A Randomized Controlled Comparison of Emotional Freedom Technique and Cognitive-Behavioral Therapy to Reduce Adolescent Anxiety:
A Pilot Study

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Abstract

Objective: The objective of this pilot study was to compare the efficacy of Emotional Freedom Techniques (EFT) with that of Cognitive-Behavioral Therapy (CBT) in reducing adolescent anxiety.

Design: Randomized controlled study.

Settings: This study took place in 10 schools (8 public/2 private; 4 high schools/6 middle schools) in 2 northeastern states in the United States.

Participants: Sixty-three high-ability students in grades 6–12, ages 10–18 years, who scored in the moderate to high ranges for anxiety on the Revised Children’s Manifest Anxiety Scale-2 (RCMAS-2) were randomly assigned to CBT (n=21), EFT (n=21), or waitlist control (n=21) intervention groups.

Interventions: CBT is the gold standard of anxiety treatment for adolescent anxiety. EFT is an evidence-based treatment for anxiety that incorporates acupoint stimulation. Students assigned to the CBT or EFT treatment groups received three individual sessions of the identified protocols from trained graduate counseling, psychology, or social work students enrolled at a large northeastern research university.

Outcome measures: The RCMAS-2 was used to assess preintervention and postintervention anxiety levels in participants.

Results: EFT participants (n=20; M=52.16, SD=9.23) showed significant reduction in anxiety levels compared with the waitlist control group (n=21; M=57.93, SD=6.02) (p=0.005, d=0.74, 95% CI [−9.76, −1.77]) with a moderate to large effect size. CBT participants (n=21; M=54.82, SD=5.81) showed reduction in anxiety but did not differ significantly from the EFT (p=0.18, d=0.34; 95% CI [−6.61, 1.30]) or control (p=0.12, d=0.53, 95% CI [−7.06, 8.41]).

Conclusions: EFT is an efficacious intervention to significantly reduce anxiety for high-ability adolescents.

Keywords: Emotional Freedom Technique, randomized controlled trial, adolescent anxiety, schools, gifted

Introduction

Of the approximately 50.5 million school-age children from pre-K through 12th grade in the United States, over 5 million struggle with the negative effects of anxiety, including up to 2.5 million who refuse to go to school and/or participate in parts of their school day. Anxiety impedes concentration, unsettles behavior, and interferes with perception, frustrating the optimal functioning of students. Cognitive resources of those affected are diverted from information processing and creative endeavors, which inhibits development of abilities and talents. While research has indicated that the adverse effects of anxiety on performance can be reduced or eliminated with the use of effective resources, excessively high caseloads of school counselors, psychologists, and social workers, as well as scheduling

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difficulties, limit the amount of time available for these professionals to provide individual counseling support long term.11–13

Cognitive-Behavioral Therapy (CBT) is the gold standard of treatment for adolescent anxiety; this therapy uses evidence-based techniques to help clients cognitively reframe their interpretations and neutralize their psychological and emotional responses to present stimuli through awareness building and systematic desensitization processes.14 One meta-analyses on the use of CBT to treat adult anxiety reported moderate to large effect sizes for panic disorder (effect size range of 1.53–1.02), social anxiety disorder (effect size range of 1.75–0.89), and generalized anxiety disorder (effect size range of 0.92–2.26).15 Similarly, another meta-analysis examined CBT alone to treat anxiety (average effect size of 0.82 95% CI [0.63, 1.00]) compared with CBT with pharmacology (average effect size of 0.33 95% CI [0.02, 0.67]).16 Additionally, a meta-analysis investigating the effectiveness of psychotherapy for childhood anxiety revealed an overall mean treatment effect of 0.86.17

Conversely, while the use of CBT for anxiety is well established, research suggests that traditional interventions have limited success in treating adolescent anxiety in the long term.18–21 Studies have indicated that many treated patients continued to be symptomatic when sessions ended;22 at least 50% of participants were nonresponsive to treatment,23 and an even greater percentage continued to need at least one psychotropic medication trial and/or continued outpatient therapy.24 Effective treatment interventions are needed to reduce anxiety and help students to develop effective management strategies.

Concurrently, growing evidence supports Emotional Freedom Techniques (EFT) as an efficacious treatment for anxiety in adults.25–28 Scholars have identified EFT, progressive muscle relaxation, autogenic training, relaxation response, biofeedback, EFT, guided imagery, diaphragmatic breathing, transcendental meditation, CBT, and mindfulness-based stress reduction as evidence-based techniques to address stress.29,30 Results of a meta-analysis investigating EFT as an intervention for anxiety revealed large effects sizes compared with controls in both adults and children. The combined pre–post effect size for the EFT treatment groups was 1.23 (95% CI [0.82, 1.64]; p < 0.001), and the effect size for combined controls was 0.41 (95% CI [0.17, 0.67]; p = 0.001).31 Research has examined diaphragmatic breathing and EFT interventions for anxiety and reported large posttest between-group effect sizes (Subjective Units of Distress Scale, d = 1.11; Beck Anxiety Inventory, d = 0.94; Behavioral Approach Test, d = 0.89),32 as well as improvements in both the diaphragmatic breathing and EFT groups with gains maintained on follow-up.33 Furthermore, a systematic review of EFT research in adults also indicated a significant reduction of symptoms long-term with fewer required sessions than traditional CBT.34

Initial studies examining EFT for adolescent anxiety have supported EFT as an evidence-based intervention. This research has indicated that EFT reduces anxiety related to mathematics35 and significantly decreases test anxiety (p < 0.05).36 Additionally, EFT significantly reduces the intensity of traumatic memories in abused adolescents (Impact of Event Scale scores: (preintervention mean = 36, SD ± 4.74, postintervention mean = 3, SD ± 2.60, p < 0.001).37 The current quantitative study extends important research on the efficacy of EFT to treat adolescent anxiety, especially in school settings. Additionally, it contributes to the existing research on the efficacy of EFT compared with CBT for treating anxiety by using standardized, research-based treatment protocols for both CBT and EFT and by including a waitlist control group to more fully assess treatment outcomes.

Materials and Methods

Participants

Sixty-three students (18 male, 45 female; age 10–18 years) who scored at moderate to high anxiety levels (i.e., 61–70 and ≥71, respectively) on the Revised Children’s Manifest Anxiety Scale-2 (RCMAS-2)38 participated. All were engaged in high-ability education programs, in grades 6–12, in public or private schools in two northeastern states. Participants came from a total of 10 schools and were within the top 15%–20% of their peer groups academically. Of these schools, 8 were public and 2 were private. Concurrently, 4 were high schools and 6 were middle schools.

Procedures

This study was designed to meet the American Psychological Association (APA) Division 12 quality control criteria39,40 and the Consolidated Standards for Reporting Trials (CONSORT) criteria.41 Schools throughout one northeastern state were invited to collaborate in the recruitment for this study. Ten schools from two northeastern states expressed interest and distributed the information forms to students from their high-ability programs and these students’ parents. Additionally, the original state’s association for the gifted posted a study recruitment announcement on their website.

The pretreatment RCMAS-2 was administered to all interested students who, depending on age, consented or assented and received parent/guardian permission to participate after they attended an informational meeting explaining the study. Through use of permuted randomized assignment, participants identified as having moderate to high levels of anxiety on the pretreatment RCMAS-2 were randomly assigned to one of three treatment groups: (1) CBT (n = 21), (2) EFT (n = 21), or (3) waitlist control (n = 21).

Permuted randomization allowed for restricted distribution of participants across the assignment of intervention groups, with equity maintained in the number of participants assigned to each group.42 Additionally, it ensured that the order in which groups were assigned each time was randomized to minimize assignment bias. A restricted assignment model was used to force equal sample sizes across groups as participants joined the study, as recommended for studies with fewer than 200 participants.43 To minimize potential researcher bias negatively affecting outcomes, RCMAS-2s administered before and after the intervention were scored by a blinded independent assessor. Before participant assignment, graduate students taking upper-level classes on counseling, psychology, or social work and enrolled in graduate programs at a large northeastern research university had been randomly sorted into the CBT or EFT interventions and trained in their respective protocols. Training including 6 hours of instruction on the assigned protocol, and then individual practice sessions supervised by certified practitioners until
mastery of the assigned protocol was achieved. These practitioners used mastery checklists to determine when the graduate students achieved mastery.

**Measures**

**Outcome measure.** The RCMAS-2 was used to assess pre- and posttreatment anxiety levels in study participants. The RCMAS-2 is a 49-item questionnaire and one of the most extensively used anxiety scales for children;44 it has adequate to excellent reliability and excellent validity.38 RCMAS-2 scores are reported as T-scores. RCMAS-2 scores of 60 or lower are considered in the normal to low range, scores of 61–70 are considered in the moderate range, and scores of 71 or higher are considered in the high range.

Scores on the RCMAS-2 exhibited adequate to excellent reliability on the basis of Cronbach’s z estimates of total anxiety (TOT)= 0.92 for internal consistency with a standard error of the mean of ±3, and test-retest reliability for TOT of r = 0.76.38 RCMAS-2 was determined to be a reliable measure for anxiety across sex, grade level, and ethnicity,38,45,46 as well as for high-ability children.47,48

Construct validity of the RCMAS-2 was supported by extensive factor analysis.39,50,51 Reynolds51 further confirmed construct validity by comparing convergent and divergent validity between the RCMAS and the State-Trait Anxiety Inventory for Children (STAIC) and found a large correlation between the RCMAS and the STAIC Trait scale (r = 0.85; p < .001). Reynolds52 found a score correlation of r = 0.78 between the RCMAS and the STAIC Trait scale for high-IQ children, providing additional support for validity with this group. Validity has been further established with correlations between RCMAS scores and teacher-observed behavior.53

**Intervention protocols.** Both the CBT and EFT protocols used in this study were manualized, specific, replicable, and had been used in previous research.

CBT helps clients to cognitively reframe their interpretations and neutralize their psychological and emotional responses to present stimuli through awareness building and systematic desensitization processes.14 With repeated practice, successful use of CBT is achieved when the individual no longer experiences anxiety related to the original trigger. A brief form of CBT based on the Coping Cat54 and the C.A.T. Project55 for children was used as the CBT protocol for this study.

EFT is an easily implemented strategy that uses such techniques as awareness building, exposure, reframing of interpretation, and systematic desensitization, while teaching the participant to self-stimulate protocol-identified acupoints (i.e., acupuncture points) by tapping.56,57 The effectiveness of acupuncture for treating anxiety has been well documented.58–60 Rather than using acupuncture needles, EFT relies on the manual stimulation of the acupoints. A recent meta-analysis indicated that interventions using acupoint stimulation had a moderate effect size (Hedge’s g = –0.66 95% CI [–0.99, –0.33]) in reducing symptoms.61 In EFT, the client stimulates the protocol-identified acupoints by tapping on them. Preliminary studies have suggested that tapping and other alternative ways of stimulating acupuncture points to be as effective as acupuncture needling.62 The EFT protocol and identified acupoints that were used in this study are the ones recommended for research purposes by the Association for Comprehensive Energy Psychology63 and identified in Supplementary Appendix A (Supplementary Data are available online at www.liebertpub.com/acm).

Fidelity of intervention mastery and implementation was monitored throughout the study by practitioners certified in the respective modalities (CBT or EFT) through regular reviews of session briefs and audiotapes.

**Data analysis**

Permutated randomized assignment of study participants to treatment groups was used to support unbiased estimates of the average treatment effect.64 Treatment outcomes were assessed by using the RCMAS-2 posttreatment (TOTf) scores. A one-way between-groups analysis of covariance (ANCOVA) was used to assess outcome differences across treatment groups on posttreatment RCMAS-2 TOT scores (TOTf) by using the pretreatment RCMAS-2 (i.e., TOTin) as the covariate. The independent variable was the type of treatment modality (i.e., CBT, EFT, or control) received by the participants. The dependent variable was the posttreatment RCMAS-2 total (TOT) scores. Posttreatment RCMAS-2 was administered to each participant after the participant underwent three individual skill development sessions in the assigned modality. A one-way between groups analysis of variance on TOTin confirmed that groups were equal before treatment and a between-groups ANCOVA confirmed a strong covariance (τ² = 0.23) between TOTin and TOTf. The analyses were completed using IBM SPSS Statistics for Macintosh (Version 22.0, Armonk, NY).

**Results**

**Implementation**

**Delivery of intervention sessions.** Participants assigned to CBT or EFT treatment groups received three individual sessions of the identified intervention from trained graduate students. Attrition was minimal, with only one participant assigned to EFT withdrawing from the study before beginning her sessions because of scheduling difficulties with her extracurricular activities.

Intervention sessions with participants occurred over a 5-month period. Most individual sessions occurred not less than 1 week or more than 2 weeks apart. Participants in both the CBT and EFT groups received regular, individual intervention sessions from their assigned graduate student for three sessions. These sessions occurred at a time mutually agreed upon by the graduate student, participant, and, where applicable, school and participant’s parent/guardian.

At the first individual session, the assigned graduate student shared the appropriate intervention protocol with the participant. Participants’ parents/guardians also received a copy of the assigned protocol. The graduate student and study participant then followed the steps outlined in the respective protocols over the period of the three sessions. No adverse events occurred within any of the sessions. CBT and EFT participants completed the posttreatment RCMAS-2 after completing their third individual session.

**Post-intervention sessions.** All RCMAS-2s throughout the study were scored by an independent blind assessor. The
waitlist control group received no intervention throughout the duration of the delivery of the individual CBT and EFT sessions. Upon completion of all individual CBT and EFT sessions, the waitlist control group completed their second RCMAS-2 before receiving any treatment themselves. The waitlisted control participants were then offered an EFT group intervention session using the EFT protocol. Research has supported the effectiveness of a single session of EFT.27,37

Analysis

Table 1 provides the within-group pre/post means and standard deviations. Treatment outcomes were measured by administration of the RCMAS-2 after treatment and analyzed by using ANCOVA, with pretreatment RCMAS-2 scores serving as the covariate. A one-way, between-groups ANCOVA was conducted to compare treatment effectiveness on participants’ posttreatment anxiety level scores. The ANCOVA was computed on posttreatment RCMAS-2 TOTf scores with TOTin and intervention and the interaction (TOTin*intervention). The interaction term was not significant \( F(2, 56) = 0.094; \ p = 0.911 \) and was removed from the model. Preliminary checks were conducted to ensure that there was no violation of assumptions of normality, linearity, homogeneity of variances, homogeneity of regression slopes, and reliable measurement of the covariate. The Levene test showed equality of variance \( (p = 0.058) \) for the resulting model. TOTin was a significant covariate \( (F[1, 58] = 17.47; \ p < 0.001; \ \eta^2 = 0.23) \), explaining 23% of the variance in TOTf scores. Intervention was a significant factor \( (F[2, 58] = 4.186; \ p = 0.020; \ \eta^2 = 0.13) \) with a large effect size.

Students in the EFT treatment group \( (n = 20; \ M = 52.16, SD = 9.23) \) had significantly lower posttreatment anxiety scores than students in the control group \( (n = 21; \ M = 57.93, SD = 6.02) \) \( (p = 0.005; d = .74; 95\% \ CI [-9.76, -1.77]) \) with a moderate to large effect size. Students in the CBT group \( (n = 21; \ M = 54.82, SD = 5.81) \) had decreased anxiety scores, but they did not differ significantly from students in the EFT group \( (p = 0.18; d = 0.34; 95\% \ CI [-6.61, 1.30]) \) or control group \( (p = 0.12; d = 0.53; 95\% \ CI [-7.06, .84]) \). During the post hoc analysis, a Bonferroni-corrected \( z \) of \( p = 0.016 \) was used to maintain a group error rate of 0.05.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBT ( n = 21 )</td>
<td></td>
</tr>
<tr>
<td>Pretreatment</td>
<td>64.05 ± 6.82</td>
</tr>
<tr>
<td>Posttreatment</td>
<td>54.82 ± 5.81</td>
</tr>
<tr>
<td>EFT ( n = 20 )</td>
<td></td>
</tr>
<tr>
<td>Pretreatment</td>
<td>63.75 ± 6.73</td>
</tr>
<tr>
<td>Posttreatment</td>
<td>52.16 ± 9.23</td>
</tr>
<tr>
<td>Control ( n = 21 )</td>
<td></td>
</tr>
<tr>
<td>Pretreatment</td>
<td>61.62 ± 5.95</td>
</tr>
<tr>
<td>Posttreatment</td>
<td>57.93 ± 6.02</td>
</tr>
</tbody>
</table>

SD, standard deviation.

Discussion

Both the CBT and EFT groups experienced reduced anxiety in this study, although only the EFT group had a statistically significant decrease compared with the control group. Results indicated that EFT is an efficacious intervention in school settings for reducing adolescent anxiety within a few sessions. The significant reduction in anxiety levels for the EFT intervention group is consistent with a growing body of research evidence indicating that EFT is an efficacious treatment for adolescent anxiety.31,35–37

Clinical implications are significant. School counselors, psychologists, and social workers often have limited time and resources to effectively assist students struggling with anxiety and/or teach them effective stress management strategies. EFT is an evidence-based protocol to more rapidly address issues of anxiety and stress in school settings. Helping students to develop effective, easily incorporated anxiety and stress management tools, such as EFT, early in their lives can support maximum development of students’ well-being and talent potential, as well as prevent persistent difficulties with impairment due to anxiety into adulthood.

Several factors may account for the significant reduction in anxiety experienced by participants in the EFT group. Therapies that incorporate a somatic component in the treatment of stress and trauma have been gaining traction within clinical practice.35 The somatic intervention used in EFT and investigated in this study (i.e., the stimulation of acupoints) has received substantial investigation.31,61 For example, when acupoint tapping was introduced to exposure therapy protocols, the extinction of fear memories was accelerated.60 Furthermore, biophysical markers indicating a reduction in stress after acupoint tapping have included decreased expression of genes implicated in the stress response,67 normalization of brainwave patterns,68,69 and hormonal changes associated with stress reduction.26 Strengths of tapping protocols in facilitating memory reconsolidation and the resulting depotentiation of neural pathways that maintain intransient emotional learnings have also been proposed.70 These physiologic shifts after acupoint tapping may help explain the significant reduction in adolescent anxiety evidenced in the present study.

Limitations

This sample was limited to high-ability students from the northwestern United States. Furthermore, a post hoc analysis of power using G*power software found that the study was underpowered (38%), indicating that treatment effectiveness may have been underassessed because of low sample size. Further study is needed with larger, heterogeneous sample sizes to assess generalizability.

Because the RCMAS-2 was administered both before and after treatment and does not have a parallel form, test biasing was a concern; however, randomized assignment of participants helped to minimize this concern. Additionally, analyses completed and outcomes of the TOTf in the waitlist control group suggested that test biasing was not an issue in this study.

Future directions

To more comprehensively assess treatment outcomes, results of this pilot study support further research related to
treatment effectiveness that includes the following: (1) larger sample that consists of both high- and average-ability students, (2) more treatment sessions, (3) additional outcome measures, and (4) additional intervals to assess posttreatment outcomes (e.g., 1 month, 6 months, and/or 1 year after treatment) to more fully assess generalizability of results seen. Biophysical markers, such as neuroimaging findings and cortisol level indicators, should also be included. Further, as imaging technology becomes more refined and advanced, research should be conducted to more fully assess the mechanisms involved in acupoint stimulation during counseling. Finally, a comprehensive comparison of EFT to all relaxation interventions would be beneficial.

Conclusions

Results of this study are consistent with findings from previous research and a meta-analysis showing that EFT is an efficacious, evidence-based treatment for adolescent anxiety. Additionally, the results indicate that EFT can be effectively used in school settings to significantly reduce adolescent anxiety within a few sessions.

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Author Disclosure Statement

No competing financial interests exist.

References


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Tapping for success: A pilot study to explore if Emotional Freedom Techniques (EFT) can reduce anxiety and enhance academic performance in University students

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Learning itself is an intrinsically emotional business

(Claxton, 1999, p15)

Abstract

Emotional Freedom Technique (EFT), also known as tapping, is an emerging psychological intervention that has been used to treat a variety of conditions, including exam stress and public speaking anxiety.

Participants were a convenience sample of 52 3rd year Foundation Degree level students undertaking a Research Methods Module. The module included an assessed presentation, which was known to generate anxiety among students. The students were given a 15 minute assignment workshop. They then received a 15 minute lecture introducing EFT and were guided though one round of EFT focussing on their anxiety of public speaking. The students were assessed using the Subjective Units of Distress (SUDs) and the Hospital Anxiety and Depression Scale (HADS) pre and post EFT. The students were instructed that they could continue to use EFT at any time to reduce their anxiety regarding their assessed presentation. Immediately following their presentation, the students were invited to take part in a brief face-to-face interview to identify those who used EFT to explore their use of and feelings about EFT and to identify those who had chosen not to use EFT and explore their reasons for not choosing to use it.

Forty Six of the total sample of 52 students (88%) participated in the research. There was a significant reduction in SUDS (p=<0.001), HAD (p = 0.003) and HAD Anxiety Subscale (p<0.001). There was no difference in the HAD Depression Subscale (p=0.67). The qualitative data were analysed using a framework approach which revealed the following three themes: helpfulness of EFT in reducing anxiety and staying calm and focussed; Using other complementary therapy skills; and their reasons for not using EFT.
Despite the limitations of the study, the results suggest that EFT may be a useful addition to curricula for courses that include oral presentations and that using EFT to reduce presentation anxiety may enhance academic performance.

Introduction

A range of pedagogic, medical and psychological strategies have been used to enhance academic performance. Strategies include peer tutoring (Liiden & Meier, 1991), assistive technology (Goldius & Gotesman, 2010; Parent & Del Rio-Parent, 2008), identifying student achievement goals, student self efficacy and reducing class size (Fonollar et al., 2007). Some students with a diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) have used ADHD drugs to enhance academic performance, whereas others without a diagnosis of ADHD have taken these drugs illegally to enhance their performance (Murray et al, 2011).

Fear of public speaking is the single most common fear and up to 75% of people suffer from it (Furmark, 2002; Pollard & Henderson, 1998). Many students report high levels of anxiety levels around assessed presentations. While a slightly increased level of anxiety may enhance performance, too much anxiety can have a detrimental effect (Cherry, 2010).

Emotional Freedom Technique (EFT; Craig, 2011) is a gentle psychological intervention that can be easily taught and self-administered (Karatzias et al. 2011). Subjects gently tap with their fingertips on acupressure points on the head, torso and hands and relate this to the voicing of specific statements (Craig, 2011). Recent systematic reviews reveal that EFT is effective for a variety of psychological disorders including reducing presentation anxiety and test-taking anxiety and enhancing athletic performance (Boath et al., 2012a; Feinstein, 2012; Feinstein, 2008).

The emerging literature suggests that EFT is a feasible treatment for presentation and test anxiety in students. For example, Boath and colleagues (2012b) found that EFT significantly reduced presentation anxiety in University students. Sezgin and Ozgin (2009) investigated the effect of EFT and Progressive Muscular Relaxation (PMR) on test anxiety in Turkish students undertaking a University entrance exam and found that students scored higher on examinations post EFT. Benor and colleagues (2006) treated test anxiety in Canadian University students with EFT and found that these students also successfully transferred their EFT skills to other stressful areas of their lives. Schoninger (2004) used Thought Field Therapy (TFT; Callahan & Trubo, 2001), the precursor of EFT, to treat public speaking anxiety and found a significant reduction in anxiety, shyness, confusion, and physiological factors as well as increased poise and positive anticipation following one hour of TFT. In Australia, Jones and colleagues (2011) reported significant reductions in public speaking anxiety in a group of University students and lecturing staff randomised to receive EFT and concluded that EFT was a quick and effective treatment for public speaking anxiety.

However, to date none of the studies of presentation anxiety has linked the reduction in anxiety levels with enhancing academic performance and so this pilot study aimed to assess the impact on EFT on a cohort of students’ public speaking anxiety and to assess whether EFT had an impact on their grades.
Methodology

A convenience sample of 3rd year students undertaking a Foundation Degree in complementary therapies were invited to participate in the project. Once written informed consent was obtained, the students were all given a 15 minute assignment lecture outlining the requirements for their assessed presentation. They were then asked to rate their anxiety levels using Subjective Units of Distress (SUDs; Wolpe, 1958) and the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). Higher scores on these scales mean higher levels of distress, anxiety and depression. Next, they received a 15 minute lecture introducing EFT, the theory behind it and the tapping points by TS who is a fully qualified and highly experienced Advanced EFT practitioner and trainer. Following this, they were guided though one round of EFT, focussing on their fear of public speaking and being assessed, by TS. The EFT protocol used followed the ‘basic recipe’ (Craig, 2011) and the one round included tapping on 12 acupressure points on the head, torso and hand, while tuning in to their anxiety about their presentation and being assessed. Following the introduction, where the students familiarised themselves with the tapping points, they were then guided through one full round of EFT, where they focussed on their own anxiety. The students were asked to complete the SUDS and the HADS scales immediately following this. This was approximately 30 minutes since they completed the previous outcome measures.

The students were instructed that they could continue to use EFT on themselves any time they wished during the intervening 8 weeks between the EFT training session and their assessed presentation. A reminder email was sent out one week prior to their presentation, with an attachment outlining the tapping points and reminding them about using EFT if they desired.

Immediately after giving their presentation, the students were invited to take part in a brief face to face interview in which they were asked if they had used EFT prior to their presentation, how effective they felt it had been, if they had used anything else to reduce their anxiety and if they would use EFT in future. Responses were captured verbatim in writing.

Data analysis

The quantitative data were entered into SPSS. Data were screened for normality using the Shapiro-Wilk test. SUDs and total HAD were found to be normal and were analysed using the paired t-test. Anxiety and depression data were found to be non-normally distributed and therefore the non-parametric equivalent, the Wilcoxon Signed Rank Test was employed. Before and after mean scores (SUDS and total HADS) were compared using paired t-tests and the anxiety and depression subscale were compared using the Wilcoxon Signed Rank Test. Where P-values were <0.05, the differences were considered statistically significant.

The qualitative data was analysed using thematic framework analysis to identify emergent patterns and themes (Ritchie and Spencer, 1994). Interview transcripts were read independently by LB and AC who devised an index of key concepts and themes drawing on a priori issues linked to the study objectives as well as issues raised by the students. LB and AC agreed on a final framework and subsequently data from the transcripts were applied systematically to the framework followed by mapping and interpretation.
**Ethical approval**

Ethical approval was obtained from Staffordshire University Research Ethics Committee.

**Results**

Fifty two 3rd year students were invited to participate in the project and 46 (88%) agreed and gave written informed consent. All students were female and aged between 25 and 55 (mean = 37.5). Many students were ‘returning to learning’ and studying for a career change.

SUDS data and the Hospital Anxiety and Depression Scale (HADS) scores were collected immediately before and immediately after the EFT training. A total of 46 complementary therapy students participated in the research. Table 1 shows the students’ anxiety scores pre and post EFT. It demonstrated that the means for the SUDS, the Anxiety Subscale of the HADS and the total HADS were significantly lower after the EFT intervention. However, there was no significant difference in the depression subscale of the HADS.

Table 1. Results of inferential analysis pre and post EFT

<table>
<thead>
<tr>
<th>Measure</th>
<th>Time</th>
<th>Mean (SD)</th>
<th>P-value</th>
<th>Significant?</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUDS</td>
<td>Before</td>
<td>5.68 (2.79)</td>
<td>&lt;0.001</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>3.80 (2.93)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety Subscale</td>
<td>Before</td>
<td>10.22 (4.78)</td>
<td>&lt;0.001</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>7.83 (5.17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression Subscale</td>
<td>Before</td>
<td>4.81 (4.45)</td>
<td>0.67</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>4.56 (4.40)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total HADS</td>
<td>Before</td>
<td>14.97 (8.24)</td>
<td>0.003</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>After</td>
<td>12.44 (8.46)</td>
<td></td>
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</tr>
</tbody>
</table>

Students in the study were followed-up, to see whether there was a difference in grades points achieved for the presentation, between those in the cohort who had used EFT prior to their presentation and those who had not.

"Marks” were expressed as assignment grades, based on Staffordshire University’s grading system at the time of the study. In this system, grades for Foundation Degrees are
awarded between 1-15, where 1-3 represents a fail; 4-6 represents third class, 7-9 is a lower second, 10-12 is an upper second and 13-15 is First class.

Follow-up data were received for a total of 46 students, 19 of whom had used EFT for their presentation anxiety and 27 who had not. Data were found to be non-normal using the Shapiro-Wilk test; nonparametric statistical tests were therefore used.

Students who had used EFT attained significantly higher grades (mean 10.63, SD=2.872, range 4-14) than those who had not (mean 7.70, SD=2.771, range 4-13). Means were compared using an Independent-samples Mann-Whitney U test, which was significant (p<0.01).

The qualitative data produced a rich insight about the student’s experience of EFT. The students gave positive feedback about their experience of EFT and these were characterised by three overarching themes: theme 1 relating to the effectiveness of EFT in reducing their anxiety and helping them to remain calm and focused; a second theme relating to their use of other complementary approaches and a final theme outline their reasons for not using EFT. Quotes are presented to illustrate the themes. Names have been changed to maintain confidentiality.

**Theme 1: Helpfulness of EFT in reducing anxiety and staying calm and focussed**

It was evident from the quotes that EFT had a calming effect on students which helped to reduce their pre-presentation anxiety and helped to keep them calm and focussed, as illustrated by the following data extracts:

*Yes. I did it [EFT] in the car. It helped. I didn’t sleep well last night – got a dry mouth and feel shaky, but not as bad as I usually am when doing a presentation. My legs are normally going, but they are alright today. It definitely took the edge off. I would definitely use it again. Used it for helping me to sleep and will use it again in future.* (Kelly)

*Yes I usually go blank, I forget. And I used it to keep me focussed today. I also used it when I first sat down and looked at the assignment. It did actually work.* (Jacky)

*Yes, I done it before I came in and yesterday. It really helped me actually. It helped me to calm down. Helped my emotions – my anxiety, nervousness. Helped me to calm down really. It took the edge off the presentation* (Roberta)

*I have done it a few times for other things, for example when I am feeling a little bit worried. ...It was something to do while waiting outside. Tapped in the corridor!* (Anne)

**Theme two: Using other complementary therapy skills**

The students were undertaking a Foundation Degree in Complementary therapy and had a range of complementary skills, including aromatherapy and reiki to reduce their anxiety and many made good use of these instead of EFT to help them relax and reduce their anxiety prior to their presentation:
Not used EFT, but did visualisation and used hypnotherapy on myself. (Ruby)

No, used reiki and yoga techniques and my own aroma treatment. (Georgia)

No, not used it today, but used calming oils. I have been using it and found it really helpful. Used it to help when I meet people and to have my photo taken. (Anita)

Theme three: Reasons for not using EFT

Five students indicated that they although they had used EFT successfully for anxiety following the session, they had not carried out any EFT immediately prior to the presentation. Reasons for not using EFT included forgetting, feeling silly tapping it in public, uncertainty that they were doing it right and not being able to tap due to obsessive compulsive disorder (OCD):

Tapped in the morning and before driving in to do the presentation and it helped bring down my anxiety levels, but I didn’t tap immediately before the presentation, as I was in a busy corridor and felt daft doing it. That would have really helped. (Cathy)

I did not use it on the day of the presentation as I was not sure I was doing it ‘right’ (Lynne)

I struggled with EFT as I have OCD and I kept counting the number of taps, rather than focusing on my anxiety. (Lee)

Two students, who forgot to use EFT, reported their regret at not using it:

No. Didn’t. I should have [used EFT]... I think if I’d used it, it would have been a good idea. I would have done better. Can’t believe I didn’t actually. (Amanda)

Yes, used it in the past, but not today. I didn’t even think about it. That would have been a good idea! I just forgot I was in such a panic. Have used it for headaches and stuff in the past and it worked. (Alison)

Discussion

This small study explored the feasibility of using group EFT in reducing presentation anxiety in University students and enhancing academic performance. The results suggest that group EFT is an effective intervention in reducing presentation anxiety as measured using SUDS and HADS and that EFT can be used to reduce anxiety and enhance performance. Indeed, the anxiety reducing effects of EFT reported in this study are consistent with the findings of previous research that has used EFT to reduce exam stress and presentation anxiety in high school and university students (Boath et al., 2012b; Schoninger, 2004; Sezgin & Ozgin, 2009; Feinstein 2008).
The qualitative data analysis revealed three overarching themes. Students on the whole felt that EFT was very useful in reducing their presentation anxiety.

There was no significant difference in pre and post depression scores on the HAD depression subscale. This is in line with previous research (Boath et al., 2012b) and reflects the focussed nature of EFT and that the tapping was aimed at reducing anxiety and not depression.

Eight is the cut-off point for caseness for both the anxiety and depression subscales of the HAD. A score above 8 on either subscale suggests a clinical level of depression or anxiety. The depression scores pre and post EFT were substantially below 8, suggesting that students were not depressed. However, the mean anxiety scores pre EFT of 10.22 were well over the clinical cut-off point for anxiety and this highlights the high level of anxiety students felt in relation to their presentation. The mean anxiety levels following the EFT intervention reduced to 7.83, which suggests that their anxiety had reduced to a non-clinical level. It is feasible that a further round of EFT may have resulted in even greater reductions in anxiety levels (Craig, 2011) and future research should explore this.

In line with other EFT research, there were no ethical or safety issues identified during the study. Only one student with obsessive compulsive disorder (OCD) highlighted that she could not perform EFT properly as her OCD involved counting and meant that she concentrated on counting the number of taps and not her anxiety. This may be a limitation of EFT, however the literature suggests that EFT can be a useful treatment for OCD and offers solutions to this issue including varying the order and number of tapping points (Moran, 2012; Bressler, 2011).

Research has questioned the validity of using self-report scales alone (Carrell & Williamson, 1996 cited in Jones). The HADS and SUDS scales were not repeated on the day of their presentation. Further research is currently underway that will do this. However the qualitative results suggest that the students who used the EFT on the day of their presentation found it extremely helpful.

Although the results suggest that EFT is an effective group treatment for presentation anxiety and to enhance performance, these are tentative due to the limitations of the study outlined below,

The use of a convenience sample of complementary therapy students may have meant that many were more inclined towards the use of a psychological intervention than students studying for other courses. The authors have carried out a similar intervention with Sport Science students and many of them were initially very sceptical. Indeed the authors’ clinical experience suggests that many people find the idea of EFT absurd, let alone the idea that this can also have an impact on their psychology and other research supports this assertion (Burkeman, 2007; Gaudiano & Herbert, 2000).

Public speaking anxiety is often reported to be greater in women that in men (Furmark, 2002; Pollard & Henderson, 1998). The students were all women and so further research is currently underway with a cohort of male and female students to assess if there is a gender difference. The present study did not obtain demographic informational such as age, ethnicity or disability future research will include these variables.
There was a long period (8 weeks) between the EFT training session and the presentation. Students were sent a reminder email. However they were not directly instructed to continue tapping, but were told that they could use EFT if they wished prior to their presentation. Although 8 weeks seems long other EFT research has demonstrated that a single brief EFT session is effective and that the results are maintained for up to 6 months when EFT is used for weight loss or phobias (Stapleton et al., 2011; Wells et al., 2003). However, it may be that the acute, situational nature of presentation anxiety, requires further intervention. This study did not take into account factors such as personality and learning styles that have been shown to play significant roles in influencing academic achievement (Komarraju et al., 2011; Richardson et al., 2012). Furthermore, the use of learning and study skill in enhancing performance (Hamblet, 2012) was not addressed. Future research could consider exploring these traits.

Overall the students who used EFT had a mean grade of 10.73, equating to an upper second, whereas those who did not use EFT had a mean grade of 7.7, which equates to a lower second. However, students’ prior academic performance in presentations was not assessed, as previous presentations had been group presentations and this was the only individual presentation they had during their course. It is therefore impossible to conclude that EFT enhanced their performance, as it may be that students who used EFT were less anxious, or were simply more adept at using mechanisms at their disposal to enhance their performance. Future research should compare outcome with marks on previous presentations. I

The sample size in the current study was small (n=46), they were all women and there was no control group. The question therefore arises as to whether the findings from this small select group of female university complementary therapy students could generalise to a wider population of students. In order to explore this an RCT of EFT versus a lecture on presentation skills using larger cohort of male and female students doing a sports science degree is currently underway. (Boath et al., ongoing).

27 out of the 46 students (59%) did not carry out any further EFT and this is higher than rates of ‘dropout’ in other studies that have used EFT (Karatzias et al 2011(39%); Brattberg, 2008 (40%). This higher rate may be due to the fact that this cohort of complementary therapy students had other complementary skills, such as aromatherapy that they could call on to reduce their anxiety, as highlighted in the qualitative analysis. The most common reason for not using EFT was that they had forgotten about it, or had forgotten how to do it. Many of those who forgot also added that they wished that they had remembered and felt that their performance would have been enhanced if they had used it.

For the 19 students who did continue tapping, the frequency and duration of tapping was not assessed. Future research could employ a diary method to record this and also explore the duration of treatment effects.

Although there was an immediate effect on SUDS and the anxiety subscale, the evidence for long term effects was not addressed in this study as the HADS and SUDS were not repeated on the day of the presentation. Future research should consider assessing students immediately prior to and after their presentation.
The HADS assesses feelings of depression and anxiety over the past week. A scale such as the Spielberger State-Trait Anxiety Inventory (STAI; Spielberger et al., 1983), that has been used in other anxiety research, and distinguishes between the temporary condition of ‘state anxiety’ and the more general, long-standing ‘trait anxiety’ may have been a more appropriate choice of outcome measure.

The scales used were both self-report and although the results highlighted high levels of anxiety in both groups, the sample was not therefore derived from a clinically diagnosed anxious population.

The HAD and SUDS scales do not address presentation anxiety per se and so scales designed to assess apprehension, confidence in public speaking and communication competence such Personal Report of Communication Apprehension, Personal Report of Confidence as a Speaker and Self-Perceived Communication Competence (Hancock et al., 2010) would be valuable future outcome measures.

The outcome measures used were both self-report and although the results highlighted high levels of anxiety in the students, the sample was not derived from a clinically diagnosed anxious population. Future research would benefit from the use of a clinician assessed scale, such as the Structured Clinical Interview for DSM Disorders.

Research has also shown that EFT is effective with large groups of people (Rowe, 2005) and so has the potential to offer very efficient and cost effective interventions to student groups. However, it would be interesting to explore if individual sessions with students were more effective.

The lead researcher (EB) was not blind to treatment group. The researchers who collected the data and interviewed the students (EB and AC) were also the module lead and award leader for the group and were therefore known to the students.

The students were aware that the authors were highly experienced advanced EFT practitioners and that all have a strong allegiance to EFT. This may have influenced students’ responses via verbal or non-verbal cues and may well have strengthened the ‘client-therapist’ relationship which is known to have a positive effect on treatment outcome.

**Conclusion**

Despite the limitations of the study, the results suggest a potential role for EFT as a group intervention in reducing presentation anxiety and potentially enhancing academic performance in University students. In addition, given that it takes a very short time to train students to use EFT, and that once learned, EFT can be very effectively self-administered suggests that EFT may be a useful addition to curricula for courses that include oral presentations. Furthermore, EFT can easily be transferred to other aspects of student life, for example exam stress and so could be used to reduce anxiety around exams and potentially enhance exam performance. Further research is planned to address this.

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**Conflict of interest**

Innovative Practice in Higher Education
Ethical approval

Ethical approval was obtained from Staffordshire University.

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The effect of emotional freedom technique on stress and anxiety in nursing students: A pilot study

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Background: Stress and anxiety have been identified as significant issues experienced by student nurses during their education. Some studies have suggested that the stress experienced by nursing students is greater than that experienced by medical students, other non-nursing healthcare students, degreed nurses, and the female population in general. A recently introduced energy type therapy, emotional freedom technique (EFT), has shown some success in reducing symptoms of anxiety, stress, and fear in a variety of settings.

Objective: The purpose of this study was to determine the efficacy of EFT in decreasing anxiety and stress as a potential intervention to assist students in stress management.

Design: The study used a mixed method design of both qualitative and quantitative measures. Quantitatively, in a one group pretest–posttest design, participants received group instruction in the technique and were encouraged to repeat it daily. Self-reported anxiety was measured at baseline, and then weekly for four weeks using the Perceived Stress Scale (PSS) and the State–Trait Anxiety Inventory (STAI). The qualitative survey was completed by participants at the end of the study in order to capture a more subjective experience.

Setting: The pilot study was conducted in a two-year college in the southeastern region of the United States.

Participants: All enrolled nursing students in an associate degree nursing program were invited to participate. Participation was voluntary, resulting in an original convenience sample of thirty-nine nursing students (N = 39).

Methods: Data collection instruments included a demographic questionnaire, pretest State–Trait Anxiety Inventory (STAI) and Perceived Stress Scale (PSS). A qualitative questionnaire was also administered at the end of the four weeks. STAI and PSS were administered weekly. Data analysis using RMANOVA was performed at the second, third and the fourth week.

Results: Decreases in anxiety as measured on both the STAI and PSS were statistically significant (p = .05). For PSS, STAI state and trait data, the reduction in self-reported stress was statistically significant with a mean difference baseline to week 4. Qualitative data suggested that nursing students experienced a decrease in feelings of stress and anxiety including a decrease in somatic symptoms.

Conclusions: Overall, findings suggested that EFT can be an effective tool for stress management and anxiety relief in nursing students.

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Stress
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Introduction

Psychological stress has long been identified to be an unfortunate consequence of a career in nursing. Conditions which contribute to this are increased job demands, inadequate staffing, increased acuity of patients, lack of administrative support, a rapidly changing healthcare environment, and the emotional challenges of working with the sick and dying. Stress and anxiety have also been identified as significant issues experienced by student nurses during their education. In fact, some studies have suggested that the stress experienced by nursing students is greater than that experienced by medical students, other non-nursing healthcare students, degreed nurses, and the female population in general (Baldwin, 1999; Beck et al., 1997; Rhead, 1995). Nursing students have identified major areas of stress as coursework, clinical experiences, and personal issues (Jones and Johnston, 1997, 2000; Lindop, 1999; Timmins and Kaliszer, 2002; Elliott, 2002; Rhead, 1995; Jimenez et al., 2010).

A variety of stress management approaches for nursing students have been suggested and tested. Jones and Johnston (2000) made a strong endorsement for a multifaceted approach to stress reduction using problem solving, time management, relaxation techniques, as well as other interventions. This same study also emphasized the need for interventions that dealt with the interface between student nurses and the healthcare organization. Galbraith and Brown (2011), in their comprehensive literature review of successful interventions for
managing stress, identified that the most successful interventions had a strong theoretical basis and included, “cognitive reappraisal of maladaptive cognitions, as well as relaxation” (p. 718).

Although the role of complementary therapies in the treatment of stress and anxiety is not new, there has been increased interest in the role of energy or biofield therapies in reducing anxiety and promoting feelings of well-being. Biofield therapy is described by the National Institutes of Health’s National Center for Complementary and Alternative Medicine (2012) as “the manipulation of various energy fields to affect health” (p.1). A recently introduced energy type therapy is emotional freedom technique (EFT). While similar to other energy based therapies such as Reiki and Healing Touch, EFT may have more in common with acupuncture, a well-known Chinese medicine technique (Church, 2010). EFT combines the tapping of meridian points with a focus on the feared object or negative emotion to provide desensitization to the fear. In addition, there is repetition of a statement of self-acceptance, suggested to contribute to cognitive restructuring, a well-known psychotherapeutic technique, where the individual identifies and corrects negative thoughts (Church, 2010). Tapping the meridian points relieves stress, and through the application of this non-traumatic physical stimulus while also introducing the fear with self-acceptance, the negative somatic response that is associated with that memory and all similar memories is interrupted (Craig, 2010).

EFT is currently receiving much attention in the treatment of compulsive behavior, phobias, anxiety, and post-traumatic stress disorder. Therapeutic results and relief of symptoms are often quick and dramatic, demonstrating rapid improvement in the participant’s ability to tolerate stress.

Review of the Literature

An examination of the literature was performed to better understand the prevalence of anxiety reported by nursing students and the effectiveness of a variety of interventions. The review focused on three main questions: (1) Has anxiety been identified as a significant issue for nursing students? (2) What particular interventions have been successfully applied to reduce anxiety? and (3) Has EFT been identified as a potential intervention for decreasing anxiety in nursing students or other groups?

A literature search was performed using the Cumulative Index to Nursing and Allied Health Literature database (CINAHL) for the period of October 2000 through 2011. This database was chosen due to its extensive coverage of nursing, biomedicine, health sciences, and alternative/complementary medicine. Search elements included anxiety, stress, nursing students, complementary therapies, energy therapies, and emotional freedom technique (EFT). In the case of EFT, since only a scant number of articles were recovered from the CINAHL search, an EFT website, http://www.eftuniverse.com was also used to identify peer reviewed articles.

A limited number of articles were generated regarding stress and anxiety in nursing students requiring an expansion of the search to 1995. This may reflect current lack of interest in this topic as a research focus even though in the contemporary nursing education environment students report stress and anxiety as concerns. Deary et al. (2003) examined a cohort of nursing students to better understand causes of stress, burnout, and attrition using six different instruments and concluded that stress and the use of negative coping skills increased as the nursing program progressed and psychological symptoms increased. Watson et al. (2008) found that life changes and stress contributed to distress, and that newly qualified nurses had a higher reported stress than nursing students. Gibbons et al. (2008) identified sources of distress to include new clinical experiences, lack of support from staff, and a number of stressors regarding coursework demands and grades. Jimenez, Navia-Osorio and Diaz. (2010) uncovered three kinds of stressors in nursing students, clinical, academic, and external, with clinical rotations the most intense source of stress.

Interventions for relieving the stress and anxiety usually focused on a multifaceted approach. Charlesworth et al. (1981) evaluated a five week stress management program for nursing students and found that those enrolled in the program experienced a reduction in test anxiety. Boutin and Tosi (1983) compared the effects of hypnosis and the combination of hypnosis and cognitive restructuring against a control and placebo group and noted better results from the group receiving the combined approach. Jones and Johnston (2000) designed a six session stress management intervention, which included a presentation on coping skills, problem solving strategies, cognitive techniques, time management skills, and relaxation techniques, showing anxiety was less in those students receiving the intervention. Hamrin et al. (2006) reported that a peer-led support group demonstrated self-reported reductions in anxiety and improved coping. Hsiao et al. (2010) found that spiritual health was negatively associated with clinical practice stress and depressive tendency.

Although there was no information available regarding the use of EFT in nursing students, the literature did suggest that EFT might be successful in decreasing anxiety and feelings of distress in a variety of populations and settings. Wells et al. (2003) found that EFT was more effective in reducing human phobias of small animals than a comparative group using deep breathing. Waite and Holder (2003) compared EFT against other methods and a control group and found EFT to be just as effective at reducing fear as the other interventions, but more effective than the control group. Rowe (2005) compared a group using EFT pre-treatment to post-treatment, finding a statistically significant decrease in all components of psychological distress. Brattberg (2008) demonstrated a statistically significant improvement in pain, anxiety, depression, vitality, social function, and performance in a group of women with fibromyalgia who received EFT. Church et al. (2008) examined the effects of EFT on psychological symptoms in a sample of veterans finding a statistically significant improvement in symptoms. Church (2009a) studied the effect of EFT on athletic performance in basketball players, which demonstrated an improvement in the number of free throws, but not jump height. Additional studies by Church (Church, 2009b; Church et al, 2010), on small groups of veterans suffering from post-traumatic stress disorder (PTSD) indicated significantly less psychological symptoms when compared to control groups.

Church and Brooks (2010) investigated the effects of multiple rounds of EFT with healthcare workers on physical discomfort, emotional childhood experiences and substances craved finding a reduction in symptoms. Church et al. (2012a, 2012b) undertook a study on EFT and its effect on depression among college students with lower depression scores for those using EFT. Church et al. (2012a, 2012b) investigated the effect of EFT on the salivary production of cortisol and found that the EFT group had significantly less production of cortisol than other study groups.

To summarize the literature, stress and anxiety have been identified as areas of concern for nursing students. A variety of stress management approaches have been suggested and tested with the most successful interventions having a basis in cognitive reappraisal and relaxation. EFT has been recently introduced and is currently receiving much attention in the treatment of compulsive behavior, phobias, anxiety, and post-traumatic stress disorder. With the gap in the literature on the use of EFT in nursing students, the purpose of this project was to determine the efficacy of emotional freedom technique (EFT) in decreasing anxiety and stress in nursing students enrolled in an associate degree nursing program.

Methods

The research proposal, study design and all participant related content was reviewed and approved by the university and healthcare system Institutional Review Boards (IRB). In observance of IRB guidelines, all participants were provided a description of the study and how
privacy and confidentiality would be maintained; written, informed consent was obtained. All participants selected a unique confidential identifier to further provide confidentiality.

**Study Design**

This study was a mixed design with both quantitative and qualitative approaches. Quantitatively, a quasi-experimental, time series, pretest-posttest design was selected and qualitatively, a post-study, short answer questionnaire was chosen.

**Setting**

The setting was a hospital based associate degree nursing program in the southeast region of the United States with a nursing student body of approximately 250 students. Only nursing students were included. Group sessions were held in classrooms at the college with access only to those participants admitted to the pilot in order to provide participants with confidentiality.

**Sample/Recruitment**

Participants in the pilot study were a convenience sample of associate degree nursing students recruited by a variety of means including college newsletter announcements, email invitation, electronic, and paper poster displays. Exclusion criteria included those currently being professionally treated for anxiety and those who were already regular users of EFT. The rule of 30 was applied to determine the sample size for the pilot study. Burns and Grove (as cited in White, 2012) suggest that in quantitative research at least 30 participants are needed in each group being studied. Melnyk and Cole (2011) also state that pilot studies are conducted with smaller sample sizes of perhaps 30–40 participants. The initial sample size was 39 participants, one participant dropped out of the study the second week and a duplicate case was identified in the demographic data sample and was removed. This resulted in a final demographic sample of 37. During data analysis it was noted that there were additional duplicate cases and that some participants did not complete the PSS, STAI trait and state survey every week. Additional duplicate cases were removed and cases without full data sets for week 0, week 2 and week 4 were also removed. This resulted in an sample size of \( n = 31 \) for PSS and a sample of \( n = 30 \) for STAI state and trait.

**Study Intervention**

The EFT technique, The Basic Recipe (Craig, 2010; Church, 2010) was used as an intervention in the study. EFT involves the light manual tapping of traditional acupuncture meridian points (acupoints) on the head, face, neck, chest and hands while verbally confronting the feared object or stressor and repeating a phrase of reassurance. Participants are asked to repeat the phrase, “even though I have this feeling of stress and anxiety, I deeply and completely accept myself” while simultaneously tapping the acupoints. After the initial round of tapping accompanied by this phrase, the participants are instructed to shorten the phrase to ‘this feeling of anxiety, stress’ or some other short phrase that focuses on the fear. Participants are then encouraged to repeat rounds of this process until they note their anxiety to be decreased.

**Measurement Tools**

Three instruments were used in this project, the State–Trait Anxiety Inventory (STAI) (Spielberger et al., 1983), the Perceived Stress Scale (PSS) (Cohen et al., 1983) and a qualitative questionnaire developed by the researcher. The STAI is a 40 item self-report instrument that measures both state and trait anxiety using a four-point Likert scale. State anxiety is defined as a temporary condition of anxiety while trait anxiety is a longstanding anxiety trait. Reliability has been established at .92 for state anxiety) and .90 for trait anxiety (Spielberger et al., 1983). Cohen et al. (1983) developed a 14-item self-report, one-dimensional tool for measuring perceived stress called the Perceived Stress Scale (PSS) which uses a 5-point Likert scale and has an established reliability of 0.84, 0.85, and 0.86 for three samples. The 14-item instrument was revised to a 10-item instrument with a reliability of 0.78 (Cohen and Williamson, 1988). The 10-item PSS was used for this project.

Basic demographic data including age, gender, marital status, race/cultural background, years of previous college, current course enrollment, previous experience with EFT, and current involvement with other anxiety/stress reduction interventions were also collected.

The pilot began with an introductory session (week 0) followed by four follow-up sessions, each a week apart. Three introductory sessions were offered in order to meet student scheduling needs. In the introductory session, the researcher provided participants with step by step instructions for the technique using the EFT technique as described in The Basic Recipe (Craig, 2010), a demonstration and the opportunity to practice. Participants were encouraged to practice the technique daily. During the first follow-up session (week 1) and the second follow-up session (week 2), participants met as a group. Multiple sessions were offered each week to meet student schedules. During these sessions, the technique was practiced and PSS, STAI instruments were completed via SurveyMonkey linked to a study website. No group session was held during week 3 and participants practiced the technique independently and were instructed to complete surveys remotely. In the final group session (week 4), in addition to the PSS, STAI surveys, a qualitative questionnaire was completed and a debriefing statement provided. A gift certificate for $20.00 was provided for participants who completed the study.

**Data and Results**

Through SurveyMonkey, demographic and quantitative data was exported to the Statistical Package for the Social Sciences, version 20 (SPSS) for data analysis. Four participant files were excluded from the data sample because of missing EFT log or duplicative project ID numbers.

**Sample Demographics**

There were thirty-nine \( n = 39 \) initial participants in the pilot study. One participant dropped out before the second week of the study due to increased anxiety and desire to seek professional help. The remaining 38 participants continued in the pilot through its duration of four weeks. A duplicate case was identified in the demographic data sample adjusting the final demographic data sample data to 37. The demographic sample consisted of 33 females and four males with an average age of 34. Marital status reflected 37.8% married and 62% single. Most (62%) were employed, with 40.5% working 16–30 h per week. Highest level of education varied, with the majority of the sample already having a baccalaureate degree (54%), 16.2% with a graduate degree, 8% with an associate degree, and 16.2% with previous college and no degree. Only 5.4% listed their highest level of education as a high school diploma or GED. The majority of students were in the intermediate level of the nursing program (51.3%), with 37.8% in the fundamental level, and 10.8% in the advanced level. Average GPA range was self-reported and results were 3.5–4.0 (54%), 32.4% in the 3.0–3.5 range, 10.8% in the 2.5 to 3.0 range, and 2.7% in the 2.0–2.5 range. A summary of the sample’s demographic data can be found in Table 1.

**Quantitative Analysis**

A repeated-measures, analysis of variance (RMANOVA) was performed comparing baseline, week 2, and week 4 for each of the quantitative instruments, PSS, STAI-state, and STAI-trait. Although data was collected at baseline and then weekly for 4 weeks, when data was
examined and cleaned for missing cases, duplicate cases, and verification that the same participants were represented in each repeated measure, some cases were present in the PSS data set for week 1 and 3, which were not present in week 1 and week 3 STAI data sets. Additionally, after data examination and cleaning, week 1 and week 3 had a decreased sample size of \( N = 28 \) for STAI state and trait. To maintain the sample size at the \( N = 30 \) minimum recommendation for a pilot study (Melnyk and Cole, 2011; Burns and Grove, as cited in White, 2012), data analysis was performed on baseline, week 2, and week 4 data which after cleaning had adequate sample size.

RMANOVA assumes that the dependent variable is continuous, is approximately normally distributed, has sphericity, and has one independent variable. The sphericity assumption was met in the STAI-state results but violated in both the PSS and STAI-trait results. To rectify this violation, an adjustment to degrees of freedom was made through Greenhouse-Geisser correction and sphericity was met. A traditional alpha level of .05 was chosen as the indicator of statistical significance.

Data analysis supported the hypothesis that nursing students will have reduced anxiety relative to baseline as measured by the Perceived Stress Scale, the State–Trait Anxiety Inventory.

**PSS Results**

Mauchly’s test of sphericity, an important assumption for RMANOVA, was violated (significance of the approximate Chi-square of 9.18 is .010, a significance level = 0.05) and so a Greenhouse-Geisser correction to degrees of freedom was applied. Greenhouse–Geisser correction values demonstrated that the mean scores for PSS week comparisons were significantly different (\( F(1.6, 47.2) = 24.59, p < 0.0005 \), partial eta squared = .45). The Bonferroni pairwise comparison tests demonstrated that the mean difference of 3.16 was significant (\( p = .05 \)) from week 0 (baseline) to week 2; the mean difference of 2.52 was also significant from week 2 to week 4 (\( p = .05 \)) and the mean difference of 5.68 was significant from week 0 (baseline) to week 4. Descriptive statistics for the sample (\( n = 31 \)) demonstrated a decrease in PSS mean from baseline of 23.87 (std. deviation 6.51) to 20.71 (std. deviation 6.17) in week 2 and 18.19 (std. deviation 6.86) in week 4 (\( p = .05 \)). This represents a 23.8% decrease in anxiety as measured by PSS. Descriptive statistics results are presented in Table 2. A profile plot demonstrates the difference in means over the 4-week period in Fig. 1.

**STAI State Results**

Mauchly’s test of sphericity for STAI state, with in subjects effect (\( P = .860 \)) was not found to be statistically significant (\( p > .05 \)) and the sphericity assumption was not violated. The observed \( F \) value was statistically significant, \( F(2, 58) = 22.22, p < .001 \), partial eta squared = .434. Bonferroni pairwise comparison tests suggested that although there was a decrease in anxiety from week 0 (baseline) to week 2 (mean difference 3.33) this change was not significant. However, when comparing week 2 to week 4, a mean difference of 9.7 was found to be significant (\( p = .05 \)). Furthermore, when comparing week 0 (baseline) to week 4, the mean difference of 13.03 was significant (\( p = .05 \)).

Descriptive statistics for the sample (\( n = 30 \)) demonstrated a decrease in mean from baseline of 38.13 (std. deviation 10.03) to 34.8 (std. deviation 10.78) in week 2 and 25.1 (std. deviation 7.42) in week 4 (\( p = .05 \)). This represents a 34.2% decrease in anxiety as measured by STAI state. Descriptive statistics results are presented in Table 3. A profile plot demonstrates the difference in means in Fig. 2.

**STAI Trait Results**

Mauchly’s test of sphericity was found to be significant (\( p = .009 \)) and the sphericity assumption had been violated. With a correctional adjustment made to degrees of freedom through Greenhouse–Geisser, mean scores for anxiety were significantly different (\( F(1.56, 45.19) = 20.48, p < 0.0005 \)). Bonferroni adjustments for multiple comparisons demonstrated a decrease in anxiety from week 0 (baseline) to week 2 (mean difference 3.13) and this change was significant (\( p = .05 \)). A comparison of week 2 to week 4 also demonstrated a decrease in trait anxiety (mean difference 4.4) and this change was statistically significant (\( p = .05 \)). The comparison of week 0 (baseline) to week 4 also demonstrated a decrease in trait anxiety (mean difference 7.53) and this change was also significant (\( p = .05 \)).

Descriptive statistics for the sample (\( n = 30 \)) demonstrated a decrease in mean from baseline of 37.87 to 34.73 in week 2 and 30.33 in week 4 (\( p = .05 \)). Overall, this represents a 19.9% decrease in anxiety when comparing baseline to week 4. Descriptive statistics results are presented in Table 4. A profile plot demonstrates the difference in means in Fig. 3.

**Qualitative Results**

Qualitative data, as measured by the self-report of nursing students in a six-item questionnaire developed by the researcher, reported a perceived reduction in anxiety and stress. Questions covered the following

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**Table 1**

Demographic data.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Marital status</th>
<th>GPA</th>
<th>Employment</th>
<th>Program level</th>
<th>Highest education</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 F</td>
<td>37.8% married</td>
<td>3.5–4.0</td>
<td>62% employed</td>
<td>37.8% F</td>
<td>54% bachelors</td>
</tr>
<tr>
<td>4 M</td>
<td>62% single</td>
<td>3.0–3.5 32.4%</td>
<td>40.35% at 16–30 h/wk</td>
<td>51.3% I</td>
<td>8% associate</td>
</tr>
</tbody>
</table>

---

**Table 2**

Descriptive statistics PSS baseline, week 2 and week 4, \( p = .05 \).

<table>
<thead>
<tr>
<th>PSS score</th>
<th>Mean</th>
<th>Standard deviation</th>
<th>( N )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline</td>
<td>23.87</td>
<td>6.51</td>
<td>31</td>
</tr>
<tr>
<td>Week 2</td>
<td>20.71</td>
<td>6.17</td>
<td>31</td>
</tr>
<tr>
<td>Week 4</td>
<td>18.19</td>
<td>6.86</td>
<td>31</td>
</tr>
</tbody>
</table>
themes: ease of technique, changes in mood or feelings, immediate reduction in stress, changes in anxiety or stress after 4 weeks, changes in mood after 4 weeks, and other feelings or experiences with EFT. Response rate was 100% on all six questions. A text analysis was performed through SurveyMonkey on qualitative data to identify frequently used words and phrases. In addition, qualitative data was manually reviewed for individual comments, and repeated themes were identified and categorized.

For the question, “Did you experience any changes in mood or feelings immediately after using the technique” a text analysis revealed that 87% of the students felt calmer, more relaxed after using EFT. Comments included:

“I felt a decrease in moods of tension and anxiety, and an increased feeling of control over the present situation I was in,” “I was not as anxious and it transferred to not being in a bad mood,” and “EFT did calm me down when I used it 15–30 minutes before a test.”

In addition to the feelings of increased calm and relaxation, 17% reported that the technique helped them sleep:

“This technique worked especially well when I woke up during the night (which happens rarely, but is annoying), I would do EFT and go right back to sleep.” “Yes, I felt calm, sleepy, and relaxed. Most of the time, when I use EFT at night, I fall right asleep afterwards.”

For the question, “Did you experience any reduction in anxiety or stress immediately after using EFT? If so, how did you experience the change (decreased heart rate, less agitation, etc.)?” most participants (82%) described an immediate calming, relaxing, or less tension:

“I feel a sense of calm and relaxation after using the technique as many times as it took to take my mind off of the stress and anxiety.” “Right away. It was very effective in reducing my stress in minutes.” and “Yes, I was almost always instantly calmer after 1 or 2 rounds of doing it.”

Many participants (51%) also reported a decrease in somatic symptoms:

“Yes, decreased heart rate and decreased ‘tightening’ or weight in the pit of my stomach.” “Yes. Less pressure in my chest.” and “I could feel this relief with the reduction of tension in my jaw, my heart rate would decrease, and I could feel the tension leave my shoulders and neck.”

For this same question, some (10%) also reported an increased feeling of control:

“More in control, breathing slowed.” “Yes, I felt calmer and more in control of the current situation immediately after doing EFT.” and “I felt that using EFT gave me a perceived feeling of control and security.”

For the question, “After the four weeks of using EFT, did you experience any overall change in mood or feeling?” A total of 38% reported that their mood had not changed but they did find EFT to be an effective tool for decreasing anxiety:

“Not really. I feel it worked better for me as an acute therapeutic tool.” “Not particularly. I felt the technique worked to temporarily relieve stress; I don’t think I experienced an overall change in mood.” and “I still experience worries and nervousness; however, EFT has provided a way to relieve those feelings, at least temporarily and provides a way to better control and manage those feelings.”

In contrast, 33% reported that EFT might have impacted their mood:

“I believe that my mood has improved since beginning EFT.” “Yes, I felt happier. I feel that I am an easier going person.” and “I changed to more of a positive mood/feeling while using EFT.” Some 20% of the participants were not sure: “My overall mood has not been drastically changed, although I would say that my overall attitude has improved greatly and I am more successful at being positive on a daily basis since practicing EFT.” “It is really hard to say because I have so many other things going on right now. I have had some personal issues this past month and I have a final coming up.” and “I feel great, but I don’t know if that is because of EFT.”

In the next inquiry, “After four weeks of using EFT, did you experience any overall change in feelings of anxiety or stress? If so, how did you experience the change (decreased heart rate, less agitation, etc.)”, 56% of participants admitted to experiencing less stress and anxiety after four weeks of using the technique. Comments included:

“I would say overall I am somewhat less anxious and stressed because things don’t seem to make me upset quite as easily or quickly.” “Slightly.
I feel calmer.” and “Levels of anxiety have gone down to a more tolerable rate.”

A large number of respondents (43%) also reported that they were better able to cope after 4 weeks:

“I feel more empowered to tackle my stress level and confident that going forward I will use the tool to keep my stress levels at a more comfortable level”, “I felt like I still had stress but it was better controlled using EFT,” and “EFT enabled me to experience a temporary relief of stress and anxiety.”

Some participants (12%) reported no change in stress and anxiety over the four weeks:

“I don’t believe so. My heart rate and breathing become increased when I get anxious.”; “No change. I do not wrestle with anxiety very much.” and “I don’t think overall but I was able to use EFT to reduce my stress in immediate situations”.

For the question, “Are there any other feelings or experiences you would like to comment on regarding your practice of EFT?” A total of 82% of participants provided positive comments about their experience with the technique; some of these include:

“I would say it’s definitely worthwhile to have in ‘your tool bag’ as a way to lessen anxiety as it’s quick & easy to incorporate into one’s daily routine.” and “I feel much more able to manage my anxiety. Even though I still feel anxious at times, I calm down more quickly.”

Discussion

Both qualitative and quantitative statistical analysis supported the pilot hypotheses, that nursing students participating in EFT would have reduced anxiety relative to baseline as measured by the Perceived Stress Scale, the State–Trait Anxiety Inventory, and a qualitative survey. The qualitative data provided participant feedback rich in expression of improved feelings of calm, relaxation, and diminished agitation and tension. Notably, some participants also identified a decrease in negative somatic symptoms, as well as an improved ability to fall asleep. Most participants also described that the technique provided them with a feeling of control over stress and anxiety, another tool for stress management and coping.

For PSS data, the reduction in self-reported stress was statistically significant with a mean difference baseline to week 4. PSS data supported claims in the literature that the stress experienced by nursing students is greater than that reported by the female population in general (Baldwin, 1999; Beck et al., 1997; Rhead, 1995). This is strongly reflected in PSS results where baseline PSS measurement of stress in this sample was considerably higher than Cohen and Williamson’s (1988) reported PSS normative means for women (mean 13.7, std. deviation 6.6). The elevated perceived stress reported by nursing students in this sample may reflect a greater perception of stressful events, the need for better coping strategies, and perhaps personality attributes that are particular to those who chose the nursing profession.

Conversely to PSS, STAI state results for baseline anxiety were just below Spielberger et al.’s (1983) normative values for females (mean 38.76, std. deviation 11.95) and did not reflect the claim in the literature that the stress experienced by nursing students is greater than members of the general female population. Most importantly and similar to PSS results, for STAI state data, reduction in anxiety when comparing baseline to week 4 was also statistically significant. STAI trait results for baseline anxiety are also just below Spielberger et al.’s (1983) normative values for females (mean 40.40, std. deviation 10.15). Similar to PSS and STAI state results, the reduction in STAI trait scores baseline compared to week 4 was also considerable. This result is surprising and differs with expectations and results in the literature, since trait anxiety is reflective of one’s personality trait for anxiety and is expected to be stable over time. This may reflect that although the explanation to students completing the STAI trait tool was to comment regarding their usual or longstanding level of anxiety, students may have been commenting on their current level or state of anxiety.

Although the exact mechanism behind EFT has not been identified, Church (2010) suggests that tapping of meridian points while focusing on the fear or negative emotion decreases the associated feelings of anxiety. Repeating of a statement of self-acceptance may contribute to changing ones thinking or appraisal of the fear. Lane (2009) proposed that acupressure tapping might produce “a biochemical relaxation response that counter conditions anxiety producing stimuli and traumatic memories” (p. 11). Both of these explanations support Galbraith and Brown’s (2011) suggestion that cognitive reappraisal and relaxation play a key role in effective stress management techniques.

The literature suggests that EFT has been shown to significantly decrease anxiety, and feelings of distress in a variety of populations and settings. These settings and conditions included veterans, phobic individuals, athletes, individuals diagnosed with fibromyalgia and others. Both qualitatively and quantitatively, the results of this pilot study support that EFT may also decrease the feelings of stress and anxiety experienced by nursing students as well as offer them a means for coping or give them some measure of control over existing anxiety.

The study did have a number of limitations, one of which is its small sample size (n = 39), which limits the ability to apply study results to the general population. There was also potential for selection bias due to convenience sampling. This selection or sampling bias, inherent to convenience sampling, was accepted in this study with the knowledge that it also decreased the ability to apply the study results to the general population. In addition, the nature of nursing being a profession dominated by females, persons of male gender were diminished from the sample. This again represents a selection bias and limits the ability to generalize study results across genders. Attention bias may also have been a limiting factor since participants were aware of their involvement, and the study hypothesis. As a result of this bias, participants may have given a more favorable response when responding to the instruments. Participants were all familiar with the researcher as a current or former instructor. This could potentially influence participants providing a more favorable response to instrument questions. However, the 98% study retention rate suggests that the efficacy of the EFT was instrumental in keeping participants engaged.

Conclusions and Implications for Nursing

EFT can be another tool for successful stress management and anxiety relief in nursing students. Beyond efficacy, the simplicity and immediacy of EFT make it especially attractive. The technique can be taught quickly and then practiced by the individual with no need for frequent therapist intervention or the associated costs. Even more important, therapeutic effects have been reported to occur quickly, perhaps even instantaneously after performing the technique. Stress reduction and the resulting feelings of well-being and self-efficacy promote psychological health and hardiness. The psychologically hardy individual is better able to cope and endure the certain stressors of academics and later, the professional environment. Improved academic and professional retention is critical in nursing and in healthcare.

With the predictions for an unprecedented nursing shortage looming in the next ten years, attracting and retaining competent candidates for nursing is imperative. Furthermore, to succeed in today’s healthcare environment, the nurse must be resilient. Arm students with effective coping techniques increases their chances for successful health maintenance and professional longevity as they move from academics to practice.
References

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Pilot Study of Emotional Freedom Techniques, Wholistic Hybrid Derived From Eye Movement Desensitization and Reprocessing and Emotional Freedom Technique, and Cognitive Behavioral Therapy for Treatment of Test Anxiety in University Students

Daniel J. Benor, MD, Karen Ledger, RN, BScN, Loren Toussaint, PhD, Geoffrey Hett, PhD, and Daniel Zaccaro, BA

Objective: This study explored test anxiety benefits of wholistic hybrid derived from eye movement desensitization and reprocessing and Emotional Freedom Techniques (WHEE), Emotional Freedom Techniques (EFTs), and cognitive behavioral therapy (CBT).

Participants: Canadian university students with severe or moderate test anxiety participated.

Methods: A controlled trial of WHEE (n = 110), EFT (n = 110), and CBT (n = 110) was conducted. Standardized anxiety measures included the Test Anxiety Inventory and Hopkins Symptom Checklist-21.

Results: Despite small sample size, significant reductions in test anxiety were found for all three treatments. In only two sessions, WHEE and EFT achieved the same benefits as CBT did in five sessions. Participants reported high satisfaction with all treatments. Emotional freedom techniques and WHEE participants successfully transferred their self-treatment skills to other stressful areas of their lives.

Conclusions: Both WHEE and EFT show promise as feasible treatments for test anxiety.

Key words: Test anxiety, exam anxiety, emotional freedom technique (EFT), wholistic hybrid derived from eye movement desensitization and Emotional Freedom Techniques (WHEE), cognitive behavioral therapy (CBT)

INTRODUCTION

This study investigated the feasibility of two “Energy Psychology” techniques and cognitive behavioral therapy (CBT) in reducing test anxiety. Both emotional freedom techniques (EFT) and wholistic hybrid derived from eye movement desensitization and reprocessing and Emotional Freedom Techniques (WHEE) are potent self-treatment methods for dealing with mild to severe stress, are safe for use outside the therapist’s office, and do not produce heavy emotional abractions.

Emotional Freedom Techniques is a mental/emotional version of acupressure that can be self-applied for a wide range of emotional, health, and performance issues. Emotional Freedom Techniques is based on the connection between a person’s thoughts and emotions and the body’s subtle energies, neurological activity, and cellular function. Emotional Freedom Techniques treatment gently removes unconscious blocks to healing with a statement about the negative issue while repeating a self-affirmation and massaging neurolymphatic points on the chest or hand. This is followed by tapping or rubbing a specific sequence of acupuncture points on the face, upper body, and hands while repeating a reminder phrase about the negative issue. Emotional Freedom Techniques acupuncture points interface with the person’s neurophysiological systems to increase physical, emotional, and neurological stability.

The methodology for WHEE combines the alternating right and left body stimulation derived from EMDR, with affirmations modified from EFT as a person focuses on their anxieties. Again borrowing from EMDR, WHEE installs positive cognitions and feelings to replace the negative ones that have been released. Anxieties are reduced by WHEE very rapidly and WHEE is used by people on their own to reduce recurrent anxieties as needed. Eye movement desensitization and reprocessing, from which WHEE is partly derived, has four studies demonstrating efficacy for test anxiety and many studies demonstrating efficacy for treating severe emotional trauma. In fact, the American Psychiatric Association has acknowledged EMDR as having the same efficacy as CBT in treatment of both acute and chronic posttraumatic stress disorder.

Generally speaking, energy psychology research is still in its early days. Energy psychology has demonstrated efficacy in treatment of generalized anxiety disorder, weight control by using the Tapas Acupressure Technique, and specific phobias by using EFT. Clinical observations by D.J.B. and K.L. indicate that test anxiety responds rapidly and well to WHEE and EFT. Advantages of energy psychology techniques are that they...
are easily learned, rapidly effective, can be administered in groups, and are safe to use on one’s own.

Cognitive behavioral therapy can include a variety of modalities. In this study, muscle relaxation with systematic desensitization, individualized to each student’s anxieties about their tests, were used.11 Effectiveness of CBT has been demonstrated for test anxiety.12 We have found no studies exploring the rate of change of anxiety over the course of CBT therapy or of particular components of CBT that are effective in addressing test anxiety, which are some of the issues explored in this study.

Present Study Objectives
Given the encouraging early findings in energy psychology techniques, the purpose of this study was to evaluate the efficacy of WHEE and EFT in treating test anxiety in college students by using CBT as a control group. This study examined closely the rate of improvement in test anxiety resulting from each treatment. We expected that WHEE and EFT would be equally effective as CBT in bringing about relief from test anxiety, and that these benefits could be realized in fewer treatment sessions than with CBT.

METHOD
Participants
From an initial pool of 27 volunteers, 15 students met the inclusion criterion and completed the study. The inclusion criterion was that the student had to demonstrate moderate (>37 for males, >41 for females) to severe (46 for males and 51 for females) test anxiety on the Spielberger Test Anxiety Inventory. Use of major tranquilizers or a history of psychosis were exclusion criteria. Ethics review and approval was granted through the Institutional Review Board of Luther College and all students provided informed consent for the study and treatment.

Therapists
Daniel Benor, MD, is the developer of WHEE. He is a psychiatric psychotherapist with training in EMDR and EFT and eight years’ experience in using WHEE. Karen Ledger, RN, BScN, is a health educator and nurse-counselor with 13 years of experience teaching and working with EFT in groups and one-on-one therapy. Geoffrey G. Hett, PhD, retired from the University of Victoria in 2008 and specialized in teacher education and counseling psychology. Much of his career was directed toward teaching and supervising MA and PhD students in the use of CBT.

Design and Procedure
Our intent was to randomly assign all participants to one of three treatment groups. Due to a poor response to multiple recruitment efforts and conflicts with class schedules, we were not able to randomly assign participants to the treatment groups. Students were assigned to treatments on the basis of scheduling and availability. Both WHEE and EFT interventions were conducted in two weekly sessions lasting two hours. Cognitive behavioral therapy consisted of five approximately two-hour sessions focused on test anxiety reduction techniques. Test anxiety assessments were made at baseline (ie, recruitment), one day before exams, and one day after exams.

Measures
Standardized assessments included the Test Anxiety Inventory13 and the Hopkins Symptom Checklist-21.14 Qualitative demographic and personal history data were also collected.

RESULTS
Quantitative Analyses
Test Anxiety Inventory data were submitted to a 3 (EFT vs CBT vs WHEE) × 3 (base vs preexamination vs postexamination) mixed model repeated measures analysis of variance (ANOVA). The main effect for time of testing was significant (F = 32.4; P < .001). There was a decrease in anxiety from base (mean = 62.3, SD = 7.9) to preexamination (mean = 52.5, SD = 7.1) to postexamination (mean = 42.7, SD = 9.4). All pair-wise differences were statistically significant (P < .001). There was no treatment group × time interaction (F = 1.6, not significant). Hence, the rate of decrease in anxiety across the three treatment conditions was similar.

Because of nonparallelism present in graphical plots of the means of the three treatment conditions across the three time points and concerns about type II error involved in testing interactions with small samples, we further examined decreases in anxiety separately for each treatment condition. For the EFT and WHEE treatment groups, all decreases in anxiety across time were statistically significant (P < .05). For the CBT treatment group, there were no statistically significant decreases in anxiety at any time point. Hence, although the omnibus test of the interaction was not significant, decreases in anxiety did appear to differ quite dramatically across treatment conditions. Wholistic hybrid derived from EMDR and EFT treatments yielded statistically significant decreases in anxiety in only two sessions.

Hopkins Symptom Checklist-21 data were also submitted to a three (EFT vs CBT vs WHEE) × three (base vs preexamination vs postexamination) mixed model repeated measures ANOVA. Again, the main effect for time was significant (F = 8.7; P < .001). There was a decrease in distress from base (mean = 50.3, SD = 12.9) to preexamination (mean = 39.4, SD = 9.5) to postexamination (mean = 35.3, SD = 9.0). Decreases in distress from base to preexamination and base to postexamination were statistically significant (P < .05), but distress scores at preexamination and postexamination were the same (not significant). There was no treatment group × time interaction (F = 0.3, not significant). Hence, the rate of decrease in distress across the three treatment conditions was similar.

Qualitative Analyses
The qualitative responses of students who completed the study were uniformly favorable regarding treatment benefits related to their test anxiety, (qualitative data is available upon request). Importantly, students in the WHEE and EFT groups were more likely to have used these skills to also reduce stress responses in other areas of their lives.
DISCUSSION
Both WHEE and EFT are promising new methods for the treatment of test anxiety. They produced effects in only two sessions, as compared with five CBT sessions. Students reported using each of the methods frequently and transferring the use of EFT and WHEE to reduce stressors in other areas of their lives, with good effect. These findings, in essence, confirm others showing promising benefits of energy psychology in treating many psychological conditions.

Limitations
This pilot study has some key limitations. First, random assignment was not possible. Second, our sample size was small, limiting the power of statistical tests. Although these factors limit the generalizability of the results of this pilot study, they suggest that further, more rigorous studies may be warranted, and lessons learned from this study will be helpful to other researchers in planning their studies.

CONCLUSIONS
The limitations of the present study notwithstanding, this is the first known study to demonstrate the efficacy of WHEE and EFT in the treatment of test anxiety in college students, and the first comparison of these methods with CBT. Our data are preliminary, but with continued attention to the importance of complementary/alternative energy psychotherapies, larger-scale replications of this work will provide additional evidence of the efficacy of these techniques. Future studies will no doubt offer a focused lens in which to view the impressive and efficient effects of energy psychology techniques for use with a broad array of psychological maladies.

REFERENCES
EMOTIONAL FREEDOM TECHNIQUES IN THE TREATMENT OF UNHEALTHY EATING BEHAVIORS AND RELATED PSYCHOLOGICAL CONSTRUCTS IN ADOLESCENTS: A RANDOMIZED CONTROLLED PILOT TRIAL

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Context: In Australia and throughout much of the world, rates of obesity continue to climb as do the prevalence of eating disorders, particularly in adolescents. Psychological consequences of childhood obesity include low self-esteem, depression, body dissatisfaction, and social maladjustment (Young-Hyman et al., 2012).

Objective and Intervention: This feasibility study sought to examine the impact of a six-week Emotional Freedom Techniques (EFT) group treatment program upon eating behaviours, self-esteem, compassion, and psychological symptoms. Design: Forty-four students were randomly allocated to either the EFT group or the waitlist control group.

Results: Results revealed a delayed effect for both groups at post-intervention, with improved eating habits, self-esteem, and compassion at follow-up. Findings provide preliminary support for EFT as an effective treatment strategy for increasing healthy eating behaviours and improving associated weight-related psychopathology.

Key words: EFT, obesity, self-esteem, psychological distress, eating behaviours, compassion

The global obesity epidemic has been accelerating for four decades, with limited prevention efforts being instigated during this period.1 Recent research conducted by the (WHO) reports that obesity represents the fifth leading cause of global deaths. Additionally, the eating behaviors of adolescents has received widespread attention in recent years, with alarming predictions that children today will be the first generation to die earlier than their parents if sufficient preventative measures are not taken.2

Vast amounts of research indicate these disturbing forecasts are largely due to eating behaviors.3,4 There are also a number of eating behaviors that develop during the period of childhood and adolescence that can manifest into eating-related psychopathology.5 These disordered behaviors have a myriad of long-term physical and psychological consequences, including increased risk of chronic health conditions.6 This highlights the importance of designing effective strategies for the prevention and management of this global epidemic.

FOOD CHOICES AND EATING BEHAVIORS
The Australian Nutritional Survey6 indicated that the dietary consumption of Australian adolescents is inadequate. A broad range of factors have been identified that influence the eating behaviors of youth.7 These factors include social modeling, access to healthy food, exposure to food advertising, negative emotions, and parental influence.7,8 Ackard et al.9 found that in a school-based sample of approximately 4700 students, 57% of girls and 33% of boys reported using unhealthy weight control behaviors in order to lose weight. Additionally, the study found that 17.3% of girls and 7.8% of boys reported that they had engaged in overeating in the past year. Participants who reported overeating were more likely to be overweight or obese, currently dieting, and scored significantly lower on measures of self-esteem and body satisfaction.

Nutritionally sparse diets, cravings for readily accessible unhealthy foods, and overeating are implicated in the etiology of unhealthy eating habits among adolescents.10 These unhealthy habits are associated with poor health outcomes, such as a higher risk of developing chronic disease as adults, increased risk of obesity in adulthood, increased susceptibility to psychological distress, and poorer
overall quality of life. \(^1\) Paradoxically, pressure to fit an ideal body shape can lead to unhealthy weight loss endeavors such as fasting and dietary restraint, which may increase the propensity to binge eat. \(^5\) Previous studies have established that fasting or restricting dietary intake is linked to both weight gain/obesity and disordered eating/eating disorders. \(^13,14\)

**PSYCHOLOGICAL FACTORS ASSOCIATED WITH OBESITY**

Studies exploring the role of psychological factors in obesity have revealed several important findings, including various constructs being implicated in the etiology, maintenance, and prevention of obesity. A study by Young-Hyman et al. \(^17\) showed a clear association between psychological distress and obesity, whereby overweight and obese children reported higher levels of psychological distress.

**Self-Esteem**

Studies have consistently demonstrated self-esteem, specifically, as a factor implicated in the etiology and maintenance of childhood and adolescent obesity. \(^16\) French et al. \(^17\) reviewed 35 outcome studies investigating the link between self-esteem and obesity in children and adolescents. Findings of this meta-analysis revealed that obese adolescents consistently reported lower self-esteem in comparison to their non-obese counterparts, which was in turn associated with greater body dissatisfaction, negative perceptions of body image, and other psychological symptoms. Similar findings have been established in other studies of the relationship between self-esteem, obesity, and other psychological constructs. \(^15\)

Randomized controlled trials have also revealed that being overweight or obese can lead to a number of mental health outcomes, including depression, anxiety, reduced self-esteem, self-compassion, and self-worth, and in extreme cases, suicide. \(^9,12\) Overall, these findings indicate an urgent need for more holistic interventions that also take into account psychological and mediating variables of health. Researchers in the area of prevention and treatment of obesity have previously sought to target certain psychological factors in order to counteract the deleterious psychological consequences of obesity. \(^21,22\)

**Self-Compassion**

More recently, empirical literature has established self-compassion as a construct associated with improved eating behaviors. \(^7\) Self-compassion refers to an individual having an understanding for the self instead of being judgmental or critical. \(^2\) Previous studies suggest that self-compassion is also strongly linked to psychological and physiological health, with individuals higher in self-compassion being more likely to exercise regularly \(^25\) and maintain a healthy diet. \(^31\) For adolescent populations, studies indicate that higher ratings of self-compassion are associated with increased ability to identify and modify unproductive behaviors. \(^26\) Kelly et al. \(^27\) found that, among clients diagnosed with an eating disorder, increases in self-compassion were associated with decreases in poor eating behaviors including binge eating.

**INTERVENTION PROGRAMS**

A number of multi-disciplinary and population-based treatment programs have been recommended. \(^28\) In a meta-analysis of 131 published studies, Russell-Mayhew et al. \(^11\) reported that the majority of programs that have attempted to intervene in childhood or adolescent obesity have focused on food intake, nutrition, and physical activity. The rate of efficacy in these types of approaches is estimated at 20%. According to an Australian study by Williams et al. \(^29\) successful preventative measures for unhealthy eating must include encouragement of healthy food choices, provision of education, and increased availability of healthy food. Meta-analysis and follow-up studies indicate that any gains from prevention and intervention programs are generally not maintained, \(^30\) which suggests the need for more holistic interventions that also take into account other variables, including psychological constructs. \(^20\)

**EMOTIONAL FREEDOM TECHNIQUES**

Emotional freedom techniques (EFT) is a relatively new, meridian-based technique that is gaining acceptance as an evidenced-based, clinically useful tool within the realm of energy psychology. \(^1,12\) EFT is a group of exposure therapies that consist of somatic and cognitive elements, which are designed to target emotional discomfort. \(^33\) Sojcher et al. \(^34\) review found that energy psychology strategies have promising outcomes for obesity and binge eating disorder-related difficulties. Other randomized controlled trials have demonstrated that EFT is effective in reducing food cravings, resulting in reduced weight, craving restraint and psychological coping in adult trials. \(^35,36\)

In a randomized controlled trial \(^37\) of 96 overweight/obese adults, participants were allocated either to an EFT-based treatment or to a four-week waitlist condition. Compared to waitlist participants, the EFT group reported significant improvements in food cravings, craving restraint, and the subjective power of food. These effects were maintained at 6 and 12 months, with additional reductions in BMI and body weight. Researchers concluded that EFT demonstrated efficacy in reducing cravings, and led to a reduction of weight in overweight and obese individuals. \(^38\) Evidence suggests that particularly positive aspects of energy psychology treatments are the often-enduring results displayed within short time-frames of between one to six weeks. \(^39,40\) The process of EFT involves focusing on the situation identified as causing the distress and tapping on specific meridian points on the body. \(^13\)

More recently, Stapleton et al. \(^41\) compared the effectiveness of EFT and Cognitive Behavioral Therapy (CBT) in the treatment of food cravings among 88 overweight and obese adults. Both the EFT and CBT groups reported significant decreases in food cravings, craving restraint, and subjective power of food from pre-treatment to six-month follow-up. The EFT group lost an average 6.79 kg from pre-treatment to 12 months, with additional reductions in BMI and body weight. Researcher concluded that EFT demonstrated efficacy in reducing cravings, and led to a reduction of weight in overweight and obese individuals. \(^41\) Evidence suggests that particularly positive aspects of energy psychology treatments are the often-enduring results displayed within short time-frames of between one to six weeks. \(^39,40\) The process of EFT involves focusing on the situation identified as causing the distress and tapping on specific meridian points on the body. \(^13\)
of the study showed that participants reported an average weight loss of 5.44 kg from pre- to post-treatment and a further 1.36 kg in the six-month period following the intervention program. In an outcome study of 216 healthcare workers attending a single, full-day EFT group workshop, participants reported significant reductions (i.e., to a non-clinical level) in addictive cravings for chocolate, food in general, alcohol, and tobacco. Moreover, the study of Church and Brooks indicated that participants’ completing an EFT weekend workshop targeting addiction reported significantly reduced psychological distress post-treatment, which may imply that EFT may be an effective adjunct to addiction treatment such as food cravings, by reducing the severity of individuals’ general psychological distress. However, there is a distinct lack of research exploring the effectiveness and clinical utility of EFT for targeting eating behaviors, psychological distress, or physical activity among children and adolescents, specifically.

**CURRENT STUDY**

The overarching goal of the study was to develop a clinical protocol and framework for an effective, enduring, and low-cost intervention program for improving health lifestyle practices among 14- and 15-year olds. The current study aimed to assess whether frequency of eating behavior, self-esteem, self-compassion, and psychological distress improved following completion of the six-week EFT program. The study also aimed to evaluate the impact of EFT across time, including between pre-treatment, post-treatment, and 10-week follow-up. Finally, the study aimed to compare the results of the EFT group participants to the waitlist group. It was hypothesized that, at post-intervention, the EFT group would report increased positive eating behaviors, decreased negative eating behaviors, increased self-esteem, increased self-compassion, and decreased psychological distress, compared to the WL group. Moreover, it was hypothesized that these treatment effects would be maintained at 10-week follow-up for the EFT group, in comparison to the WL group.

**METHOD**

**Procedure**

Ethical approval was obtained from the Bond University Human Research Ethics Committee prior to the commencement of the study. Approval for conducting research at Queensland schools was obtained from the Department of Education, Training and Employment. The principal of Helensvale State High School was provided with this documentation. A letter was sent to participants’ parents including an explanatory statement of the current study. Participants were provided with a list of local counseling services to ensure that participants and their parents had sufficient contact options if participants experienced any psychological distress throughout the study.

Treatment fidelity plans for the EFT groups were formed prior to the trial commencing. The primary investigator and the EFT intervention practitioners developed and reviewed the treatment manuals to ensure the active ingredients of the intervention were adequately operationalized. Fidelity was not monitored using audio or video recording, but rather facilitators completed intervention checklists, and participants completed weekly social validity scales (described below). EFT treatment delivered was based on standardized treatment protocols and provided by EFT practitioners via a group setting. One facilitator was a counselor and certified at level 2 by EFT Universe, with 30 years of prior counseling experience in critical incident stress debriefing. The other facilitator was a level 3 AAMET certified counselor with a Masters of Counseling degree. A Masters of Clinical Psychology student and a Registered Nurse completing her Honors in Psychology supported facilitators. Each session consisted of 70 min of treatment per week, every Tuesday at the same time. Table 1 briefly outlines weekly program topics and content. Note that each of the topics introduced in each session were addressed using the EFT tapping sequence; as such, EFT was a component of each session.

At the end of each session, participants were given take-home EFT information and activities to complete. In order to protect participant privacy, fidelity was not monitored via audio or video recording; however, intervention checklists were used and optional social validity scales in the form of a weekly evaluation (described earlier) were distributed upon session completion. The post-intervention questionnaire was administered at the conclusion of the final session in week 6. The 10-week follow-up questionnaire was completed via hard copy in a classroom on the school premises.

**Recruitment**

Potential participants were recruited from a local State High School to take part in a six-week pilot study consisting of 70 min of treatment per week. The recruitment process was not limited to participants who were self-identifying as having difficulties with weight or eating behaviors, but rather was offered to any adolescent wishing to “to inspire healthy eating, increased physical activity, and improved resilience.” Inclusion criteria specified that participants should be between 12 and 18 years old and have parental consent to participate in the treatment. Exclusion criteria included students not capable of physical activity, known sufferers of diabetes (types 1 and 2), and adolescents with hypoglycemic. Initially 60 students currently attending grade 9 were approached to take part in the study. Appropriate parental consent forms were returned by 28 students. These students

<table>
<thead>
<tr>
<th>Table 1. Weekly Program Content</th>
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<tr>
<td><strong>Brief Overview of Content</strong></td>
</tr>
<tr>
<td>Week 1</td>
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<td>Week 2</td>
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<td>Week 3</td>
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<td>Week 5</td>
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<td>Week 6</td>
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</table>

EFT = emotional freedom techniques.
completed their own participant consent forms, except for two individuals who declined to take part in the study. Due to limited participant availability and the requirement to fit the program around normal school curriculum, participants were randomly allocated (via a computerized random number generator system) to two intervention groups. A statistician, unconnected to the study and blind to its aims, at the lead author’s previous institution completed the computer randomization and subsequent data analyses. The first group, the EFT group, consisted of 12 participants and was run during term 2 of the school year. The second group, the WL group, consisted of 14 participants and was conducted in term 3. Outcomes for the WL group will be analyzed and presented in a separate study. The format of the intervention did not change between groups. In total, 26 participants took part in the six-week intervention. All 26 participants completed the program. However, four participants from the EFT group did not complete their final assessments and their data could not be used in the study analyses. Other reasons for drop outs included study commitments and school absence on treatment days. There were no adverse events to report. Attendance rate average was 4.85 sessions (out of a total six) for the total sample. Refer to Figure 1 for consort diagram and complete details of participant flow.

Participants
In total, pre/post-intervention data was collected from 22 participants (11 males and 11 females). Of the 22 participants who completed pre/post study questionnaires, 18 completed the follow-up questionnaire at 10-weeks to establish if outcome variables were maintained. Participants ranged in age from 14 to 15 years. The participants were predominantly

![Figure 1. Consort participant flow diagram of EFT feasibility program.](image-url)
white with 78.8% of participants identifying their ethnicity as Caucasian, 9.6% Asian, 3.8% Maori/Pacific Islander, 3.8% Middle Eastern, and 3.8% European.

Measures
The participant questionnaire included a battery of self-report measures (described below), which comprised a total of 212 items. Although measures were merged, this did not affect the reliability or validity of individual scales. To ensure confidentiality of responses, each participant used a unique respondent code. An explanatory statement and consent form were included to inform respondents of the purpose of the study and included details regarding confidentiality and privacy. The entire questionnaire took approximately 35–45 min to administer.

Demographic variables. Demographic information surrounding gender, age, grade, ethnicity, marital status, number of people within the household, and household income level was collected.

Eating behaviors. The Youth Adolescent Food Frequency Questionnaire—Short Version (YAQ) is a self-report measure designed to assess the frequency of eating behaviors in individuals on a seven-point scale ranging from 1 = never/less than once a month to 7 = more than five times a day. The YAQ has demonstrated adequate internal consistency, test-retest reliability, and validity, in previous studies.

Self-compassion. The Rosenberg Self-Esteem Scale (RSEQ) is a 10-item self-report measure of global self-esteem. Participants were required to indicate their agreement with items on a four-point scale ranging from 0 = strongly disagree to 4 = strongly agree. Previous studies have shown the RSEQ to possess good internal consistency, test-retest reliability, and validity, in previous studies.

Psychological distress. The Depression Anxiety Stress Scale—21 (DASS-21) is a self-report inventory designed to assess negative emotional states of depression, anxiety, and stress over the past week. The DASS-21 includes seven items per scale, and items are rated on a four-point scale ranging from 0 = never to 3 = almost always. The DASS-21 has adequate reliability and validity, as evidenced in a number of outcome studies.

Self-compassion. The Self-Compassion Scale (SCS—Short Form) is a 12-item self-report inventory used to assess major components of self-compassion, including mindfulness, self-kindness, and humanity. All items are rated on a five-point scale from 1 = almost never to 5 = almost always. The SCS-SF has been found to be a psychometrically sound measure of self-compassion, with high internal consistency and convergent validity with scales measuring self-compassion and acceptance.

Weekly evaluation forms. Evaluations were distributed at the end of each session as a means of collecting social validity data and assessing participants' subjective perceptions of the intervention. Evaluations were voluntary and could be completed anonymously. Participants were asked to nominate on a Likert scale ranging from 1 = not useful at all and 6 = very useful, how beneficial they believed the skills and treatment delivered to have been.

Results
Data was analyzed using the Statistical Package for Social Sciences 22.0. A one-way repeated-measures MANOVA was conducted to compare scores across time, to determine if the intervention had an effect on the dependent variables. Table 2 displays the means and standard deviations for the dependent variables between groups at pre-intervention, post-intervention, and follow-up.

Healthy drinks. Refer to Figure 2 for mean scores for healthy drinks, for both groups at each measurement point. Univariate analyses revealed a significant interaction effect on healthy drinks $F(1.40, 27.93) = 55.86, P < .001$, partial $\eta^2 = .74$, power = 1.00. Simple effects analyses for group

<table>
<thead>
<tr>
<th>Variable</th>
<th>WL Group (n = 11)</th>
<th>EFT Group (n = 11)</th>
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<tbody>
<tr>
<td>Healthy drinks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre M (SD)</td>
<td>9.73 (1.95)</td>
<td>11.64 (1.50)</td>
</tr>
<tr>
<td>Post M (SD)</td>
<td>9.73 (1.95)</td>
<td>12.45 (1.81)</td>
</tr>
<tr>
<td>Follow-Up M (SD)</td>
<td>10.91 (2.59)</td>
<td>17.64 (2.38)</td>
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<tr>
<td>Unhealthy drinks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre M (SD)</td>
<td>16.27 (6.72)</td>
<td>13.18 (3.09)</td>
</tr>
<tr>
<td>Post M (SD)</td>
<td>16.27 (6.72)</td>
<td>10.45 (1.86)</td>
</tr>
<tr>
<td>Follow-Up M (SD)</td>
<td>11.82 (2.79)</td>
<td>7.91 (2.12)</td>
</tr>
<tr>
<td>Healthy foods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre M (SD)</td>
<td>29.18 (7.81)</td>
<td>32.73 (6.75)</td>
</tr>
<tr>
<td>Post M (SD)</td>
<td>29.18 (7.81)</td>
<td>31.55 (4.25)</td>
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<tr>
<td>Follow-Up M (SD)</td>
<td>33.27 (6.51)</td>
<td>38.55 (4.63)</td>
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<tr>
<td>Unhealthy foods</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre M (SD)</td>
<td>34.55 (5.80)</td>
<td>36.75 (4.97)</td>
</tr>
<tr>
<td>Post M (SD)</td>
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<td>25.55 (4.63)</td>
<td>23.73 (3.95)</td>
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<tr>
<td>Self-esteem</td>
<td></td>
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<tr>
<td>Pre M (SD)</td>
<td>23.82 (4.29)</td>
<td>27.73 (2.28)</td>
</tr>
<tr>
<td>Post M (SD)</td>
<td>23.82 (4.29)</td>
<td>28.64 (2.98)</td>
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<tr>
<td>Follow-Up M (SD)</td>
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<td>31.45 (3.91)</td>
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<tr>
<td>Psychological distress</td>
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<tr>
<td>Pre M (SD)</td>
<td>35.57 (16.31)</td>
<td>46.25 (14.68)</td>
</tr>
<tr>
<td>Post M (SD)</td>
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<td>Follow-Up M (SD)</td>
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<td>28.73 (8.49)</td>
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<tr>
<td>Self-compassion</td>
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</tr>
<tr>
<td>Pre M (SD)</td>
<td>35.50 (8.22)</td>
<td>31.75 (7.92)</td>
</tr>
<tr>
<td>Post M (SD)</td>
<td>35.50 (8.22)</td>
<td>34.50 (9.47)</td>
</tr>
<tr>
<td>Follow-Up M (SD)</td>
<td>38.21 (5.87)</td>
<td>37.94 (7.67)</td>
</tr>
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</table>

Using Wilk’s $\lambda$, a significant multivariate main effect was revealed for group $F (8, 15) = 3.98, P = .014$, partial $\eta^2 = .61$, power = .87, and time $F (12, 9) = 24.73, P < .001$, partial $\eta^2 = .97$, power = 1.00. A significant interaction between time and group was also shown $F (12, 9) = 6.39, P = .005$, partial $\eta^2 = .90$, power = .98, therefore, further analyses focused primarily on interaction effects. EFT = emotional freedom techniques; M = means; SD = standard deviations.
Figure 2. Mean healthy drink scores, as measured by the YAQ.

Figure 3. Mean unhealthy drink scores, as measured by the YAQ.

Figure 4. Mean healthy food scores, as measured by the YAQ.

Unhealthy drinks. Refer to Figure 3 for mean scores for unhealthy drinks, for both groups at each measurement point. The results revealed a significant univariate interaction effect on unhealthy drinks \( F(1.53, 30.56) = 2.24, P = .013 \), partial \( \eta^2 = .10 \), power = .37, indicating that the consumption of unhealthy drinks differed as a function of time and group. Simple effects analyses for group revealed there was no significant difference between the EFT group and WL group at pre-intervention \( F(1, 20) = 1.92, P = .181 \), partial \( \eta^2 = .09 \), power = .26. At post-intervention, there was a significant difference between groups \( F(1, 20) = 7.65, P = .012 \), partial \( \eta^2 = .28 \), power = .75, with the EFT group consuming fewer unhealthy drinks compared to the WL group. A significant difference between groups was also observed at follow-up \( F(1, 20) = 13.72, P = .001 \), partial \( \eta^2 = .41 \), power = .94, that is, the EFT group were consuming a significantly lower number of unhealthy drinks than the WL group.

Simple effects analyses for time revealed there was a significant difference in the number of unhealthy drinks consumed by the WL group over time \( F(1, 10) = 10.17, P = .010 \), \( \eta^2 = .50 \), power = .82. Pairwise comparisons with Sidak adjustment revealed the number of unhealthy drinks consumed by the WL group decreased significantly \( (P = .029) \) from pre-intervention to follow-up. For the EFT group, significant differences in the number of unhealthy drinks consumed across time were observed, \( F(2, 20) = 31.20, P < .001 \), \( \eta^2 = .76 \), power = 1.00. Pairwise comparisons with Sidak adjustment revealed the number of unhealthy drinks consumed by the EFT group decreased significantly \( (P = .015) \) from pre-intervention to immediately post-intervention, with an additional significant decrease \( (P = .003) \) from post-intervention to follow-up.

Healthy foods. Refer to Figure 4 for mean scores for healthy foods, for both groups at each measurement point. Results revealed a non-significant univariate interaction effect on healthy foods \( F(2, 40) = 1.33, P = .275 \), partial \( \eta^2 = .06 \), power = .27, indicating that the consumption of healthy foods did not differ as a function of time and group.

Unhealthy foods. Refer to Figure 5 for mean scores for unhealthy foods, for both groups at each measurement point. Univariate analyses revealed a significant interaction
effect on unhealthy foods $F(2, 40) = 13.40, P = .001$, partial $\eta^2 = .40$, power = 1.00, indicating the consumption of unhealthy foods differed as a function of time and group. Simple effects analyses for group revealed there was no significant difference between the EFT group and WL group at pre-intervention $F(1, 20) = .75, P = .395$, partial $\eta^2 = .75$, power = .13. At post-intervention $F(1, 20) = 7.65, P = .012$, partial $\eta^2 = .28$, power = .75, there was a significant difference between groups with the EFT group consuming significantly less unhealthy food compared to the WL group. No significant difference was observed between the EFT and WL group at follow-up $F(1, 20) = 18.55, P = .334$, partial $\eta^2 = .05$, power = .16.

Simple effects analyses for time revealed there was a significant difference in the number of unhealthy foods consumed by the WL group over time $F(1, 10) = 35.08, P = .001$, $\eta^2 = .78$, power = 1.00. Pairwise comparisons with Sidak adjustment revealed the number of unhealthy foods consumed by the WL group decreased significantly ($P < .001$) from pre-intervention to follow-up. For the EFT group, significant differences in the number of unhealthy foods consumed across time were observed $F(2, 20) = 92.84, P = .001$, $\eta^2 = .90$, power = 1.00. Pairwise comparisons with Sidak adjustment revealed the number of unhealthy foods consumed by the EFT group decreased significantly ($P < .001$) from pre-intervention to immediately post-intervention, with an additional significant decrease ($P < .001$) from post-intervention to follow-up.

**Psychological distress.** Refer to Figure 6 for mean scores for psychological distress, for both groups at each measurement point. Univariate analyses revealed a non-significant univariate interaction effect on psychological distress $F(2, 40) = .94, P = .398$, partial $\eta^2 = .05$, power = .20, indicating that psychological distress did not differ as a function of time and group.

**Self-esteem.** Refer to Figure 7 for mean scores for self-esteem, for both groups at each measurement point. Results revealed a significant interaction effect on self-esteem $F(1.42, 28.47) = 3.81, P = .047$, partial $\eta^2 = .16$, power = .55, indicating self-esteem differed as a function of time and group. Simple effects analyses for group revealed there was no significant difference between groups at pre-intervention $F(1, 20) = 7.13, P = .095$, partial $\eta^2 = .26$, power = .72. At post-intervention, there was a significant difference between groups $F(1, 20) = 9.38, P = .006$, partial $\eta^2 = .32$, power = .83, with the EFT group demonstrating a higher level of self-esteem compared to the WL. A significant difference between groups was also observed at follow-up $F(1, 20) = 13.21, P = .002$, partial $\eta^2 = .40$, power = .93, that is, the EFT group reported higher self-esteem scores than the WL group.

Simple effects analyses for time revealed there was no significant change in self-esteem scores for the WL group over time $F(1, 10) = 1.72, P = .219$, $\eta^2 = .15$, power = .22. That is, self-esteem scores did not significantly change from pre-intervention to follow-up. For the EFT group, significant differences in the self-esteem scores across time were observed $F(1.16, 11.55) = 9.86, P = .007$, $\eta^2 = .50$, power = .85. Pairwise comparisons with Sidak adjustment revealed that there was no significant change in self-esteem scores from pre-intervention to immediately post-intervention ($P = .642$), but that a significant increase in scores was observed from pre-intervention to follow-up ($P = .031$), and from post-intervention to follow-up ($P < .001$).

**Self-compassion.** Refer to Figure 8 for mean scores for self-compassion, for both groups at each measurement point. Results revealed a significant univariate interaction effect on self-
Results of the current study revealed a number of significant findings. Firstly, results indicated that the EFT group consumed a significantly higher number of healthy drinks at post-intervention, compared to the WL group. Results also revealed that the EFT group reported significant decreases in consumption of unhealthy drinks at pre- and post-treatment, which were maintained at follow-up. Results revealed a non-significant interaction effect for healthy foods, which implied that participants’ consumption of healthy foods did not differ between groups and over time. The EFT group consumed a significantly lower number of unhealthy foods at post-intervention, compared to the WL group. Results also indicated that the EFT group reported significant decreases in consumption of unhealthy foods at pre- and post-treatment, which were maintained at follow-up. This finding, in particular, is consistent with previous research, which indicates that EFT-based intervention has the potential to improve negative eating behaviors among adolescents.

Results revealed a non-significant interaction effect for psychological distress, meaning that there was no significant difference in psychological distress between groups and over time. However, it is important to note that there were clinically valid decreases in the means of both groups in terms of psychological distress scores. One reason for this lack of statistically significant finding may be that group facilitators did not instruct participants to apply the EFT tapping sequence to various psychological symptoms. Although there was no statistically significant finding, further examination of descriptive statistics indicated clinically valid changes in the EFT group from pre-intervention to follow-up.

In terms of self-esteem, results indicated significantly higher self-esteem scores from pre- to post-intervention and follow-up for the EFT group. Although the EFT group exhibited a significant increase in self-esteem from pre- to post-treatment, this effect was not maintained at follow-up. With respect to self-compassion, study findings indicated significantly higher self-compassion scores from pre- to post-intervention for the EFT group. This is consistent with previous studies demonstrating significant increases in self-compassion scores following an eight-week psychological intervention, and may further suggest that self-compassion can be taught and enhanced. However, this effect was not maintained at follow-up.

WEEKLY EVALUATION RESULTS
A total of 66 completed participant evaluation forms were submitted for review. For the EFT group, results indicated that 78% of participants found the program useful, 68% of participants indicated they would be confident in using the information and skills covered, and 86% of participants responded that the content was easy to understand.

DISCUSSION
This study was conducted to examine the feasibility of a six-week EFT intervention program on adolescents and to extend understanding of the relationship between eating behaviors, self-esteem, self-compassion, and psychological distress. Results of the current study revealed a number of significant findings. Firstly, results indicated that the EFT group consumed a significantly higher number of healthy drinks at post-intervention, compared to the WL group. However, results revealed that this effect was not maintained at follow-up. For unhealthy drinks, study findings demonstrated that the EFT group consumed a significantly lower number of unhealthy drinks at post-intervention, compared to the WL group. Results also revealed that the EFT group reported significant decreases in consumption of unhealthy drinks at pre- and post-treatment, which were maintained at follow-up.

Results revealed a non-significant interaction effect for healthy foods, which implied that participants’ consumption of healthy foods did not differ between groups and over time. The EFT group consumed a significantly lower number of unhealthy foods at post-intervention, compared to the WL group. Results also indicated that the EFT group reported significant decreases in consumption of unhealthy foods at pre- and post-treatment, which were maintained at follow-up. This finding, in particular, is consistent with previous research, which indicates that EFT-based intervention has the potential to improve negative eating behaviors among adolescents.

Results revealed a non-significant interaction effect for psychological distress, meaning that there was no significant difference in psychological distress between groups and over time. However, it is important to note that there were clinically valid decreases in the means of both groups in terms of psychological distress scores. One reason for this lack of statistically significant finding may be that group facilitators did not instruct participants to apply the EFT tapping sequence to various psychological symptoms. Although there was no statistically significant finding, further examination of descriptive statistics indicated clinically valid changes in the EFT group from pre-intervention to follow-up.

In terms of self-esteem, results indicated significantly higher self-esteem scores from pre- to post-intervention and follow-up for the EFT group. Although the EFT group exhibited a significant increase in self-esteem from pre- to post-treatment, this effect was not maintained at follow-up. With respect to self-compassion, study findings indicated significantly higher self-compassion scores from pre- to post-intervention for the EFT group. This is consistent with previous studies demonstrating significant increases in self-compassion scores following an eight-week psychological intervention, and may further suggest that self-compassion can be taught and enhanced. However, this effect was not maintained at follow-up.

IMPLICATIONS OF THE CURRENT STUDY
The current study has a number of strengths, including having expanded on the limited research examining the impact of EFT on eating habits, self-esteem, self-compassion, and psychological distress in adolescents. Moreover, this study provided preliminary evidence for the effectiveness of adopting a more multifaceted intervention approach that examines not only dietary intake and physical output but also other psychological variables such as self-esteem and self-compassion, in targeting weight-related behaviors.

LIMITATIONS AND RECOMMENDATIONS FOR FURTHER STUDY
Although results of the current study demonstrate a number of important findings and was originally intended as a pilot
study, the small sample size is likely to affect the generalizability of research findings. Future replication studies may seek to examine the effectiveness of EFT-based intervention with larger sample sizes, in order to ensure power of study conclusions. A priori analyses for a MANOVA indicated that to achieve a power level of 0.80, while setting the level of significance \( \alpha = 0.05 \), at least 32 participants per group would be needed to detect significant change on primary and secondary outcome measures and to achieve a medium effect size.

Moreover, a thorough program evaluation may be necessary to more specifically assess how intervention materials are implemented or practiced by participants. A further limitation of the current study was the reliance upon self-report data, which is a common methodological concern within psychological research. As such, it is important to consider whether the study findings may have been affected by variables such as social desirability bias.

Although the current study was aimed at changing eating behaviors rather than achieving weight loss, participants' weight may affect how they responded to the intervention. In particular, adolescents that are overweight or obese may have a greater need to change eating behaviors and engage in physical activity and may be affected by their difficulties with self-image. Future replication studies should seek to incorporate BMI as a variable, in order to evaluate the impact that weight has on the outcome measures assessed.

CONCLUSIONS

Nonetheless, the results of the current study are promising, and tentatively suggest that EFT is useful in promoting improvements in eating behaviors and self-esteem, within some adolescent groups. In the absence of a clear and consensual causal pathway to disordered eating, a focus on positive psychology and EFT may provide an opportunity to facilitate healthier eating in adolescents. Participants in reported that the EFT program was useful and simple to understand, and that they would be confident in using the skills taught and information learned outside of the context of therapy. Future research should focus on expanding alternative intervention styles that is readily available to adolescents, in order to reduce the international obesity epidemic.

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