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A Randomised Clinical Trial of a Meridian-Based Intervention for Food Cravings with Six Month Follow-up

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Running Head: Emotional Freedom Technique and Food Cravings

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Abstract

This randomised, clinical trial tested whether The Emotional Freedom Technique (EFT) reduced food cravings. This study involved ninety-six overweight or obese adults who were allocated to the EFT treatment or 4-week waitlist condition. Degree of food craving, perceived power of food, restraint capabilities and psychological symptoms were assessed pre- and post- a four week treatment program (mixed method ANOVA comparative analysis), and at 6-month follow-up (repeated measure ANOVA with group data collapsed). EFT was associated with a significantly greater improvement in food cravings, the subjective power of food and craving restraint than waitlist from pre- to immediately post-test ($p<0.05$). Across collapsed groups, an improvement in food cravings and the subjective power of food after active EFT treatment was maintained at 6-months and a delayed effect was seen for craving restraint. Although there was a significant reduction in measures of psychological distress immediately after treatment ($p<0.05$), there was no between group difference. These findings are consistent with the hypothesis that EFT can have an immediate effect on reducing food cravings and can result in maintaining reduced cravings over time.

Word count: 185

Keywords: Emotional Freedom Techniques (EFT), food cravings, weight, energy psychology, subjective power of food

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Background

It is suggested that food cravings frequently lead to consumption of the craved food (Hill & Heaton-Brown, 1994) and elevated Body Mass Index (BMI) is associated with food intake and preference for high fat foods (Drewnowski et al., 1985). Even in non-clinical samples, food craving has been found to be related to body weight, suggesting the significant role of craving in food consumption (Franken & Muris, 2005). Early identification of elevated body mass indexes (BMI), medical risks, and unhealthy eating and physical activity habits may be essential to the future prevention of obesity. One crucial question is the role food cravings may play in maintaining excessive eating patterns observed in other problems with eating behaviours: binge eating, bulimia, and obesity (Weingarten & Elston, 1990).

There is thorough and compelling evidence regarding the increase in Australia's level of obesity and the projected outcomes if this issue is not addressed. It is now known that approximately 62% of the Australian population is overweight or obese (about 7 million Australian adults - 67% of men and 52% of women over 18 years; Australian Bureau of Statistics [ABS], 2007-8). Adolescents and young adults who are obese have increased risks of poor socio-economic outcomes (lower educational attainment, social isolation, and low income; Ebbling, Pawlack & Ludwig, 2002).

Ultimately the net effect of all of these adverse consequences of obesity is an increased risk of ill health and risk of premature death in adult life (Swallen et al., 2005). While dietary restraint, more nutritious eating habits and physical exercise

have always been purported to be the answer to the obesity crisis in adults, adolescents and children, meta analysis and follow-up studies indicate that weight loss is not maintained (indeed the more time that elapses between the end of a diet and the follow-up, the more weight is regained, Mann et al., 2007). The studies analysed clearly showed that one third to two thirds of dieters regain more weight than they lost on their diets.

It seems there is a missing link in the weight loss/obesity field; that of comprehensive psychological treatment in conjunction with physical and dietary approaches. Indeed, Goodspeed Grant's (2008) recent study involved investigating the psychological, cultural and social contributions to overeating in obese people. She found that eating for comfort for the morbidly obese is rooted in using food to manage experiences of emotional pain and difficult family and social relationships. Her participants reported that what had been missing from all treatment programs they had tried was the "opportunity to work on the psychological issues concurrently with weight loss".

Current weight loss / body shape change programs are based on principles of eat less and exercise more. However meta-analysis of weight loss programs with the addition of psychological techniques shows that people who are overweight or obese do benefit from psychological interventions to enhance weight reduction, particularly behavioural and cognitive-behavioural (CBT) strategies (Shaw, O'Rourke, Del Mar & Kenardy, 2005). It appears that there is little other research examining the addition of psychological intervention other than CBT in weight loss.

Energy Psychology Techniques

Research examining meridian-based procedures or energy psychology (e.g. the Emotional Freedom Technique, EFT) combines cognitive strategies with somatic procedures adapted from acupuncture and related systems for altering the cognitive, behavioural, and neurochemical foundations of psychological problems. It is often referred to as "psychological acupuncture" and aims to incorporate this principle of acupuncture into psychotherapeutic settings (Brattberg, 2008). Few scientific studies have been conducted on EFT however acupuncture has been quite extensively studied (see Stux & Pomeranx, 1995). A plethora of clinical reports and taped sessions (2200+) and 15 case studies using brain scans currently exist to support EFT (see Feinstein, 2008 for a review) but to date only three randomised clinical trials (RCT) have been published. The first examined EFT in relation to specific phobias (Wells et al., 2003), the second investigated EFT with test-taking anxiety (Sezgin & Özcan, 2004), and a partial replication and extension of Well's (2003) study investigated specific phobias (Baker & Siegel, 2005; reviewed below).

EFT Theory

EFT as a therapy belongs to a group of therapies termed 'energy psychology' (EP) and similar treatments would include Thought Field Therapy (TFT), EMDR, and Tapas Acupressure Technique (TAT; Feinstein, 2008). EFT was originally designed as a simplified version of TFT (Callahan, 2000). Based on acupuncture principles, Callahan (2000) suggested that a brief tapping procedure may be successfully used to treat almost any emotional disorder. Specific problems have a tailored procedure (Hooke, 1998) and after diagnosis, the process involves tapping on specific meridian

points on one's body while focusing the mind on the source of the distressing situation. The tapping is suggested to create energy.

The premise behind TFT and EFT suggests that negative emotions in the body are caused by a disturbance in the body's energy field (or meridian system). The action of stimulating acupressure points on the body (through a tapping process) while focusing the mind on the negative emotion is thought to restore the balance in the body (Craig, 2008). This act then eliminates negative emotions. Feinstein (2008) has proposed that the arousal of the amygdala and other brain structures in the stress response are desensitised using EFT, where other theories highlight connective tissue transmission of piezoelectric signals (Oschman, 2006), neurotransmitter ratio alterations (dopamine and serotonin, Feinstein et al., 2005), and increased HPA axis regulation and a reduction of the stress hormone cortisol (Church, 2008).

Feinstein's (2008) recent comprehensive review of literature examining energy psychology proposes that EP has reached the minimum threshold for being designated as an evidence-based treatment, particularly because one form has met the American Psychological Association Division 12 (Society of Clinical Psychology) criteria as a "probably efficacious treatment" for specific phobias; another for maintaining weight loss (APA, Division 12; Chambless & Hollon, 1998). Feinstein (2008, p.3) highlights that the common core strategy of EP therapies involve a "physical intervention for regulating electrical signals or energy fields with mental involvement in a feeling, cognition, or behaviour that is a target for change. This simultaneous pairing of the physical activity and mental activation is believed to therapeutically alter the targeted response".

EFT Evidence

In a study by Sezgin and Özcan (2004) EFT was compared with Progressive Muscle Relaxation (PMR) in the self-treatment of test anxiety with a group of adolescent students taking intensive training for the preparation of the university entrance exam in Turkey. Thirty-two students were randomly divided into two groups (N=16). Each group first received a lecture on the modality being used (EFT or PMR). Students in the EFT group were taught how to self-apply EFT while focusing on taking a test. Students in the PMR group received audio instruction CDs for progressive muscle relaxation, published by the Turkish Psychological Association. The groups were asked to apply their modality three times a week for the following two months, particularly at times when feeling anxiety about the test. At post-test (still prior to taking the entrance exam), both groups showed a significant decrease in test-taking anxiety, but the decrease for the EFT group (mean pre-treatment score of 53.9 decreased to 33.9) was significantly greater than the decrease (56.3 to 44.9) for the PMR group ($p < .05$).

Wells et al. (2003) conducted a RCT comparing EFT with a form of Diaphragmatic Breathing (DB) in the treatment of specific phobias of insects or small animals, including rats, mice, spiders, and roaches. In order to determine whether the EFT tapping was the operative factor in treatment gains, the two treatment conditions were kept as similar as possible (except for the physical intervention of tapping or breathing). Thirty-five participants were randomly assigned to the 30 minute EFT treatment (N=18) or the 30 minute DB treatment (N=17) condition. Phobic symptoms and changes were measured through self-report and a Behavioural Approach Task (BAT) was designed to measure the participants' level of avoidance of the feared animal.

Immediately following treatment, both groups showed immediate post-treatment improvement on all measures, with EFT being superior on four of them: fear questionnaire ($p < .005$), BAT ($p < .02$), subjective rating during the BAT ($p < .02$), and pre-/post-treatment subjective rating ($p <.005$). Follow-up testing six to nine months after the treatment involved 12 EFT participants and nine DB subjects. Follow-up scores for the EFT group on the BAT, subjective rating during the BAT, and the pre-/post-treatment subjective rating showed that the improvement found immediately following treatment was sustained. Scores on the fear questionnaire indicated an increase in fear since the treatment, but they were still significantly lower than the original pre-treatment scores ($p < .025$).

Baker and Siegel's (2005) partial replication of the Wells study used randomized controls (N=11 for the EFT group, N=10 for the control group) and confirmed its findings. A third condition was added, a no-treatment control group (N=10), and the authors changed the comparison condition from diaphragmatic breathing to a supportive interview where participants were given an opportunity to discuss their fears in a therapeutic, Rogerian-like setting. The time for the two treatment conditions was also changed, from 30 minutes to 45 minutes.

EFT was superior on 5 pre-/post measures: subjective rating following the treatment, subjective rating during the BAT, the fear questionnaire, a fear of animals questionnaire designed for the new study, and the BAT (.001, .002, .02, .001, and .03 respectively), and consistently supported the findings of the original study. However, participants in the supportive interview and the no-treatment control conditions of this study showed no significant changes on the questionnaire measures. Follow-up, on average 1.4 years later, showed that the effects of EFT persisted, though in an attenuated form.

The Present Study

It is proposed by the current authors that food craving is hypothesised to be an important intervening causal variable in the development of extreme eating behaviour and therefore, obesity. It is also hypothesised that the presence and power of food cravings decreases willpower for restraint and weight loss, and if food cravings for unhealthy foods are decreased then consumers should eventually lose weight because of the lack of desire to eat those foods. This randomised, clinical trial explored whether EFT reduced food cravings in participants under laboratory-controlled conditions, and compared this to a waitlist (WL) group. The WL group subsequently received the active EFT treatment after the 4-week test condition. Analysis compared the two groups to assess the impact of EFT on measures of food craving, psychological distress and restraint immediately following the test period. A secondary analysis collapsed the two groups, in order to assess whether any changes in outcome measures of food craving persist over time; that is, immediately before active treatment, immediately after active treatment and at a 6-month follow-up.

The following foods were examined: chocolate, salty carbohydrate foods (e.g. chips, crisps, salted nuts), sweet carbohydrate foods (e.g. cakes, biscuits, soft/soda drinks), carbohydrate foods which are neither sweet nor salty such as white refined foods (e.g. bread, rice, pasta), and caffeinated products.

Method

Participants

Ethics approval was obtained for the current study from the lead author's affiliated university. Male and female participants were recruited through community announcements in print advertisements, radio, and television. Inclusion criteria

included: participants (l) were suffering food cravings of a certain severity (defined below), (2) had a Body Mass Index greater than 25, (3) over 18 years old and under 60 years and not suffering any severe psychological impairment as measured by the Symptom Assessment (SA-45; Strategic Advantage, 2000), (4) they were not currently receiving treatment (psychological or medical) for their food cravings, (5) they agreed to be contacted for follow-up testing. Participants taking psychotropic medication which can suppress feelings, cravings and sensitivity were excluded. Known sufferers of diabetes (Type I and II), hypoglycaemia and women who were pregnant were excluded due to any physiological aetiology (effects related) to food cravings. Sufferers of Anorexia Nervosa were also excluded.

Participants were randomly assigned to one of two groups; the active 4-week EFT treatment or a WL condition of the same duration. Prior to randomisation and treatment beginning, 24 participants withdrew from the study for various reasons (e.g. death in family, illness, pregnancy and change of decision to pursue treatment for food cravings). The final sample consisted of 49 participants in the EFT group and 47 in the WL condition. Randomisation was conducted via a computerized random-number generator by a statistician associated with the lead author's institution who was unconnected to the study and blind to its aims. All participants in the EFT group were asked to complete the questionnaire package and were weighed and had height taken pre-test (at recruitment, before treatment) and post-test (immediately after treatment) . The WL condition were weighed, had their height taken and completed the package pre-test (at recruitment, on entry to the WL), post-test/pre-treatment (after the test period, at the beginning of their own treatment) and post-treatment (immediately after their own treatment). To limit attrition from waitlist conditions,

reminder telephone or email contacts were made with the WL participants. Follow-up also occurred at the 6-month point.

Procedures

A telephone screening procedure was used to determine eligibility and potential participants answered the Food Craving Inventory (FCI; White et al., 2002), and the SA-45 (Strategic Advantage, 2000) was also used in the screening process. . Finally, participants were asked their weight and height in order to ascertain their BMI.

After an unexpected response of more than 4000 individuals interested in participating, 120 eligible applicants were offered participation in the study through an informed consent procedure and all were aware of the random allocation to a treatment or WL condition. Applicants were screened on a first-come, first-served basis and treatment location and limited funding restricted how many eligible participants could be included. Self report questionnaires were issued as part of the study and a demographic questionnaire was included. Unsuitable or superfluous participants were advised in letter form that they did not meet selection criteria or that limited funding prevented them from being screened and included, and a list of suitable practitioners was included if they still wished to address their food craving using the EFT modality.

Measures

In their package, all eligible participants were asked to complete a demographic questionnaire, the FCI (White et al., 2002), the Power of Food Scale (POF; Lowe et al., 2009), and the SA-45. Three aspects of eating behaviour (cognitive

restraint, uncontrolled eating and emotional eating) were measured using the 10-item Revised Restraint Scale (Herman & Mack, 1975; Herman & Polivy, 1980). The eating behaviour of low restraint people seems to conform to the pattern that typically characterises ‘normal’ weight individuals, namely, "internal” regulation of food intake. In comparison, people with high restraint have more "external" regulation, and the presence of food cues, once restraint has been abandoned, serves to trigger additional eating.

The POF was used and is a 21-item scale designed to assess the psychological influence of the mere presence or availability of food. The authors suggest the POF may tap a pre-existing tendency toward heightened appetitive responses to food that could contribute to the development of obesity and some forms of disordered eating.

The FCI is a reliable and valid measure for the assessment of cravings for specific types of foods, namely: High Fats, Sweets, Carbohydrates/Starches, and Fast Food Fats, all of which comprise the higher order construct of “food craving” or the FCI Total score (White et al., 2002). Higher numbers for each of the subscales reflect greater cravings for that food type with the highest score being 185.

The SA-45 aimed to assess symptomatology across nine psychiatric domains, and is a short form of the Symptom Checklist (SCL-90). The Positive Symptom Index (PST) was used as it indicated the total number of symptoms reported to be present (i.e., item yielding a response other than "Not at all") as was the Global Severity Index (GSI) as it represented the total of the item response values for all items on the SA-45 providing a more meaningful overview of the level of symptomatology.

For two weeks prior to beginning a treatment condition and for the duration of the treatment, all participants were required to complete a daily food diary in real-time, indicating all food/drink eaten and whether the item was a craving item for

them. The definition of a craving was "an intense desire to consume a particular food (or food type) that is difficult to resist" (FCI; White et al., 2002). This was rated using a seven-point Subjective Units of Distress scale (SUDS; Wolpe, 1969). Food diaries were chosen as a method that best measures real-life eating behaviour and as a behavioural strategy, have been linked to successful weight loss (Hollis et al., 2008; Wadden, Butryn & Byrne, 2004). This data is currently being analysed using a qualitative approach by the lead author and will be published in another paper.

Finally, social validity was obtained at the end of each treatment session, to ascertain treatment satisfaction, and SUDS ratings of individual cravings were collected at the post- and six-month points using an 11-point scale.

Treatment Condition

The EFT treatment was conducted by a qualified practitioner and was delivered in groups of 15 at a local therapy clinic. The intervention consisted of four sessions (two hours duration each) with homework and was based on standardised treatment protocols (Craig & Fowlie, 1995). Full instructions and safeguards are described in Flint, Lammers and Mitnick (2005). In the present study acupressure points one to seven (eyebrow, side of eye, under eye, under nose, chin, collarbone, under arm) and the top of the head (eight) were used and the 9-gamut sequence was omitted due to Craig's (2008) suggestion that it is no longer necessary for treatment outcomes. The specific session topics were: 1. Psycho-education about EFT and how it works; 2. The nature of food cravings and how they can be addressed with EFT; 3. Feelings and Food and 4. Relapse prevention, using EFT for stress and relaxation and goal setting.

The specific strategy involved participants focusing on their craving and associated emotions and using the tapping method during the treatment. Treatment sessions did involve direct exposure to the craved food (which each individual supplied during session 2 and 3). Participants were encouraged to also use EFT outside the sessions, during times of craving, if they required it.

Data analysis

Data was analysed using SPSS (SPSS for Windows, 2008). For all analyses, individuals with missing data at any time point were excluded on an analysis by analysis basis. Baseline characteristics were compared between the active EFT and WL control group at recruitment using chi-square tests for categorical variables and independent sample t-tests for continuous variables. To test whether EFT has an immediate effect on the outcomes of interest and whether this effect was different between groups, seven separate mixed ANOVAs were used to measure the effect of two levels of the repeated measure variable of time (pre-test versus pos-ttest) and two levels of the between-group treatment variable (EFT versus WL) on the seven dependent variables.

To test whether the effect of EFT was sustained at six months, seven separate repeated measure ANOVAs were used to measure the effect of three levels of the repeated measure variable of time (pre-treatment, post-treatment and 6-months). To maximise the sample size, the two groups EFT and WL were collapsed into one group (note: the WL received active treatment after completion of the test period). Paired comparisons between time-points were undertaken using post hoc tests. The Bonferroni correction was applied for multiple comparisons.

Results

Table 1 presents the baseline characteristics of participants at recruitment. The majority of participants were female (89%), over 40 years of age (68%), married (53.1%), did not live alone (87%), had undertaken some form of education since high school (60%), were employed (79%) and had a household income exceeding $50, 000 (65%). There were no significant differences between the EFT and WL conditions in baseline sociodemographic characteristics ($p>0.05$). There were no significant differences in the recruitment weight (mean 90.52±19.11kg), BMI(mean 32.78±6.03) and self-report measures between the EFT and WL groups ($p>0.05$; Table 2).

Insert Table 1 and Table 2

Table 3 outlines the initial craving concerns of participants and the craving they chose to address in the study. Craving for chocolate was chosen most frequently.

Insert Table 3

Hypothesis: Is There an Immediate Effect of EFT?

Tables 4 shows the mean and standard deviations pre-test and post-test for the EFT and WL groups, and Table 5 shows the results of the mixed ANOVA comparisons.

Table 4 and 5 here

There was a significant change from pre- to post-test in FCI total, POF total, SA45GSI and SA45PST ($p<0.05$; Table 5). For FCI total and POF total, the significant interaction between time and group suggests that there was a significant difference between the EFT and WL groups, with those receiving EFT treatment having a greater reduction in these measures than those on the waitlist ($p<0.05$). A significant interaction was also observed for total restraint ($p<0.05$), indicating that although there was no overall change in restraint between pre- and post-test across groups, there was a significant difference between groups. There was a significant reduction in both the SA45 psychological distress measures over time ($p<0.05$); however, the time*group interaction did not reach significance (SA45GSI $p=0.12$ raw score $p=0.09$ T score; SA45PST $p=0.055$ raw score $p=0.309$ T score). Thus, this reduction could not be explained by the EFT treatment condition as opposed to WL. No significant differences were observed for weight or BMI over time or between groups ($p>0.05$).

Hypothesis: Do Any Immediate Effects of EFT continue over Time?

For the collapsed treatment cohort (i.e. EFT and WL combined), 43 participants were included in at least one repeated measures ANOVA. The remaining 53 had missing data for all seven dependent variables at one or more time points (pre-treatment, post-treatment or 6-month). At 6-month follow-up, 46 participants returned their self-report measures (48% of the sample); the remaining participants accounted for the majority of the missing data. Table 6 presents means and standard deviations at pre-treatment, post-treatment and 6-month follow-up points, and the repeated measure ANOVA results for each dependent variable.

Insert Table 6

Repeated measure ANOVA analyses indicated (within subject) a significant change across the three time points for FCI total scores ($p<0.001$), POF scale ($p<0.001$), revised restraint total scores ($p<0.001$), SA45GSI ($p<0.05$) and SA45PST ($p<0.05$) indicating participants received a significant change in these measures over time.

Table 7 presents post hoc comparisons across the three time points. There was a significant reduction from pre-treatment to immediately post-treatment for FCI total scores (mean difference -16.00 $p<0.001$) and POF scale (mean difference -23.20 $p<0.001$). This reduction was maintained at the 6-month follow up (FCI total mean difference -10.17 from pre-treatment $p<0.05$, POF total mean difference -27.24 from pre-treatment $p<0.001$), indicating changes remained consistent over time. There was no significant difference between post treatment and 6-months so no further gains were made. The total score of the Revised Restraint scale appeared to have a delayed effect, with the mean difference not significant immediately post-treatment but reaching significance at the 6-month point (mean difference -3.46 from pre-treatment $p<0.01$). There was a further reduction in the restraint score (mean difference -1.76, $p=0.028$) between post-treatment and 6-month follow-up indicating participants were approaching a more 'normal' internal regulation of food intake.

For the psychological distress scores, there was a significant reduction in distress from pre- to post-treatment (SA45GSI mean difference raw score -10.15 T score -3.44 $p<0.05$, SA45PST mean difference raw score -3.756 T score -3.56 $p<0.01$), indicating participants were experiencing a reduction in psychological distress immediately following treatment. Raw scores: Only the SA45-GSI raw scores were significantly reduced at the 6-month point compared to pre-treatment ($p=0.03$).

T scores: Both the SA-45 GSI and PST T scores remained significantly reduced at 6 months compared to pre-treatment ($p<0.05$). With regards to weight and BMI, there were no significant mean differences between the three time points.

Insert Table 7

Participant Evaluation and Subjective Ratings.

All participants completed social validity questions at the end of each session and these indicated that 89% found the EFT program succeeded in meeting their goals for reducing food cravings 'very much'. Furthermore, 91% found EFT addressed their concerns very well and 80% were at least quite confident (if not extremely confident) in their ability to apply EFT.

All participants were asked to rate their perceived cravings at the end of treatment and again at the six-month point. At post-treatment, 65% of participants rated their cravings as a three or below on an 11-point SUDS scale and at 6-months 50% of participants rated the same craving at three or below.

Discussion

This study evaluated the effectiveness of a meridian-based intervention, EFT, for food cravings in overweight or obese adults. The intervention was offered to male and female overweight and obese adults and was evaluated against a waitlist condition. It was expected, based on preliminary research conducted on EFT, that there would be significant reductions in food cravings for the treatment group, compared to the WL condition. Other research has indicated the utility of EFT with psychological symptoms, but has not investigated its use with food cravings (e.g.

Sezgin & zcan, 2004; Wells et al., 2003. Perceived power of food and severity of food cravings in this study decreased for treatment participants and were significantly different to the WL. Further, in a non-comparative analysis, a decrease in these measures observed immediately after treatment was retained at the 6-month time point.

A common criticism of meridian focused techniques such as EFT is that benefits gained might be due to the distracting nature of the strategy, and might then be comparable to behaviour therapy practices of exposure with response prevention. This criticism has been addressed in previous publications on EFT (Wells et al., 2003). One of the requirements of EFT is that people must "tune in" to their problem for it to work. It is the exact opposite of distraction (Craig, 2008). Session two in the treatment program required participants to bring their most craved food and hold, smell and taste the food, thus it made trying to distract themselves from the food as they practiced the tapping procedure, very difficult. The notion that at the six month follow-up, power of food and severity of food cravings had remained significantly low suggests that the technique had a benefit.

In terms of the hypotheses relating to the lasting effects of EFT, the present study's results are supportive of the study predictions that EFT can reduce and maintain decreased targeted cravings over time. This confirms other research which suggests the same. Feinstein (2008) reviewed studies of energy psychology that included long term follow-up, and results held over time. Rowe (2005) found that participant gains in a general population were maintained over time, and Wells et al. (2003) found that phobias responded to a single EFT treatment and remained extinguished on follow-up.

Feelings of restraint over food did not change for participants during the treatment phase (although they did approach significance), but appeared to have a delayed effect, reaching significance at the six-month point. It may be that decreases in total food cravings and the associated power of food may result in decreased restraint over time and consequent internal regulation. There is research which indicates that restrained eaters choose foods which are lower in kilocalories (de Castro, 1995), and avoid foods such as cheese (de Castro, 1995), butter and margarine (Lahteenmaki & Tuorila, 1995) and sweets (French, Jeffery, & Wing, 1994).

Participants also achieved a significant decrease in psychological distress during the treatment phase which was maintained at 6 months. The results suggest participants at least maintained a lowered severity and breadth of a range of co-morbid psychological problems such as depression and anxiety. Nevertheless, the reduction in psychological distress observed at the end of treatment was not found to differ according to treatment group. Rather, being involved in the study may have been associated with a reduction in psychological stress.

The fact that participants did not indicate a significant change in BMI from pre- to post-treatment was expected. Because of the short (4-week) but appropriate for EFT, timeframe of the program, weight loss due to reduced food cravings was thought to be unlikely. It was expected that BMI may change by the six-month point but this was not achieved. It is worth noting that BMI was self-reported at the six-month mark, rather than occurring in a clinical setting. Longer-term follow-up of the impact of decreased food cravings and associated reduced consumption of those foods (and improved food choices) may be needed to indicate a stronger link between food cravings and subsequent weight. It is also possible that the study had insufficient power to detect a difference in BMI between groups or over time. Future studies of a

longer timeframe involving larger numbers of participants are needed to confirm this hypothesis.

This study provides evidence for the immediate benefit of using EFT on food cravings and is the first to present such results in a controlled trial. Strengths of this study that serve to increase the generalizability of the findings include random allocation of participants to conditions, the presence of a waitlist comparison, single clinician delivery of the program, and the use of highly reliable and valid measures of assessment and change. However, the present findings are limited due to the absence of a larger sample size, comparison of group versus individual treatment, comparative analysis at 6-month follow-up, missing data and comparison to an evidenced-based treatment for food cravings. This final issue is presently being addressed in a comparison study by the lead author. Because the study only had 10 men, the results should be interpreted cautiously with respect to generalising to the male population.

The EFT treatment in this study only addressed the craving for one food (63% of the EFT participants chose to address chocolate or salty cravings compared to only 43% of wait-list participants). The effect was obviously reversed for sweet carbohydrates, carbohydrates, and caffeine. This could be considered as a design limitation and future studies may benefit from a randomisation procedure using stratification. Finally, it may be that results were due to a placebo effect (although unlikely with the six-month results), therapist expectancy or perceived pressure from participants to report improvements, or the novelty effect of the treatment. Larger studies may determine if the gains found in this study are true. Future research in the area of EFT and food cravings would benefit from comparing EFT with non-meridian points to ascertain whether EFT works for the proposed energy meridian theory.

Research investigating durability of treatment gains is also necessary. Nevertheless this novel study sets the foundation for further research into this promising technique.

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Table 1

Baseline SD characteristics of participants at recruitment

Variable	Category	EFT (n=49)		WL (n=47)		Total (n=96)	
Gender	Female	43	87.8%	42	89.4%	85	88.5%
	Male	6	12.2%	5	10.6%	11	11.5%
Age	40 or under	16	32.7%	15	31.9%	31	32.3%
	41 or older	33	67.3%	32	68.1%	65	67.7%
Marital Status	Married	21	42.9%	24	51.1%	45	46.9%
	Other	28	57.1%	23	48.9%	51	53.1%
People in House	One	7	14.3%	6	12.8%	13	13.5%
	Two or more	42	85.7%	41	87.2%	83	86.5%
Highest Education	High school or equivalent	23	46.9%	15	31.9%	38	39.6%
	Further education	26	53.1%	32	68.1%	58	60.4%
Employment	Employed	39	79.6%	37	78.7%	76	79.2%
	Other	10	20.4%	10	21.3%	20	20.8%
Household Total Income	<$40k	19	38.8%	15	31.9%	34	35.4%
	≥$50k	30	61.2%	32	68.1%	62	64.6%

Table 2

Baseline weight, BMI and self-report measures of participants at recruitment

Variable	**EFT**			**WL**			**Total**	
	N	**Mean**	**SD**	**N**	**Mean**	**SD**	**Mean**	**SD**
Weight (kilogram)	49	90.41	20.36	44	90.64	17.84	90.52	19.11
BMI	49	32.20	6.17	44	33.43	5.88	32.78	6.03
FCI Total	47	64.57	14.57	47	65.53	18.09	65.05	16.35
POF Total	46	72.17	20.51	47	76.45	18.99	74.33	19.77
Restraint Total	46	33.30	5.77	44	33.00	5.26	33.16	5.49
SA45GSI Raw	47	80.36	30.44	46	75.30	23.35	77.86	27.08
SA45GSI Tscore	47	60.13	10.25	46	58.96	8.26	59.55	9.29
SA45PST Raw	47	19.21	11.18	46	18.04	9.29	18.63	10.25
SA45PST Tscore	47	59.68	9.70	46	59.59	8.69	59.63	9.17

Abbreviations: BMI – Body Mass Index
FCI – Food Craving Inventory
POF – Power of Food Scale
Restraint – Revised Restraint Scale
SA45GSI - Symptom Assessment Global Severity Index (Raw score & T score)
SA45PST – Symptom Assessment Positive Symptom Index (Raw score & T score)

Table 3

Count of initial concern and craving

Variable	**Category**	**n**	**EFT (n=49)**		**n**	**WL (n=47)**	
Craving Addressed	Chocolate	49	21	42.9%	47	16	34.0%
	Salty	49	11	22.4%	47	4	8.5%
	Sweet carbohydrates	49	10	20.4%	47	17	36.2%
	Carbohydrates	49	7	14.3%	47	9	19.1%
	Caffeinated	49	0	0%	47	1	2.1%

Table 4

Means and standard deviations for EFT and WL at pre- and post-test

	EFT					WL				
		Pre-test		Post-test			Pre-test		Post-test	
	N	**Mean**	**SD**	**Mean**	**SD**	**N**	**Mean**	**SD**	**Mean**	**SD**
Weight	41	91.02	20.89	90.51	21.0	44	90.64	17.84	90.61	17.73
BMI	41	32.24	6.43	32.17	6.55	44	33.43	5.88	34.02	6.91
FCI Total	41	62.78	13.95	48.63	12.82	45	64.51	17.76	61.51	14.56
POFTotal	40	71.35	20.76	57.53	18.55	45	76.16	19.13	73.58	18.96
Restraint Total	40	33.50	5.95	31.63	6.27	41	32.83	5.39	33.73	4.85
SA45GSI raw	41	79.68	30.44	71.54	26.19	44	73.39	21.93	71.32	18.63
SA45GSI T score	41	59.83	10.48	57.07	9.57	44	58.36	7.93	57.93	7.32
SA45PST raw	41	19.12	11.48	15.56	10.38	44	17.36	8.89	16.82	8.08
SA45PST T score	41	59.61	9.97	56.63	9.14	44	59.11	8.58	57.95	7.23

Abbreviations: BMI – Body Mass Index
FCI – Food Craving Inventory
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Restraint – Revised Restraint Scale
SA45GSI - Symptom Assessment Global Severity Index (raw score & T score)
SA45PST – Symptom Assessment Positive Symptom Index (raw score & T score)

Table 5

Summary of mixed ANOVA results for comparison between EFT and WL at pre- and post-test

		Within subject effects				**Between subject effects[a]**	
	df	**time(t)**		**time*group**		**group**	
Measure (DV)		**F**	**p**	**F**	**p**	**F**	**p**
Weight	1,83	2.75	0.101	2.30	0.133	0.01	0.973
BMI	1,83	0.77	0.384	1.26	0.265	1.23	0.270
FCI Total	1,84	40.55	<0.001*	17.13	<0.001*	6.20	0.015*
POFTotal	1,83	20.56	<0.001*	9.67	0.003*	7.55	0.007*
Restraint Total	1,79	0.87	0.354	7.08	0.009*	0.40	0.530
SA45GSI raw	1,83	6.87	0.010*	2.43	0.123	0.43	0.513
SA45GSI T score	1,83	5.50	0.022*	2.92	0.091	0.028	0.867
SA45PST raw	1,83	7.00	0.010*	3.78	0.055	0.02	0.899
SA45PST T score	1,83	5.43	0.022*	1.05	0.309	0.06	0.807

* $p<0.05$

[a] In addition, there was a significant between subject effect for the intercept for all variables ($p<0.001$)

Abbreviations: BMI – Body Mass Index
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SA45GSI - Symptom Assessment Global Severity Index (raw score & T score)
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Table 6

Means, standard deviations and repeated measure ANOVAs for collapsed groups at pre-treatment, post-treatment and 6-months

		Pre-treatment		Post-treatment		6mth		df	F	p
	N	Mean	SD	Mean	SD	Mean	SD			
Weight	42	92.97	18.98	92.40	19.02	90.16	17.71	(1.03, 42.08)	1.73	0.196
BMI	41	33.29	6.12	33.09	6.24	32.34	6.46	(1.04, 41.65)	1.28	0.267
FCI Total	42	63.54	15.30	47.54	13.17	53.38	18.58	(1.68, 68.85)	14.90	<0.001*
POF Total	41	76.92	19.70	53.73	19.27	49.68	19.48	(2,80)	45.10	<0.001*
Restraint Total	41	33.92	5.20	32.21	5.08	30.46	5.84	(1.71, 68.33)	9.94	<0.001*
SA45GSI raw	41	74.85	28.17	64.71	17.54	64.63	22.25	(2,80)	6.06	0.004*
SA45GSI T score	41	57.85	10.70	54.41	8.71	53.02	10.03	(2,80)	5.92	0.004*
SA45PST raw	41	16.48	10.77	12.73	9.26	13.29	10.88	(2,80)	4.37	0.016*
SA45PST T score	41	57.24	9.93	53.68	9.15	53.66	10.65	(2,80)	5.02	0.009*

* p<.0.05

Abbreviations: BMI – Body Mass Index
FCI – Food Craving Inventory
POF – Power of Food Scale
Restraint – Revised Restraint Scale
SA45GSI - Symptom Assessment Global Severity Index (raw score & T score)
SA45PST – Symptom Assessment Positive Symptom Index (raw score & T score)

Table 7

Post hoc paired comparisons, with Bonferroni adjustment, for repeated measures ANOVAs

	Post-treatment vs pre-treatment		6-month versus pre-treatment		6-month versus post-treatment	
	Mean difference	p	Mean difference	p	Mean difference	p
Weight	-0.57	0.096	-2.81	0.475	-2.24	0.767
BMI	-0.20	0.397	-0.95	0.653	-0.76	0.997
FCI Total	-16.0	<0.001*	-10.17	0.013*	5.83	0.213
POF	-23.20	<0.001*	-27.24	<0.001*	-4.05	0.506
Restraint Total*	-1.71	0.083	-3.46	0.002*	-1.76	0.028*
SA45GSI raw	-10.15	0.017*	-10.22	0.030*	-0.073	1.000
SA45GSI T score	-3.44	0.048*	-4.83	0.012*	-1.39	0.960
SA45PST raw	-3.76	0.008*	-3.20	0.122	0.56	1.000
SA45PST T score	-3.56	0.010*	-3.59	0.042*	-0.024	1.000

* p<.0.05

Abbreviations: BMI – Body Mass Index
FCI – Food Craving Inventory
POF – Power of Food Scale
Restraint – Revised Restraint Scale
SA45GSI - Symptom Assessment Global Severity Index (raw score & T score)
SA45PST – Symptom Assessment Positive Symptom Index (raw score & T score)