or dementia.

Andrade reported (personal communication, January 17, 2007) that the data were so striking that they deserved to be reported. However, they have not been published in a professional journal because, according to Andrade, not all criteria were rigorously defined, record-keeping was relatively informal, and source data were not always maintained.
In addition to the Pignotti references already cited, other investigations of TFT treatment of various psychiatric diagnoses have been reported. Volume 57 of the Journal of Clinical Psychology was dedicated in its entirety to “initial research” using TFT. Journal editor Larry Beutler (2001) published various case reports without their being peer-reviewed as is customary, and asked that readers draw their own conclusions regarding TFT efficacy. The reports are alternately of clinical interest and heuristic value, and are open to criticism for design flaws.

There are also three published reports of physiological shifts following treatment with meridian point tapping. Diepold & Goldstein (2000) evaluated quantitative electroencephalogram (qEEG) measures before TFT treatment of one patient, immediately following, and on 18-month follow-up. Statistically abnormal brain-wave patterns were observed when the patient thought about a targeted personal traumatic memory prior to the session, but not when a neutral (baseline) event was recalled. Following treatment, no statistical abnormalities were observed in brain-wave patterns when the patient recalled the targeted trauma. Self-report was correlated with the qEEG measures: subjective distress was eliminated. On 18-month follow-up, the brain-wave patterns remained normal when the patient recalled the memory. Another brain scan study by Lambrou, Pratt, & Chevalier (2003) also revealed normalized brain wave patterns following TFT treatment of four claustrophobia subjects. In a third related study, Swingle, Pulos, & Swingle (2004) treated nine traumatized patients with TFT and found similar brain wave normalization following treatment.

Parallel controlled studies have also been conducted on EFT, for test-taking anxiety (Sezgin & Ozcan, 2004) and specific phobia (Wells et al., 2003; Baker & Siegel, 2005; Salas, 2001). Using procedures involving the stimulation of meridian points that typify EFT, Kober et al. (2002) reported reduction of pain in victims of traumatic injury following treatment with acupressure. If Pignotti’s conclusion of TFT and EFT equivalence is accepted, the findings from EFT research holds relevance for TFT as well.

Method

Participants

There were 38 female and 10 male participants, ranging in age from 29 to 63 years [M=], who were experiencing public speaking anxiety. Their education ranged from high school to degree to doctoral degree [M=]; income ranged from [ $ , mdn =]; [ ] were married [ ], divorced; 96% were White, 2% were Hispanic, and 2% were African-American. [ %] had previously been in therapy.

Subjects were recruited from the general population of Colorado Springs, Colorado, through notices posted at community organizations, therapists’ offices, and local colleges. The first author conducted an initial telephone interview [with # of persons] to determine if the person met criteria for public speaking anxiety and could commit time for the research. Utilizing the 0-10 SUD scale developed by Wolpe (1958), where 0 means no anxiety and 10 means the most anxiety imaginable, potential subjects rated...
their anxiety when they recalled a public speaking memory. Instead of employing independent raters to judge whether a subject met criteria for social phobia, a SUDS score of 6 or greater was used as an arbitrary measure of “excessive or unreasonable anxiety”. The first author then used this cutoff to support a tentative diagnosis of social anxiety. Fifty-five persons met criteria. Seven did not show for their first scheduled appointment and were not included in the study.

Persons in the study were asked [not to engage in other therapy?]

The 48 remaining subjects were interviewed in person by the first author on four weekends with a standardized interview manual designed to select study subjects. The subject was read a statement that included the basic assumptions of energy psychology (there is an energy field, it governs health and dysfunction, and it is possible to improve both energy and emotional balance through tapping of specific points on the body). Subjects were also told that they would do their own tapping. History was taken for each subject that included early memories of feeling publicly humiliated, and was asked to speak about “other previous events” that might be related to the fear. The different memories were then subjectively rated by severity.

Research Team

The 14-member research team consisted of the first author, a university-employed statistician, a masters-level independent assessor, and 11 research therapists. The first author was also principle investigator in the study, which comprised her dissertation for a doctorate in psychology. She subsequently presented the results of the study as partial fulfillment of her doctoral work, and subsequently was granted the PhD by the Union Institute. The therapists, 8 women and 3 men, were proficient at the second [first? ] level of TFT training, and were all licensed to practice psychotherapy in Colorado. Each had earned a master-level degree in social work or counseling, or a doctorate in psychology.

Measurements

Following the selection interview, the 48 subjects met with the independent assessor and filled out the Speaker Anxiety Scale (SA Scale) (Clevenger & Halvorsen (1992). The assessor also inquired about specific physical symptoms such as sweating and shaking. From the history, the most disturbing memory was designated as the initial treatment target.

Subjects were randomly assigned to a treatment group (n=28, 23 females and 5 males) or a delayed treatment group (n=20, 15 females, 5 males), and were assigned randomly to one of the 11 therapists. Participants met at the research center, a Victorian house converted to a therapy clinic. Each participant was given a list of possible topics, chose a topic, and was given 3 minutes to prepare a speech. The subject then gave the speech for 3 minutes in front of a live audience that was composed of other study subjects and additional persons recruited as audience members. Each speech was videotaped. Audience members were instructed not to respond in any way during a participant’s
Following the speeches, all subjects then met with the independent assessor and filled out the SA Scale for the second time.

Subjects in the treatment group then received 60 minutes of TFT treatment, after which they gave a second speech. Following the second speech the completed the SA Scale for the third and final time.

Subjects in the wait (no treatment) group completed the first measure at the same time as treatment subjects, then gave a speech, and again filled out the SA the same time as the treatment group. They then engaged in no study-related activities, nor did they receive psychotherapy or other intervention, until four weeks later when each wait group subject gave a second speech and again filled out the SA, now for the third time. Each subject was then treated for 60 minutes with TFT, after which s/he gave a third speech, and filled out the SA for the fourth and final time.

There was one difference in measurement. Because of [ ? ], the wait group alone completed Spielberger State-Trait Anxiety Inventory (STAI) (Spielberger, 1983). Measure. In the results section, the STAI data refer to the wait group alone.

**Treatment Procedures**

Each subject was treated once for 60 minutes with TFT. A session was conducted by one therapist who followed a written standardized treatment protocol which consisted of descriptions of the algorithms that would be used, written according to Callahan’s instructions. Each of the study therapists had been trained in TFT and received additional training from the first author. To determine treatment fidelity, all treatment sessions were videotaped, and tapes were reviewed by the first author who decided alone if TFT was being conducted with fidelity.

First, the initial target was recalled and the subject rated it with the SUD.

Next, the subject was treated for psychological reversals (PRs), a concept related to the assumption that a person’s thought or intention can disrupt energy flow, and that flow can be resumed if the person makes certain statements while tapping specific energy points. PR corrections in TFT include a specific breathing routine, a brief posture from applied kinesiology that involves crossing feet and hands in a prescribed manner.

Then a specific algorithm was followed that consisted of having the subject tap, 7 or 8 times rapidly, on certain specified points on the body with three fingers of each hand on respective points on the homolateral side of the body. Of the 14 key points identified by Callahan, the first 8 are on the inner end of the eye brow (eb), outside the eye (oe), under the eye (e), under the nose (un), under the lips (ul), under the collarbone (cb), 4 inches under the arm on the torso (a), and on the ribs (rb). The next 4 are located on the hand: with the palm down, the hand points are on the side of the nails closest to the body, of the
thumb (th), index finger (if), middle finger (mf), and little finger (lf). The 13th is on the side of the hand, and the last (gamut point) is on the back of the hand between the bones of the ring and little fingers. The anxiety algorithm followed in this study began with this tapping of this sequence: eb, e, a, cb, if, cb, if, cb. The subject than tapped the gamut point continuously while following the therapist’s hand with certain eye movements. The tapping sequence already described was then repeated. The subject gave a SUD score while thinking of the initial target, and the entire protocol of tapping and eye movements was repeated until the client was able to report a SUD of zero, or 60 minutes had passed. In the event a client reached zero early, s/he was invited to target another of the memories identified during history taking.

Clients who reached zero on SUD were then asked to tap the gamut point while slowly raising their eyes from floor to ceiling. This completed a treatment for anxiety.

Subjects were also invited to visualize the steps they would take to complete a successful public speaking experience. While visualizing, they tapped on the gamut point. They were also offered the option of tapping the gamut point while thinking about making mistakes in a public speaking situation.

Therapists were also allowed to use alternative tapping protocols in the event that a client reported emotions in addition to anxiety, or physical symptoms such as perspiring. In some cases the subject was instructed to state a certain affirmation. For example, a client who reported feeling rage would be instructed to tap oe and cb while saying, “I forgive [the person with whom s/he was angry]”. Someone experiencing guilt would tap if and cb while tapping and saying “I forgive myself”. Note that all of the points used in any of the protocols were limited to the 14 key points described above.

Immediately following treatment, subjects filled out the outcome instruments, as described above.

Results

Equivalence of Condition

Pretreatment differences between participant assigned to the treatment and delayed-treatment conditions were analyzed

Treatment Integrity

Standardized treatment protocols

SUDS measures

The SUD scores were analyzed using General Linear Model (GLM) Repeated Measures test. Since the GLM showed no significant difference between the two groups, the results were analyzed using combined scores. The Self Evaluation measures were analyzed using the GLM on the Delayed treatment group since this measures was only given post treatment to this group and
not the Treatment group. In addition, the baseline effects on all SA subscales for the two pre-treatment measures of the delayed treatment group showed no significant difference between these two pre measures. Furthermore, there were no significant main effects of group indicating that on these measures, there was no statistical difference between the treatment and the delayed treatment groups. Thus a third analysis was conducted on all participants on the pre measures taken immediately prior to treatment and the post measures conducted after treatment.

The alpha level of .05 was used for all GLM Repeated Measures test.

The hypothesis that the average SUD scores would decrease after treatment was supported as shown in Figure 1. The repeated measures GLM analysis showed a very strong main effect for treatment with the mean pre-test scores significantly decreasing post treatment ($F=201.541$, $df=1, 46$; $p<.000$). The overall treatment effect size between average pre-test and post-test SUD scores is $d=2.10$, and the within-subject effect size as measured by partial $\eta^2$ was .82. These results suggest that treatment does significantly decrease one’s level of anxiety.

![Figure 1](image1)

**Average Pre and Post SUDS Scores for All Participants**

In further analyzing the SUDS measure, the repeated measures GLM indicated there was no significant difference for the main effect of group ($F=0.232$, $df=1, 46$; $p=0.633$) or for the interaction of treatment by group ($F=1.041$, $df=1, 46$; $p=0.313$) as represented with Figure 2.

![Figure 2](image2)

**Average SUDS scores by treatment groups**
State-Trait measures

Figure 3 shows the average scores of all participants for the Self Evaluation State-Trait measure. There were no significant differences between the Treatment Group and the Delay Treatment Group pre-treatment on either the State \( t(45)=1.55, p=.128 \) or the Trait measure of anxiety \( t(45)=.77, p=0.443 \).

Figure 3
Average Self Evaluation State-Trait Scores Pre-Treatment for All Participants

The hypothesis that the Self Evaluation State measure would decrease post-treatment was supported by the Delayed Treatment group data. When anxiety was measured across time (see Figure 4), the GLM results indicated a significant time effect with Wilks’s Λ =.35 \( F=(2,17)=16.01; p≤.000, \) multivariate \( \eta^2=.65 \) with pre-treatment 1 and pre-treatment 2 being significantly different than post- treatment \( F=16.53, df=2, 36; p<.000 \). (This test was administered only to the Delay Treatment Group). These results suggest that anxiety levels decrease post-treatment.
SA State scales

The Hypothesis that anxiety levels will decrease post treatment as measured by the SA State Scales was supported for the Treatment Group, the Delayed Treatment Group and when both Groups were combined on both Positive and Negative Factors. There was no significant difference between the two groups of participants pre-treatment on the Sum of Negative factors ($t(42)=.66, p=.512$), the Sum of Positive factors ($t(45)=-.41, p=.687$), or the Overall State Anxiety ($t(41)=.42, p=.676$).

SA State scales: Treatment Group

In analyzing the data for the Treatment Group, we found that the overall state anxiety decreased, with negative factors decreasing and positive factors increasing as shown in Figures 5 through 7.

The results indicate that anxiety levels significantly decreased post-treatment for the Sum of Negative sub-scales ($F=44.202, df=1, 23; p\leq.000$), the Sum of Positive sub-scales ($F=25.686, df=1, 23; p\leq.000$), and the Overall State Anxiety ($F=44.773, df=1, 23; p\leq.000$). (see Figure 5). The within-subjects effect size as measured by partial $\eta^2$ was for the Sum of Negative factors $\eta^2=.66$, for Sum of Positive factors $\eta^2=.53$, and for the Overall State Anxiety was $\eta^2=.66$. 

Figure 5

SA Sub-scales across time by treatment group
Figure 6 shows the mean scores for the SA Negative sub-scales across time for the Treatment group. Once again, there were significant differences between the mean scores pre- and post-treatment. These results indicate that negative responses tend to decrease after treatment has been administered. $F$ values range from 6 to 44 ($df=1, 23$) with all negative factors significant at the $p \leq .000$ level except for “Shyness” ($p < .02$). See Table 1 for additional statistical information for each negative factor.

**Figure 6**
SA Negative sub-scales by treatment group

Figure 7, the SA Positive sub-scales, illustrates an increase in positive responses post-treatment. All factors showed significant differences between the mean scores pre- and post-treatment. These results indicate that positive responses tend to increase once treatment has been administered. $F$ values range from 5 to 22 ($df=1, 23$) with all positive factors significant at the $p \leq .000$ level except for “Wants More” ($p \leq .03$). See Table 1 for additional statistical information for each positive factor.
Figure 7
SA Positive sub-scales by treatment group

<table>
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<th>Sub-scale</th>
<th>Average Scores</th>
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<tr>
<td>Positive Anticipation</td>
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<td>Poise</td>
<td>0.96</td>
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<tr>
<td>Wants More</td>
<td>2.09</td>
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<td></td>
<td>2.50</td>
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[Diagram showing average scores for Positive Anticipation, Poise, and Wants More before and after treatment.]
Table 1

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<th>Pre-Treatment</th>
<th>Post-Tx</th>
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<tr>
<td>Pre-speech tension*</td>
<td>3.08 (.88)</td>
<td>1.60 (1.16)</td>
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<td></td>
<td>n=28</td>
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<td>Shyness **</td>
<td>1.94 (.80)</td>
<td>1.36 (.91)</td>
<td>.54</td>
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<td></td>
<td>n=28</td>
<td>n=28</td>
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<tr>
<td>Confusion *</td>
<td>2.35 (.92)</td>
<td>1.44 (.84)</td>
<td>.86</td>
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<td>n=27</td>
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<td>Physiological activation *</td>
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<td>1.19 (.80)</td>
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<td>Post-speech activation *</td>
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<td>1.36 (.96)</td>
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<td>1.05 (.91)</td>
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<td>Sum of negative *</td>
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<td>1.33 (.74)</td>
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Positive factors

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<th>Post-Tx</th>
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<td>Positive anticipation *</td>
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<td>2.46 (1.13)</td>
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<tr>
<td>Poise *</td>
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<td></td>
<td>n=28</td>
<td>n=28</td>
<td></td>
</tr>
<tr>
<td>Sum of positive *</td>
<td>1.40 (.66)</td>
<td>2.31 (.96)</td>
<td>1.12</td>
</tr>
<tr>
<td></td>
<td>n=26</td>
<td>n=27</td>
<td></td>
</tr>
<tr>
<td>Overall state anxiety*</td>
<td>3.03 (.63)</td>
<td>1.96 (.77)</td>
<td>1.52</td>
</tr>
<tr>
<td></td>
<td>n=24</td>
<td>n=24</td>
<td></td>
</tr>
</tbody>
</table>
Note 1: Paired t-tests indicate significant differences between Pre and Post Treatment at the *p ≤ .000, **p ≤ .01, or ***p ≤ .02 levels of significance.

Note 2: Standard Deviations are shown in parentheses.

Note 3: For **Negative Factors**, a decrease in mean indicates a decrease in Anxiety. For **Positive Factors**, an increase in mean indicates a decrease in anxiety. For **Overall State Anxiety**, a decrease in mean indicates a decrease in Anxiety.

Note 4: Cohen’s d is computed by taking the mean difference between Pre and Post divided by the sum of the pre and post standard deviations divided by two.

**SA State Scales: Delayed Treatment Group**

In analyzing the data for the Delayed Treatment group, we found that over time, the Sum of the Negative factors significantly decreased post-treatment, the Sum of the Positive factors significantly increased post-treatment, and the Overall State Anxiety significantly decreased post treatment. Repeated measures GLM conducted on all sub-scales showed no main effect for time between pre-test 1 and pre-test 2 (Multivariate $F=1.060$, $df=1, 16$; $p=0.473$), but that there were significant differences between both pre1 and post treatment and pre 2 and post treatment measures (see Figures 9 and 10).

The results shown in Figure 8 indicate that post treatment, the Sum of Negative responses decreased with a significant time effect with Wilks’s Λ=.10 ($F=(2,14)=62$; $p≤.000$, multivariate $\eta^2=.90$), the Sum of Positive responses increased in positive responses post treatment with a significant time effect with Wilks’s Λ=.12 ($F=(2,17)=62.40$; $p≤.000$, multivariate $\eta^2=.88$). For the Overall State Anxiety, results indicated a significant time effect with Wilks’s Λ=.08 ($F=(2,14)=80.79$; $p≤.000$, multivariate $\eta^2=.92$). These results indicate that anxiety levels decreased after receiving treatment.

**Figure 8**

SA sub-scales across time by delayed treatment group
Figures 9 and 10 show the individual negative and positive sub-scales for the Delayed Treatment Group across the three time frames. The repeated measures GLM showed significant decreases for the negative factors and significant increases for the positive factors with pre-treatment 1 and pre-treatment 2 being significantly different than post-treatment measures. $F$ values ranged from 14 to 95 ($p<.000$ for all sub-scales). Each sub-scale is significantly different with anxiety levels decreasing from pre to post treatment. See Table 2 for additional statistical information for each negative and positive factor.

**Figure 9**
SA negative sub-scales across time by delayed treatment group

**Figure 10**
SA negative sub-scales across time by delayed treatment group
SA positive sub-scales across time by delayed treatment group

Average Scores

SA positive sub-scales

0 1 2 3 4 5

POSITIVE ANTICIPATION POISE WANTS MORE

Average Scores

PRE1-TREATMENT PRE2-TREATMENT POST TREATMENT

2.75 1.18 1.90 1.34 2.70 1.80 2.93

POSITIVE ANTICIPATION POISE WANTS MORE

SA positive sub-scales
<table>
<thead>
<tr>
<th><strong>Negative factors</strong></th>
<th><strong>Pre-Treatment-1</strong></th>
<th><strong>Pre-Treatment-2</strong></th>
<th><strong>Post-Treatment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Means and standard deviations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-speech tension</td>
<td>3.25 (.70) n=19</td>
<td>2.77 (1.00) n=19</td>
<td>1.05 (1.06) n=19</td>
</tr>
<tr>
<td>Shyness</td>
<td>1.85 (1.11) n=20</td>
<td>1.96 (1.02) n=20</td>
<td>1.10 (1.09) n=20</td>
</tr>
<tr>
<td>Confusion</td>
<td>2.34 (.89) n=19</td>
<td>2.43 (.98) n=19</td>
<td>1.38 (1.06) n=19</td>
</tr>
<tr>
<td>Physiological activation</td>
<td>2.04 (.81) n=18</td>
<td>1.94 (.91) n=18</td>
<td>1.06 (.94) n=18</td>
</tr>
<tr>
<td>Post-speech activation</td>
<td>2.65 (.93) n=19</td>
<td>2.46 (.99) n=19</td>
<td>1.13 (.97) n=19</td>
</tr>
<tr>
<td>Environmental threat</td>
<td>1.80 (.91) n=20</td>
<td>1.95 (.94) n=20</td>
<td>1.02 (1.14) n=20</td>
</tr>
<tr>
<td>Sum of negative</td>
<td>2.31 (.63) n=16</td>
<td>2.13 (.57) n=16</td>
<td>1.02 (.73) n=16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Positive factors</strong></th>
<th><strong>Pre-Treatment-1</strong></th>
<th><strong>Pre-Treatment-2</strong></th>
<th><strong>Post-Treatment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive anticipation</td>
<td>1.47 (1.19) n=20</td>
<td>1.47 (1.01) n=20</td>
<td>2.75 (1.10) n=20</td>
</tr>
<tr>
<td>Poise</td>
<td>1.18 (.89) n=19</td>
<td>1.34 (.83) n=19</td>
<td>2.70 (.91) n=19</td>
</tr>
<tr>
<td>Wants more</td>
<td>1.90 (1.07) n=20</td>
<td>1.80 (.97) n=20</td>
<td>2.93 (.98) n=20</td>
</tr>
<tr>
<td>Sum of positive</td>
<td>1.39 (.84) n=19</td>
<td>1.47 (.76) n=19</td>
<td>2.74 (.82) n=19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Overall state anxiety</strong></th>
<th><strong>Pre-Treatment-1</strong></th>
<th><strong>Pre-Treatment-2</strong></th>
<th><strong>Post-Treatment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2.97 (.67) n=16</td>
<td>2.81 (.56) n=16</td>
<td>1.66 (.74) n=16</td>
</tr>
</tbody>
</table>
Note: GLM Repeated Measures analysis indicates a significant difference between Pre 1 and Post Treatment as well as between Pre 2 and Post Treatment at the $p \leq .000$ level of significance for all SA Factors. There is no significant difference between Pre 1 and Pre 2 on any SA factor.

Note: Standard Deviations are shown in parentheses.

Note: For **Negative Factors**, a decrease in mean indicates a decrease in Anxiety. For **Positive Factors**, an increase in mean indicates a decrease in anxiety. For **Overall State Anxiety**, a decrease in mean indicates a decrease in Anxiety.

**SA state scales: Combined groups**

The third analysis of the SA State Scales indicated that there was no significant difference for the main effect of groups ($F=1.422, df=1, 46; p=0.220$), and thus, the Treatment group and the Delayed Treatment group were combined. The hypothesis that anxiety levels will decrease post treatment as measured by the SA State Scales was supported on the Sum of Positive the Sum of Negative, and the Overall State anxiety as shown in Figure 11. These results indicate that there were significant decreases between pre-treatment and post-treatment measures within the Sum of Negative factors ($F=107.09, df=1, 40; p \leq .000$), the Sum of Positive factors ($F=86.99, df=1, 40; p \leq .000$), and the Overall State Anxiety ($F=125.84, df=1, 40; p \leq .000$). The within-subjects effect size as measured by partial $\eta^2$ was for the Sum of Negative factors $\eta^2=.73$, for Sum of Positive factors $\eta^2=.69$, and for the Overall State Anxiety was $\eta^2=.76$.

As shown in Figures 12 and 13, a more detailed analysis of the negative and positive sub-scales reveal that state anxiety significantly decreased, with negative factors decreasing and positive factors increasing. Figure 12 shows the mean scores for the SA Negative sub-scales across time. Once again, a repeated measures GLM showed significant decreases between the mean scores pre- and post-treatment with $F$ values ranging from 22 to 125 ($p \leq .000$ for all sub-scales). See Table 3 for additional statistical information for each negative factor. These results indicate that
negative responses tend to decrease after treatment has been administered.

**Figure 12**
SA negative sub-scales by treatment group

![Graph showing SA negative sub-scales by treatment group](image)

Figure 13 shows the mean scores for the SA Positive sub-scales across time and illustrates an increase in positive responses post-treatment. The repeated measures GLM showed significant increases between the mean scores pre- and post-treatment with $F$ values ranging from 31 to 64 ($p<.000$ for all sub-scales). See Table 3 for additional statistical information for each positive factor. These results indicate that positive responses tend to increase once treatment has been administered.

**Figure 13**
SA positive sub-scales by treatment group

![Graph showing SA positive sub-scales by treatment group](image)
Table 3

Combined groups

Means, standard deviations, and effect sizes (ES) for the SA factors across time

<table>
<thead>
<tr>
<th>Negative factors</th>
<th>Pre-Treatment</th>
<th>Post-Treatment</th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-speech tension</td>
<td>2.96 (.93)</td>
<td>1.38 (1.14)</td>
<td>1.35</td>
</tr>
<tr>
<td></td>
<td>n=47</td>
<td>n=47</td>
<td></td>
</tr>
<tr>
<td>Shyness</td>
<td>1.95 (.88)</td>
<td>1.25 (.99)</td>
<td>.71</td>
</tr>
<tr>
<td></td>
<td>n=48</td>
<td>n=48</td>
<td></td>
</tr>
<tr>
<td>Confusion</td>
<td>2.39 (.94)</td>
<td>1.42 (.92)</td>
<td>.96</td>
</tr>
<tr>
<td></td>
<td>n=46</td>
<td>n=46</td>
<td></td>
</tr>
<tr>
<td>Physiological activation</td>
<td>2.07 (.86)</td>
<td>1.11 (.85)</td>
<td>1.26</td>
</tr>
<tr>
<td></td>
<td>n=46</td>
<td>n=46</td>
<td></td>
</tr>
<tr>
<td>Post-speech activation</td>
<td>2.60 (.89)</td>
<td>1.27 (.96)</td>
<td>1.25</td>
</tr>
<tr>
<td></td>
<td>n=46</td>
<td>n=46</td>
<td></td>
</tr>
<tr>
<td>Environmental threat</td>
<td>2.09 (.91)</td>
<td>1.04 (1.00)</td>
<td>1.06</td>
</tr>
<tr>
<td></td>
<td>n=48</td>
<td>n=48</td>
<td></td>
</tr>
<tr>
<td>Sum of negative</td>
<td>2.28 (.62)</td>
<td>1.18 (.75)</td>
<td>1.58</td>
</tr>
<tr>
<td></td>
<td>n=44</td>
<td>n=44</td>
<td></td>
</tr>
</tbody>
</table>

Positive factors

<table>
<thead>
<tr>
<th>Positive factors</th>
<th>Pre-Treatment</th>
<th>Post-Treatment</th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive anticipation</td>
<td>1.47 (.91)</td>
<td>2.58 (1.12)</td>
<td>1.07</td>
</tr>
<tr>
<td></td>
<td>n=48</td>
<td>n=48</td>
<td></td>
</tr>
<tr>
<td>Poise</td>
<td>1.12 (.75)</td>
<td>2.34 (1.01)</td>
<td>1.28</td>
</tr>
<tr>
<td></td>
<td>n=45</td>
<td>n=45</td>
<td></td>
</tr>
<tr>
<td>Wants more</td>
<td>1.97 (.99)</td>
<td>2.68 (1.10)</td>
<td>.77</td>
</tr>
<tr>
<td></td>
<td>n=48</td>
<td>n=48</td>
<td></td>
</tr>
<tr>
<td>Sum of positive</td>
<td>1.43 (.70)</td>
<td>2.49 (.92)</td>
<td>1.44</td>
</tr>
<tr>
<td></td>
<td>n=45</td>
<td>n=45</td>
<td></td>
</tr>
</tbody>
</table>

Overall state anxiety

| Overall state anxiety             | 2.92 (.61)    | 1.81 (.77)     | 1.75|
|                                   | n=42          | n=42           |     |
Note 1: Paired t-tests indicate significant differences between Pre and Post Treatment at the \( p \leq .000 \) levels of significance for all SA factors.

Note 2: Standard Deviations are shown in parentheses.

Note 3: For **Negative Factors**, a decrease in mean indicates a decrease in Anxiety. For **Positive Factors**, an increase in mean indicates a decrease in anxiety. For **Overall State Anxiety**, a decrease in mean indicates a decrease in Anxiety.

Note 4: Cohen’s \( d \) is computed by taking the mean difference between Pre and Post divided by the sum of the pre and post standard deviations divided by two.

Note 5: Effect sizes were computed by dividing the difference between the TFT and the delayed TFT treatment groups at measurement time T2 by the standard deviation of the delayed TFT control group at T2 (Glass, McGaw, & Smith, 1981).

**Supplemental Analysis**

All statistical data were reviewed by an outside analyst with a doctorate in psychology. While such additional procedures are unusual, the authors chose to do so to preclude possible criticisms of the data: TAT is controversial, and the results presented may appear extraordinary, hence requiring extraordinary evidence. This section summarizes the reviewer’s conclusions.

The reviewer first examined the data using Tukey Exploratory Data Analysis for signs of violations of statistical assumptions (i.e., extreme deviations from normality and outliers). No major violations of statistical assumptions were found. The individual data values were then spot checked for signs of obviously fabricated or fraudulent data; data points indicating that some participants did not respond to treatment at all were judged to be realistic. Finally, the raw information appeared to be valid data collected from a bona fide study.

Several repeated measures General Linear Model (GLM) analyses were then conducted. The dependent variables were the SUDS (pre- and post-measures) and 12 scales from the SA measures (pre- and post-measures for both groups with an additional baseline measure for the delay group).

The repeated measures GLM using SUDS as the dependent repeated measures variable gave a very strong main effect for treatment (\( F=201.541, df=1, 46; p<0.0005 \)). Using the SUDS as the dependent variable, there were no significant differences for the main effect of group (\( F=0.232, df=1, 46; p=0.633 \)) or for the interaction effect of treatment by group (\( F=1.041, df=1, 46; p=0.313 \)).

The repeated measures GLM using the 12 SA subscales as the dependent repeated measures variables also gave a strong main effect for treatment (Multivariate \( F=17.554, \)
The F value was found to be high, but not so high as for the SUDS measure. Using the 12 SA subscales as the dependent variables, there were no significant differences for the main effect of group (F=1.422, df=1, 46; p=0.220) or for the interaction effect of treatment by group (F=1.387, df=1, 46; p=0.235). In addition to these multivariate results, the repeated measures analysis gave 12 univariate tests (one for each subscale); the univariate results were all significant with F values ranging from 22 to 125 (all obviously significant at p<0.0005).

The subscales changed in the expected directions: the positive symptom subscales increased after treatment and the negative symptom subscales decreased after treatment. Correlation among subscales was judged to be a minor statistical concern for the SA GLM analyses, but not for the SUDS analyses.

The 12 SA subscales were administered three times to the delay group. The first two administrations were prior to the TFT intervention and provide measure of the stability of the SA subscales. The repeated measures GLM using the 12 SA subscales as the dependent repeated measures variables showed no main effect for time of administration (Multivariate F=1.060, df=1, 16; p=0.473). None of the univariate analyses showed significant differences between the two administrations. Thus, the symptoms measured by the SA appear equivalent at the first two administrations.

Five months after the last speech, the first author conducted an informal follow-up with 31 (64%) of the treatment subjects. Of these, three reported no improvement from treatment. Twenty-five said they felt “less” apprehension in public speaking situations, and volunteered comments that included these: “I can say what I’m thinking”, “I’m not dreading it when I have to give a presentation”, “I like that I can do this by myself”, “Previously I had anxiety even if I did not speak, [and now I can] speak without anxiety’, and “Now I talk off the cuff.” A criticism of this interview is that demand characteristics could have enhanced or produced the positive reports. On the other hand, in more than one case third-party reports paralleled what was said by the subjects at follow-up. While such comments have no statistical value in determining efficacy, they are relevant to the view represented by Lefort (1993), who wrote that “for a change to be clinically significant it must make a qualitative difference in people’s lives” (page 61).

Discussion

Several factors may have contributed to the strength of this brief TFT treatment in addition to the treatment itself. The participants may have acclimated to the setting and become less anxious on the second speech simply through exposure. Secondly, even though the audience was instructed not to respond in any way to the speaker, a subject nonetheless might have found the audience to be less aversive than expected, which could have reduced anxiety further upon second exposure. And thirdly, the therapists themselves may have made positive comments, consciously or not, that reduced anticipatory anxiety even further; a review of the videotapes showed that therapists limited themselves to instructions related to the algorithms, though some positive relationship interaction was undoubtedly in effect. Nonetheless, there is no precedence in
the literature on psychotherapy efficacy to support an interpretation that would attribute to exposure alone, or to nonspecific treatment variables, the strength of change found in this study.

The SUDS results were stronger than the SA results \( F = 201.541 \text{ versus } 17.554 \), respectively, possibly indicating that the more direct self-reporting with SUDS enhances perceived change. [?] On the other hand, the SA

The wait group alone was measured on state and train anxiety. Decreases in both [?]

The authors conclude that a substantial reason for the reported beneficial changes lies in the impact of the TFT interventions. While an independent analyst found no reason to doubt the veracity of the reported data, replication of this study is recommended, given the unusually positive findings.

References


cognition, behavior, and health. Boca Raton, FL: CRC Press.


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Meichenbaum, D.


