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Running Head: EATING HABITS AND PSYCHOLOGICAL DISTRESS

A Randomised Clinical Pilot Trial: Do Emotional Freedom Techniques Impact Eating Habits in 14 to 15 Year Olds, as well as Self-Esteem, Self-Compassion, and Psychological Distress?

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A Feasibility Study of the Impact of EFT on Eating Behaviours, Self-Esteem, Compassion, and Psychological Symptoms Among 14-15 Year Olds

Abstract

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.

Keywords: EFT, obesity, self-esteem, fatigue, psychological distress, negative eating behaviours, compassion

The global obesity epidemic has been accelerating for four decades, with limited prevention efforts being instigated during this period (Gortmaker et al., 2011). Recent research conducted by the World Health Organization (WHO) reports that obesity represents the fifth leading cause of global deaths, with at least 2.8 million adults dying each year as a result of being overweight or obese (WHO, 2014). Additionally, the eating behaviours 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 (American Heart Association, 2014).

Vast amounts of research indicate these disturbing forecasts are largely due to eating behaviours (Buttitta, Iliescu, Rousseau, & Guerrien, 2014; Pulgarón, 2013). There are also a number of eating behaviours that develop during the period of childhood and adolescence that can manifest into eating-related psychopathology (Ackard, Neumark-Sztainer, Story, Perry, & Casey, 1999). These disordered behaviors cause well-established difficulties and have a myriad of long-term physical and psychological consequences, including increased risk of chronic health conditions (Buttitta et al., 2014). This highlights the importance of designing effective strategies for the prevention and management of this global epidemic.

Food Choices and Eating Behaviours

The Australian Nutritional Survey (Australian Government, Department of Health, 2008) indicated that the dietary consumption of Australian adolescents is inadequate, with only 1-5% of adolescents aged 14 to 16 meeting the recommended guidelines for adequate intake of vegetables and fruits (Australian Government, Department of Health, 2008).

Adolescence is a critical period for the formulation of lifetime eating habits and a broad range of factors have been identified that influence the eating behaviours of youth (Levitan & Davis, 2010). These factors include social modelling, access to healthy food, exposure to food advertising, negative emotions, and parental influence (Landis, Parker, & Dunbar, 2009; Levitan & Davis, 2010). Ackard et al. (2003) found that, in a school-based sample of approximately 4,700 students, 57% of girls and 33% of boys reported using unhealthy weight control behaviours 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.

Psychological Impacts

Nutritionally sparse diets, cravings for readily accessible unhealthy foods and overeating can serve in forming unhealthy eating habits in adolescence, which are often maintained throughout the individual's lifespan (Neumark-Sztainer et al., 1999). These unhealthy habits are associated with poor health outcomes, such as a higher risk of developing chronic disease as adults, increased susceptibility to psychological distress, and can detrimentally affect overall quality of life (Vander Wal, 2012). A study by Young-Hayman et al. (2006) showed that overweight and obese children reported higher levels of psychological distress (Young-Hayman et al., 2006). Rojas and Storch (2010) reported that overweight and obese children are more likely to be vulnerable to social isolation and peer victimization. Being overweight/obese can also cause depression, anxiety, loneliness, and can dramatically lower levels of self-esteem, self-compassion and self-worth (Russell-Mayhew et al., 2012; Swallen et al., 2005). In extreme cases this distress may even lead overweight/obese adolescents to attempt suicide (Ackard et al. 2003).

Self-Esteem

Studies have consistently demonstrated self-esteem as another factor contributing to childhood and adolescent obesity (e.g., Strauss, 2000). French, Story, and Perry (1995) 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 (Braet, Mervielde, & Vandereycken, 1997; French et al., 1995).

Self-Compassion

Self-compassion is another construct that has been associated with improved eating behaviours (Adams & Leary, 2007), and refers to an individual having an understanding for the self instead of being judgmental or critical (Neff & Germer, 2013). Empirical literature suggests that self-compassion is also strongly linked to psychological and physiological health, with individuals higher in self-compassion being more likely to exercise regularly (McHugh, Kowalski & Magnus, 2010) and maintain a healthy diet (Adams & Leary, 2007). For adolescent populations, studies indicate that higher ratings of self-compassion are associated with increased ability to identify and modify unproductive behaviours (Neff & Pommier, 2012). Kelly and colleagues (2013) 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 (National Health and Medical Research Council, 2012). In a meta-analysis of 131 published studies, Russell-Mayhew et al. (2012) 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, Veitch and Ball (2010), 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 (Mann et al., 2007), which suggests the need for more

holistic interventions that also take into account other variables, including psychological constructs (Goodspeed Grant, 2008).

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 (Church, De Asis & Brooks, 2012; Feinstein, 2012). EFT is a group of exposure therapies that consist of somatic and cognitive elements that have been found effective in reducing food cravings, resulting in reduced weight, craving restraint and psychological coping in adult trials (Church, 2013; Stapleton, Sheldon & Porter, 2012). In a randomised controlled trial (Stapleton, Sheldon, Porter & Whitty, 2011) of 96 overweight/obese adults, participants were allocated to either 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 six 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 (Stapleton et al., 2012b).

Evidence suggests that particularly positive aspects of energy psychology treatments are the often-enduring results displayed within short timeframes of between one to six weeks (Baker & Siegel, 2010; Church, 2010; Rowe, 2005). The process of EFT involves focusing on the situation identified as causing the distress and tapping on specific meridian points (see Figure 1) on the body (Craig, 2010).

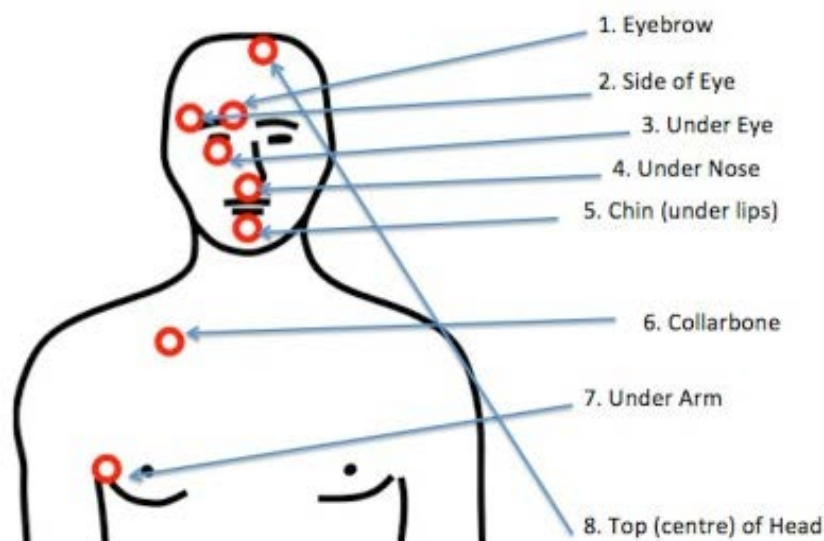


Figure 1. EFT tapping points

More recently, Stapleton et al. (2014) compared the effectiveness of EFT and Cognitive Behavioural Therapy (CBT) in the treatment of food cravings among 88 overweight and obese adults (Stapleton, Porter, Bannatyne, Urzi, & Sheldon, 2014). Both the EFT and CBT groups reported significant decreases in food cravings, craving restraint, and subjective power of food from pre-treatment to 6-month follow-up and were comparable to the non-clinical comparison group. The EFT group lost on average 6.79 kilograms from pre-treatment to 6-month follow-up, while the CBT group lost only 4.33 kilograms from pre-treatment to 6-month follow-up. To date, no published studies have explored the effectiveness and clinical utility of EFT for targeting eating behaviours, 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 increasing healthful lifestyle practices among 14 and 15 year olds. The current study aimed to assess whether frequency of eating behaviour, 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 ten-week follow-up. Finally, the study aimed to compare the results of the EFT group participants to waitlist control group (WL). It was hypothesised that, at post-intervention, the EFT group would report increased positive eating behaviours, decreased negative eating behaviours, increased self-esteem, increased self-compassion, and decreased psychological distress, compared to the WL group. Moreover, it was hypothesised 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 operationalised. Two certified professional EFT practitioners, who also fulfilled the role of group facilitators, provided the clinical instruction of EFT. EFT treatment delivered was based on standardised treatment protocols (Craig & Fowlie, 1995) and provided via a group setting. Two student researchers acted as support facilitators. Each session consisted of 70 minutes of treatment per week, every Tuesday at the same time. Table 1 briefly outlines weekly program topics and content.

Table 1

Weekly Program Content

Brief overview of content	
Week 1	Explanation of EFT; confidentiality and program rules
Week 2	Body image, resilience, and self-compassion
Week 3	Dietary requirements, water intake, and taking care of yourself
Week 4	Importance of exercise and of getting sufficient sleep
Week 5	Information about takeaway/junk foods and how to beat cravings
Week 6	Making goals and sticking to them; debriefing of program; questions and comments.

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. Debriefing was conducted at completion of the program where participants were invited to ask questions and/or raise concerns in relation to the study within an open forum or privately.

Recruitment

Potential participants were recruited from a local State High School to take part in a 6-week pilot study consisting of 70 minutes of treatment per week. Inclusion criteria specified that participants should be between 12-18 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 I and II), and adolescents with hypoglycaemia.

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 completed their own participant consent forms, except for two individuals who declined to take part in the study. Participants were randomly assigned into two intervention groups in accordance with availability. In total, 26 participants took part in the 6-week intervention. All However, four participants, all from Group 1, did not complete their final assessments and their data could not be used in the study analyses. Attendance rate average was 4.85 sessions (out of a total 6) for the total sample. Refer to Figure 2 for consort diagram and complete details of participant flow.

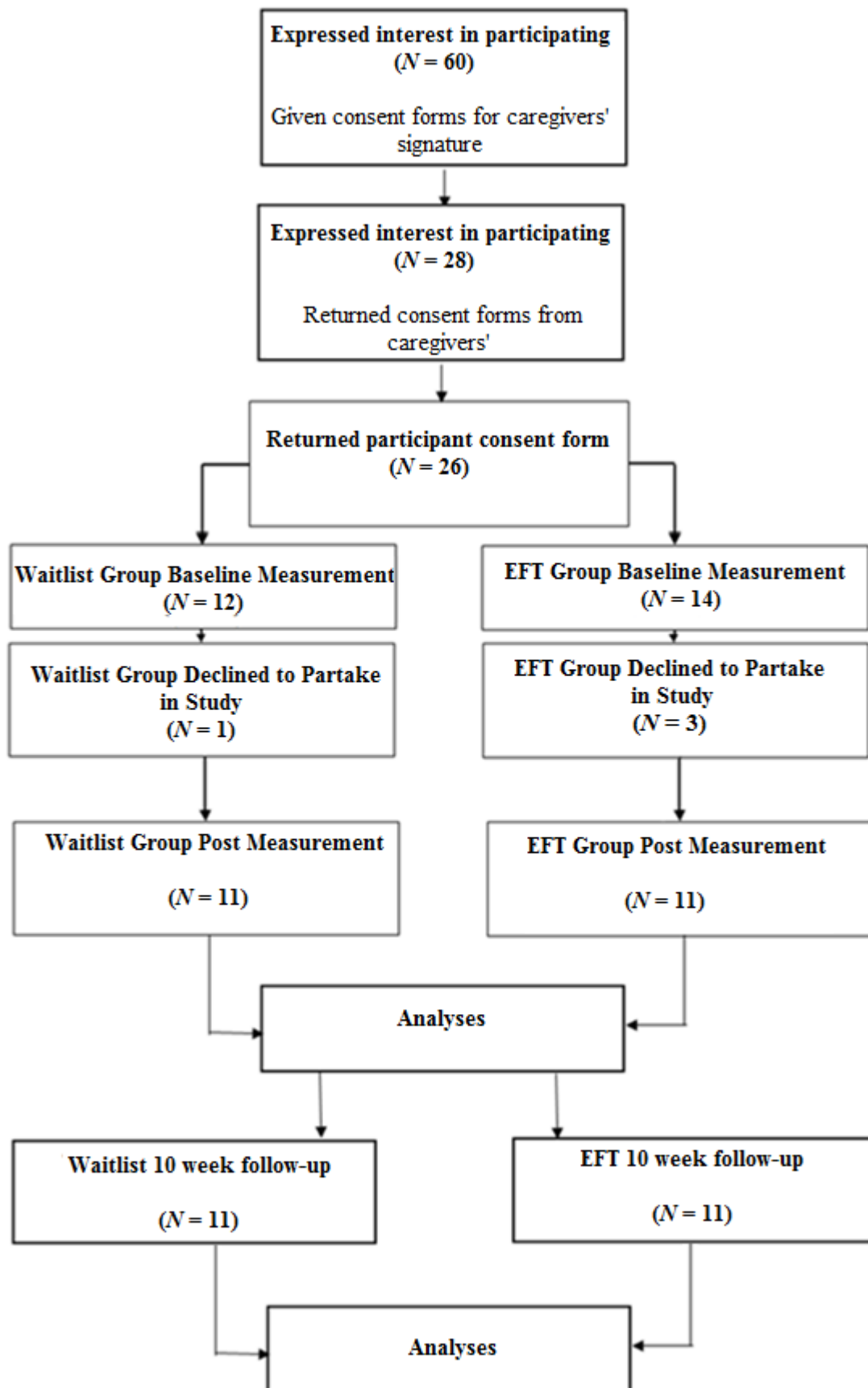


Figure 2. Consort participant flow diagram of EFT feasibility program
Participants

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 14-15 years. The participants were predominantly 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 was comprised of 212 items based on self-report responses, and included a battery of measure as well as weekly evaluation forms. 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 to 45 minutes 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 behaviours. The Youth Adolescent Food Frequency Questionnaire–Short Version (YAQ; Rockett et al., 1995) is a self-report measure designed to assess the frequency of eating behaviours in individuals on a seven-point scale ranging from 1 = *Never/less than once a month* to 7 = *More than 5 times a day*. The YAQ has demonstrated adequate internal consistency, test-retest reliability, and validity, in previous studies (Lukens, & Linscheid, 2008; Martinez, Philippi, Estima, & Legal, 2013).

Self-esteem. The Rosenberg Self-Esteem Scale (RSEQ) is 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 1 = Strongly agree to 4 = Strongly disagree. Previous studies have shown the RSEQ to possess good internal consistency and construct validity (McMullen & Resnick, 2011; Supple & Plunkett, 2011).

Psychological distress. The Depression Anxiety Stress Scale – 21 (DASS-21 ; Lovibond & Lovibond, 1995) 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 (Antony, Bieling, Cox, Enns, & Swinson, 1998; Henry & Crawford, 2005).

Self-compassion. The Self Compassion Scale (SCS – Short Form; Raes, Pommier, Neff & Van Gucht, 2011) 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 (Berger, 1952; Raes et al., 2011).

Weekly Evaluation. 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

Preliminary Analyses

Data was analysed 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 3 displays the means and

standard deviations for the dependent variables between groups at pre-intervention, post-intervention, and follow-up. Using Wilk's Lambda, a significant multivariate main effect was revealed for Group $F(6, 15) = 3.98, p = .014$, 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.

Healthy drinks. 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 revealed there was a significant difference between groups at pre-intervention $F(1, 20) = 6.60, p = .018$, partial $\eta^2 = .25$, power = .69, that is the WL group consumed fewer healthy drinks than the EFT group. At post-intervention $F(1, 20) = 11.54, p = .003$, partial $\eta^2 = .37$, power = .90, there was a significant difference between groups with the EFT group consuming a greater number of healthy drinks compared to the WL group. A significant difference between groups was also observed at follow up $F(1, 20) = 40.32, p < .001$, partial $\eta^2 = .67$, power = 1.00, that is the EFT group consumed a significantly greater number of healthy drinks than the WL group.

Simple effects analyses for Time revealed there was a significant difference in the number of healthy drinks consumed by the WL group over time $F(1, 10) = 20.12, p = .001$, $\eta^2 = .67$, power = .98. Pairwise comparisons with Sidak adjustment revealed the number of healthy drinks consumed by the WL group increased significantly ($p = .004$) from pre-intervention to follow up. For the EFT group, significant differences in the number of healthy drinks consumed across time were observed, $F(2, 20) = 110.43, p < .001$, $\eta^2 = .92$, power = 1.00. Pairwise comparisons with Sidak adjustment revealed, although the number of healthy drinks consumed by the EFT group increased from pre-intervention to immediately post-intervention, this increase was not significant ($p = .059$). However, there was a significant ($p < .001$) increase in the number of healthy drinks consumed from post-intervention to follow-up, and this increase was significantly greater than pre-intervention levels ($p < .001$).

Unhealthy drinks. 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. 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. 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. 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. 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 a significant difference between groups at pre-intervention $F(1, 20) = 7.13, p = .015$, partial $\eta^2 = .26$, power = .72, with the EFT group and WL group. 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 although self-esteem scores increased from pre-intervention to immediately post-intervention, this increase was not significant ($p = .642$). A significant increase in self-esteem scores was observed ($p < .001$) from post-intervention to follow-up, with follow-up scores significantly greater than pre-intervention levels ($p = .031$).

Self-compassion. The results revealed a significant univariate interaction effect on self-compassion, $F(2, 34) = 7.24, p = .002$, $\eta_p^2 = .299$, power = .913, indicating that self-compassion scores 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 $F(1, 20) = 1.09, p = .310$, partial $\eta^2 = .75$, power = .13. At post-intervention, there was no significant difference between the EFT group and WL group at post-intervention, $p = .267$, or at follow up, $p = .242$.

Simple effects analyses for Time revealed there was a significant difference in the self-compassion scores of EFT group participants over time, $F(1, 19) = 11.41, p < .001$, η_p^2

= .643, power = .997. Pairwise comparisons with Sidak adjustment revealed that self-compassion scores increased significantly from pre-intervention to immediately post-intervention, $F(1, 21) = 11.22$, $p = .003$, $\eta_p^2 = .348$, power = .891, with no additional improvements made from post-intervention to 10-week follow-up, $F(1, 15) = 2.32$, $p = .116$, partial $\eta^2 = .311$, power = .472. Simple effects analyses for Time revealed there was a significant difference in the self-compassion scores of WL group participants over time $F(1, 10) = 35.08$, $p < .001$, $\eta^2 = .78$, power = 1.00.

Table 3

Means and Standard Deviations of Dependent Variables between Groups at Pre, Post and Follow-up for Healthy drinks, Unhealthy drinks, Unhealthy foods, and Self-esteem.

Variable	WL Group (n = 22)			EFT Group (n = 22)		
	Pre	Post	Follow-Up	Pre	Post	Follow-Up
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Healthy Drinks	9.73 (1.95)	9.73 (1.95)	10.91 (2.59)	11.64 (1.50)	12.45 (1.81)	17.64 (2.38)
Unhealthy Drinks	16.27 (6.72)	16.27 (6.72)	11.82 (2.79)	13.18 (3.09)	10.45 (1.86)	7.91 (2.12)
Healthy Foods	29.18 (7.81)	29.18 (7.81)	33.27 (6.51)	32.73 (6.75)	31.55 (4.25)	38.55 (4.63)
Unhealthy Foods	34.55 (5.80)	34.55 (5.80)	25.55 (4.63)	36.75 (4.97)	28.45 (4.44)	23.73 (3.95)
Self-Esteem	23.82 (4.29)	23.82 (4.29)	24.73 (4.73)	27.73 (2.28)	28.64 (2.98)	31.45 (3.91)
Psych. Distress	35.57 (16.31)	35.57 (16.31)	33.79 (15.54)	46.25 (14.68)	39.13 (12.89)	28.73 (8.49)
Self-Compassion	35.50 (8.22)	35.50 (8.22)	38.21 (5.87)	31.75 (7.92)	34.50 (9.47)	37.94 (7.67)

Weekly Evaluation Results

A total of 66 completed participant evaluation forms were submitted for review. For the WL group, results indicated that 71% of participants found the program useful, 62% of participants indicated they would be confident in using the information and skills covered, and 77% of participants responded that the content was easy to understand. 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 6-week EFT intervention program on adolescents and to extend understanding of the relationship between eating behaviours, self-esteem, self-compassion, and psychological distress.

For healthy drinks, results provided support for the first hypothesis as 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, which does not provide support for the second hypothesis with respect to healthy drinks. For unhealthy drinks, results provided support for the first hypothesis as the EFT group consumed

a significantly lower number of unhealthy drinks at post-intervention, compared to the WL group. Results also indicated support for the second hypothesis with respect to unhealthy drinks, as 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. This is inconsistent with both the first and second hypotheses, in relation to healthy foods. For unhealthy foods, results provided support for the first hypothesis as the EFT group consumed a significantly lower number of unhealthy foods at post-intervention, compared to the WL group. Results also indicated support for the second hypothesis with respect to unhealthy foods, as 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 (e.g., Stapleton et al., 2012; Stapleton et al., 2011), which indicates that EFT-based intervention has the potential to improve negative eating behaviours 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. This is inconsistent with both the first and second hypotheses, in relation to psychological distress. 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 tapping sequence to various psychological symptoms.

In relation to self-esteem, the first hypothesis was supported as 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 and thus does not provide support of the second hypothesis.

With respect to self-compassion, the first hypothesis was partially supported as results 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 (Neff & Germer, 2013), and may further suggest that self-compassion can be taught and enhanced. However, this effect was not maintained at follow-up, and thus does not provide support of the second hypothesis in terms of self-compassion.

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. Potentially this study's greatest strength is that it questions previously held notions that healthy weight interventions should focus entirely on food intake and physical activity. Whilst these aspects are certainly warranted, to date the majority of interventions of this nature have been largely unsuccessful (Stice et al., 2006). Adopting a more multifaceted intervention approach that examines not only dietary intake and physical output, but more adaptive, protective and positive psychology constructs may assist in more efficacious future programs (Russell-Mayhew et al., 2012).

Whilst this study has a considerable number of strengths, there are also limitations that deserve mention. Firstly, and most obviously, is the small study size, which is likely to affect the generalisability of the study findings. Despite this, the intervention was designed to serve as a pilot study and replication of this program, with a significantly increased sample is planned for the near future. A further limitation of this study was that an active control group was not established. A control group, in which the psychoeducation component was delivered as the only intervention, would have considerably contributed to this study. Relying almost

exclusively on self-report questionnaires in research is a common methodological concern, and as such, it is important to consider whether results of the current study may have been affected by social desirability bias.

Nonetheless, the results of the current study are promising and tentatively suggest that EFT is useful in achieving improvements in eating behaviours and other psychological constructs, 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 Australia's obesity epidemic.

References

- Ackard, D. M., Neumark-Sztainer, D., Story, M., & Perry, C. (2003). Overeating among adolescents: Prevalence and associations with weight-related characteristics and psychological health. *Paediatrics*, *111*, 67-74. doi:10.1542/peds.111.1.67
- Antony, M. M., Bieling, P. J., Cox, B. J., Enns, M. W., & Swinson, R. P. (1998) Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. *Psychological Assessment*, *10*, 176–181. doi:10.1037/1040-3590.10.2.176
- Braet, C., Mervielde, I., & Vandereycken, W. (1997). Psychological aspects of childhood obesity: A controlled study in a clinical and nonclinical sample. *Journal of Pediatric Psychology*, *22*(1), 59-71. doi:10.1093/jpepsy/22.1.59
- Church, D. (2010). The treatment of combat trauma in veterans using clinical EFT (Emotional Freedom Techniques): a pilot protocol. *Traumatology*, *16*, 55–65. doi: 10.1177/1534765609347549
- Church, D. (2013). Clinical EFT as an evidence-based practice for the treatment of psychological and physiological conditions. *Psychology*, *4*, 645.
- Church, D. (2014). Reductions in pain, depression, and anxiety symptoms after PTSD remediation in veterans. *Explore (New York, N.Y.)*, *10*(3), 162-169. doi:10.1016/j.explore.2014.02.005
- Church, D., De Asis, M. A., & Brooks, A. J. (2012). Brief group intervention using emotional freedom techniques for depression in college students: A randomized controlled trial. *Depression Research and Treatment*, *2012*, 257172. doi:10.1155/2012/257172
- Craig, G., & Fowlie, A. (1995). *Emotional freedom techniques: The manual*. Sea Ranch, CA: Author.
- Feinstein, D. (2012). Acupoint stimulation in treating psychological disorders: Evidence of efficacy. *Review of General Psychology*, *16*, 364-380. doi:10.1037/a0028602
- French, S. A., Story, M., & Perry, C. L. (1995). Self-esteem and obesity in children and adolescents: A literature review. *Obesity Research*, *3*(5), 479-490.
- Gortmaker, S. L., Swinburn, B. A., Levy, D., Carter, R., Mabry, P. L., Finegood, D. T., . . . Moodie, M. L. (2011). Changing the future of obesity: Science, policy, and action. *The Lancet*, *378*(9793), 838-847. doi:10.1016/S0140-6736(11)60815-5
- Goodspeed Grant, P. (2008). Food for the soul: Social and emotional origins of comfort eating in the morbidly obese. In J. Buckroyd & S. Rother (Eds.), *Psychological responses to eating disorders and obesity*, 121–138. New Jersey: John Wiley & Sons.
- Henry, J. D., & Crawford, J. R. (2005). The short-form version of the Depression Anxiety Stress Scale (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, *44*, 227-239. doi:10.1348/014466505X29657
- Landis, A. M., Parker, K. P., & Dunbar, S. B. (2009). Sleep, hunger, satiety, food cravings, and caloric intake in adolescents. *Journal of Nursing Scholarship*, *41*, 115.
- Levitan, R. D., & Davis, C. (2010). Emotions and eating behaviour: Implications for the current obesity epidemic. *University of Toronto Quarterly*, *79*, 783-799. doi:10.3138/utq.79.2.783
- Lovibond, S. H & Lovibond, P. F. (1995). *Manual for the Depression Anxiety Stress Scales* (2nd Ed.) Sydney: Psychology Foundation.
- Lukens, C. T., & Linscheid, T. R. (2008). Development and validation of an inventory to assess mealtime behavior problems in children with autism. *Journal of Autism and Developmental Disorders*, *38*(2), 342-352. doi:10.1007/s10803-007-0401-5

- Martinez, M. F., Philippi, S. T., Estima, C., & Leal, G. (2013). Validity and reproducibility of a food frequency questionnaire to assess food group intake in adolescents. *Cadernos De Saúde Pública*, 29(9), 1795-1804. doi:10.1590/0102-311X00055512
- Mann, T., Tomiyama, A. J., Westling, E., Lew, A., Samuels, B., & Chatman, J. (2007). Medicare's search for effective obesity treatments: Diets are not the answer. *American Psychologist*, 62(3), 220-233. doi:10.1037/0003-066X.62.3.220
- McMullen, T., & Resnick, B. (2011). Evaluating the reliability and validity of the Rosenberg self-esteem scale in nursing aides. *Gerontologist*, 51, 407-471.
- National Health and Medical Research Council. (2013). Clinical practice guidelines for the management of overweight and obesity in adults, adolescents and children in Australia. Melbourne: National Health and Medical Research Council. Retrieved from <https://www.nhmrc.gov.au>
- Rockett, H. R. ., Wolf, A. M., & Colditz, G. A. (1995). Development and reproducibility of a food frequency questionnaire to assess diets of older children and adolescents. *Journal of the American Dietetic Association*, 95(3), 336-340. doi:10.1016/S0002-8223(95)00086-0
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rowe, (2005). The effects of EFT on long-term psychological symptoms. *Counselling and Clinical Psychology*, 2, 104–111.
- Stapleton, P., Devine, S., Chatwin, H., Porter, B., & Sheldon, T. (2014). A feasibility study: Emotional freedom techniques for depression in Australian adults. *Current Research in Psychology*, 5, 19.
- Stapleton, P., Porter, B., Bannatyne, A., Urzi, K-C., & Sheldon, T. (2014). Food for Thought: Randomised Controlled Trial of Emotional Freedom Techniques and Cognitive Behavioural Therapy in the Treatment of Food Cravings. *Obesity*, under review.
- Stapleton, P., Sheldon, T., & Porter, B. (2012b). Clinical Benefits of Emotional Freedom Techniques on food cravings at 12-months follow-up: A randomized controlled trial. *Energy Psychology: Theory, Research, and Treatment*, 4, 1-12.
- Stapleton, P., Sheldon, T., Porter, B., & Whitty, J. (2011). A randomized clinical trial of a meridian-based intervention for food cravings with six-month follow-up. *Behaviour Change*, 28, 1-16. doi:10.1375/bech.28.1.1
- Stice, E., Presnell, K., Lowe, M. R., & Burton, E. (2006). Validity of dietary restraint scales. *Psychological Assessment*, 18, 95–99. doi:10.1037/1040-3590.18.1.95
- Supple, A.J., & Plunkett, S.W. (2011). Dimensionality and validity of the Rosenberg self-esteem scale for use with latino adolescents. *Journal of Behavioural Sciences*, 33(1), 39-53. doi: 10.1177/0739986310387275
- Walders-Abramson, N., Nadeau, K. J., Kelsey, M. M., Schmiede, S. J., Ellert, S., Cejka, A., Zeitler, P. (2013). Psychological functioning in adolescents with obesity co-morbidities. *Journal of Childhood Obesity*, 9(4), 319-325. doi:10.1089/chi.2012.0120
- World Health Organisation (2014). Obesity and overweight fact sheets, 2008-12. Retrieved from <http://www.who.int/en/>
- Young-Hyman, D., Tanofsky-Kraff, M., Yanovski, S. Z., Keil, M., Cohen, M. L., Peyrot, M., & Yanovski, J. A. (2006). Psychological status and weight-related distress in overweight or at-risk-for-overweight children. *Journal of Obesity*, 14(12), 2249-2258. doi:10.1038/oby.2006.264
- Young-Hyman, D., Tanofsky-Kraff, M., Yanovski, S. Z., Keil, M., Cohen, M. L., Peyrot, M., & Yanovski, J. A. (2012). Psychological Status and Weight-Related Distress in Overweight or At-Risk-for-Overweight Children. *Obesity*, 14(12), 2249-2258.