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The efficacy of thought field therapy and its impact on heart rate variability in student counseling: A randomized controlled trial

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ABSTRACT

Context: Thought Field Therapy is an evidence-based method validated by 17 clinical trials, including five Randomized Controlled Trials. This study investigates whether a single Thought Field Therapy session can improve psychological issues such as stress, depression, and performance anxiety in university students.

Methods: Fifty university students were randomly assigned to an intervention group or a waitlist control group. The intervention group received a single counseling session of Thought Field Therapy and was assessed by Subjective Units of Distress and Heart Rate Variability before and after the session. The waitlist group received Thought Field Therapy and was administered the Profile of Mood States Second Edition. All participants completed the latter after a waiting period of 1–3 weeks.

Results: The 39 students who received Thought Field Therapy showed significantly higher Heart Rate Variability post-compared to pre-therapy ($p < .001$). The 33 students who were assessed for Subjective Units of Distress also reported significant improvements ($p < .001$) by a 91% reduction in distress for an average duration of 36 minutes. The Profile of Mood States Second Edition score did not show significant improvements in the intervention group ($n = 24$) as compared to the control group ($n = 15$).

Conclusion: A brief intervention of Thought Field Therapy can reduce stress and psychological distress among university students, and increase their physiological resilience in a limited timeframe, after a single session of counseling. However, the single session did not suffice to significantly improve their psychological conditions over the long term.

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Introduction

During college years, adolescents transition into young adults,¹ while being encouraged to become independent from their parents, build close relationships with others, and determine their careers. They may encounter and experience unresolved family problems or communication issues during this period in which they begin to voluntarily engage in social activities.² In addition, mental health issues assume more serious proportions rather than physical aspects in the stage of establishing identity.³

There have been increasing reports of students who cannot adapt to college life, and the consequent aggravation of mental health may lead to them repeating classes, taking leaves, or dropping out.⁴ A longitudinal study covering 14 years in Japan reported a remarkable increase in students with interpersonal tension and anxiety.⁵

Mouri et al.⁶ administered the General Health Questionnaire (GHQ) to 2,174 college students and found that 72.6% of them

experienced depressive symptoms. Furthermore, a more recent study⁷ demonstrated an increase in students who do not meet diagnostic criteria of depression but experience depressive symptoms, which negatively affect academic achievements and interpersonal relationships. Nakazato⁸ reported that more than 40% of students indicated low general health surveyed by GHQ. In addition, a survey conducted in 454 college students revealed that they considered generalized anxiety about the future, psychological stress, and relationship with teachers as the most common problems.⁹

Matsuura¹⁰ studied students who reported increasing difficulties in adapting to daily life that are associated with college life, academic achievements, job search, part-time jobs, and interpersonal relationships. These challenges led to a decrease in their self-esteem and psychological stability. They reported a wide variety of discomforts and related symptoms in counseling; however, their core issues were ambiguous. Their main claims seemed to be that they had no idea how to navigate their current and future lives. The author, however, found that their complaints involved various background issues, including family history, personality factors, academic life, interpersonal relationships, and developmental, physical, and financial

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conditions. These issues were likely to be deep-seated, complicated, and chronic.

A longitudinal study of students' mental health over 25 years demonstrated that an increasing number of students choose positive words to describe themselves, such as "active," "being in a good mood," "doing well," and "being a likable person."¹¹ Kimura et al.¹² studied the high suicidal rate and associated depression among university students and suggested that counselling as an efficient and effective intervention model. Indeed, there is evidence to suggest that the number of students who opt in for counseling is on the rise, and cooperation between students' families and college is needed. However, many students live alone, and have difficulty getting support from their families.¹³

Interestingly, a large research study of 2,622 Japanese college students found a lifetime rate of traumatic experiences involving their families or acquaintances to be 53.5%, including accidents, natural disasters, and other incidents.¹⁴ Another more recent study reported that 71.9% of students have experienced traumatic events.¹⁵ Negative life events often occur in the backgrounds of students' psychological issues. In order to improve students' academic performance as well as personal development, it is important to support them through newer, affordable, less time-consuming, and more effective therapeutic methods. One such method is Thought Field Therapy.

Thought Field Therapy (TFT) is a behavioral desensitization technique¹⁶ which alleviates symptoms via the somatic stimulations of acupuncture points paired with imaginal exposure,¹⁷ which has been found to regulate activity in the amygdala.¹⁸ The acupoint tapping facilitates psychological changes for brief periods of time.¹⁹ TFT addresses a wide variety of negative emotions, including phobia, anger, bad habits, trauma, anxiety, guilt, and grief through the body's bioenergy field by tapping specific points on the body located along energy meridians with one's fingers.¹⁹ It is a non-invasive technique and a simple protocol with no adverse effects; thus, people can apply it as self-help.¹⁸

TFT is widely known as an Energy Psychology therapy with its derivative, Emotional Freedom Techniques (EFT). In a review of research in the field of Energy Psychology,¹⁸ among 116 peer-reviewed studies of the acupoints tapping approach, 51 were Randomized Control Trials (RCTs) reporting efficacy for anxiety, PTSD, specific phobias, depression, weight issues, sleep disorders, physical pain, fibromyalgia, and athletic performance.

To this date, 17 peer-reviewed articles have focused on TFT^{20–36} including five RCTs.^{27–31} Among them, three studies demonstrated its efficacy for treating PTSD.^{27–29} Sakai et al's study²⁶ on war-related PTSD among adolescents showed a marked reduction of the Subjective Unit of Distress (SUDs),³⁷ which is a subjective scale for trauma symptoms as perceived by subjects. The SUDs scores decreased from 7.58 (SD = 2.29) to 0.31 (SD = 0.73) points after a single TFT session lasting 20 to 60 minutes. A meta-analysis of mental health programs for human-made and natural disasters examined 32 studies including 18 programs such as Narrative Exposure Therapy, Cognitive Behavior Therapy (CBT), Eye Movement Desensitization Reprocessing (EMDR), and other trauma-oriented approaches. The investigation included Sakai et al's study,²⁶ which showed the strongest effect size (4.19) ranging from 0.09 to 4.19.³⁸ The empirical evidence of TFT was further demonstrated by PTSD treatments delivered by lay counselors who were newly trained in TFT.^{26–29} The extraneous variables, such as professional counseling skills, that may contribute to outcomes were lessened. The positive results of a single session have shown medium to high effect sizes and remained at follow-ups at 12 months,²⁷ 19 months,²⁹ and 2 years.²⁶

The RCT³⁰ of 45 patients with a variety of anxiety disorders suggested that TFT is effective for reducing symptoms of anxiety. In another RCT comparing CBT and TFT, 72 patients diagnosed with agoraphobia were randomly assigned to one of two treatment groups or a waitlist. Both treatments resulted in highly significant symptom

reduction, which was maintained at a 12-month follow-up treatment. No significant differences were found between the CBT and TFT outcomes; however, TFT accomplished these outcomes in only five 55-minute sessions, whereas CBT required twelve 55-minute sessions to achieve the same outcomes.³¹ A subsequent comparative study of TFT and CBT in treating 31 patients in the post-conflict region of Kurd in Iraq suggested that TFT was more successful than CBT in reducing anxiety disorders and trauma related symptoms.³⁴ Edwards and Vanchu-Orosco³⁹ reported significant effects of TFT in a preliminary meta-analysis. Moreover, the effectiveness of TFT has been confirmed by studies documenting physiological improvements using Heart Rate Variability (HRV) as an objective assessment. The clinical studies^{20,21,23,24} reported improvements of HRV following self-reports of reduction of emotional distress by single brief intervention of TFT.

Based on our experience using TFT in multiple sessions, we wanted to explore whether a single session of TFT could facilitate psychological and physical changes in students' well-being. Effective brief intervention techniques may make counseling sessions more efficient. TFT has been widely applied in medical institutions and psychological counseling, approved as continuing education credits for certified clinical psychologists, and introduced in university programs however, to the best of our knowledge, there have been no controlled studies to show its effectiveness. This is the first controlled and randomized trial to assess the efficacy and efficiency of TFT on college students in Japan.

Methods

Study design

This study has a randomized waitlist control group design. Two factors were examined in this study: (1) psychological changes with and without TFT intervention, and (2) subjective and physiological changes during TFT intervention. For psychological changes, pre-test and post-test within-subject measurements were taken. Two levels (pre-TFT and post-TFT) were set for subjective changes, and three levels (baseline, pre-TFT, post-TFT) were set for physiological changes, as factors for the timing of measurement (both within-subject factors). This study assessed both the emotional intensity of students' conscious psychological experiences as assessed by SUDs, and their moods as assessed by the Profile of Mood States (POMS2). The study was performed between May and December 2019. We followed the CONSORT-SPI 2018 guidelines.⁴⁰

Ethical considerations

All procedures were approved by the ethical committee of a university in Japan, for research (approval number: 2018-013) and followed the WMA Declaration of Helsinki-Ethical Principles for Medical Research Involving Human Subjects. Written informed consent was obtained from all participants before beginning the experiment.

Participants

Fifty students were recruited from a psychology class and the healthcare room at the University. In the application form, TFT was introduced as a form of psychotherapy applied to improve students' performance and psychological discomfort. Participants' ages ranged from 18 to 23 years ($M = 19.60$, $SD = 1.20$). The majority of the participants were female (27.54%; male 23.46%). 94.12% were Japanese, and 5.88% were Vietnamese. All participants were undergraduate students. The non-Japanese participants had a proficiency level of N3 or higher in the Japanese Language Proficiency Test.

Randomization

Participants were randomly assigned to an intervention group ($n = 29$) or a waitlist control group ($n = 20$). The allocation ratio was set at 3:2 to ensure as many participants in the control group as possible while considering their academic schedules. The study timelines were arranged according to their availability. One random number (0 to 1) was generated for each participant using an Excel function (Microsoft 2013), with those above 0.40 assigned to the intervention group and those below 0.40 assigned to the control group. Participants did not know which group they had been assigned to. The first author, who administered the TFT, was also blinded to the participants' conditions. The second and third authors recruited and randomized participants and administered questionnaires.

Study methods

Subjective rating

The first author listened briefly to participants' main complaints involving interpersonal problems, family issues, and academic or sports performance, and asked participants to describe any associated negative feelings, emotions, sensations, and distress, related with past traumatic memories. Participants rated their negative perceptions using the Subjective Unit of Distress (SUD)³⁷ Scale, using scores ranging from 0 to 10. A score of 0 indicated no negative emotions, while 10 indicated the most severe negative emotions imaginable. Tanner⁴¹ has demonstrated that SUD is a valid measure to assess subjects' self-reports of emotional distress. The Emotional Freedom Technique (EFT), another evidence-based technique derived from TFT, has also validated the efficacy of using SUD ratings to measure distress.^{42–45}

Physiological assessment

Heart rate variability (HRV) is a physiological measure of the variation of the intervals between heartbeats.⁴⁶ Lower HRV (lower flexibility of heart beats) is related to health risks, including heart disease, inflammation, autonomic nervous dysfunction, and sudden death. Many studies have shown that higher HRV (greater flexibility of heart beats) is associated with psychological resilience, behavioral flexibility, self-regulation, emotional regulation, social interaction, a sense of coherence, personality traits of self-direction, and effective coping styles.⁴⁷ A meta-analysis confirmed that HRV is a sensitive index of top-down emotional and behavioral self-regulation.⁴⁸ The Standard Deviation of Normal to Normal (SDNN) is the standard sinus-initiated interbeat-intervals measured in milliseconds.⁴⁹ The SDNN reflects physiological resilience against stress⁵⁰ and significantly decreases due to high workplace stress.⁵¹ According to a study of college students, higher SDNN is correlated with positive emotions.⁵²

The HRV data were collected using a HeartMath emWave Pro Plus with a photoplethysmography (PPG) sensor that is a reliable and valid method of measurement.⁵³ Participants placed the sensor on their earlobe, and a pre-test recorded their HRV for 5 minutes while they focused on their emotional problems. During post-test, their HRV was recorded again while they were thinking about the same initial problem.

Self-assessment questionnaires

The short version of the Japanese Translation of the Profile of Mood States Second Edition (POMS2) was used. POMS2 was developed by Heuchert and McNair⁵⁴ and translated into Japanese by Konuma et al.⁵⁵ This mood inventory comprises 35 items (adjectives) that describe seven different moods: Anger-Hostility (AH), Confusion-Bewilderment (CB), Depression-Dejection (DD), Fatigue-Inertia (FI), Tension-Anxiety (TA), Vigor-Activity (VA), and Friendliness (F). Participants were asked to indicate mood states during the previous 1-week period on a 5-point scale ranging from “no stress and

absolutely calm” (0) to “extremely stressed” (4). The sum of the scores was calculated for each subscale except F. A Total Mood Disturbance (TMD) score was calculated as (AH + CB + DD + FI + TA) – VA.⁵⁵ The validity and reliability of POMS2 are well established.⁵⁵

Interventions

All participants completed the POMS2 as a pre-test. Within 7 to 21 days of the pre-test, the participants in the intervention group received TFT treatment and were administered POMS2 as a post-test 7 to 10 days after TFT. The participants in the waitlist control group without TFT treatment completed POMS2 at the same time as the post-test for the intervention group and received treatment 1 to 2 weeks later. The pre-tests and post-tests were conducted individually in their classrooms or the student counseling room by the second and third authors. The intervention delivery and physiological measurements were conducted in the student counseling room. The first author who was trained in Thought Field Therapy (TFT) Diagnostic Level administered TFT. The second author recorded physiological measurements and pre and post-test subjective ratings.

Treatment protocol

The TFT protocols were originally developed by muscle testing, which was used as the intervention for all participants. The process is as follows. The therapist asked participants to focus on their relevant problem and held their hands on the meridian points. Then, the therapist would gently push their arms to identify a strong or weak reaction and determine the necessary acupuncture points to stimulate for specific problems.⁵⁶ The therapist then demonstrated the tapping sequences, and participants followed the same on themselves.

Procedures

A single session, including the measurement of subjective ratings and physiological assessments, was planned for about 60 minutes. The TFT interventions were preceded by the following seven steps.

- (1) Taking baseline data (HRV) with normal breathing without focusing on specific distressing thoughts or experiences (5 minutes).
- (2) Listening to the main complaints and determining any negative emotions associated with the distressing thoughts or experiences.
- (3) Taking pre-test HRV data with normal breathing while thinking about the distressing thoughts or experiences (5 minutes).
- (4) Taking pre-test ratings of discomfort using the SUD while focusing on the negative emotions.
- (5) Conducting TFT diagnostics and tapping procedures.
- (6) Checking the post-test SUD while focusing on the negative emotions.
- (7) Taking post-test HRV data with normal breathing while thinking about the initial distressing thoughts or experiences (5 minutes).

Analyses

The SUD intensity rating was compared pre-test to post-test using a t-test. The HRV (SDNN) variables were compared across the repeated measures (baseline, pre-TFT, post-TFT) using a one-way ANOVA. When the assumption of sphericity was rejected, the F value was adjusted by the Huynh–Feldt correction. POMS2 was compared using a two-factor mixed design with the group (intervention, control) as the between-subjects factor and the test (baseline, pre-TFT) as the within-subjects factor. A two-way (group \times test) ANOVA was used on the score of each subscale of POMS2 (AH, CB, DD, TA, VA, F, and TMD). Finally, as a supplementary analysis, a paired t-test (pre-TFT, post-TFT) was performed on the POMS2 of the control group.

Tests for equality of variances (Levine's) for all dependent variables were rejected. Statistical significance was set at $p < .05$.

Results

Participant flow

Of the 50 participants, this study excluded 1 who chose to withdraw from the study. The participants were randomly allocated to an intervention group ($n = 29$) and a waitlist control group ($n = 20$). In the intervention group, five of the 29 people who received TFT did not receive the pre-TFT form. In the control group, 4 of the 20 participants did not receive the pre-TFT form, and one did not participate owing to a scheduling conflict with TFT. Moreover, a participant in the control group did not receive the post-TFT. Thirty-nine responses were included in the final sample size for the analysis (intervention group, $n = 24$; control group, $n = 15$). [Figure 1](#) presents a flow diagram

of this study. There were no adverse events reported during the study period.

Treatment outcome

SUD

Of the 39 students who received TFT (in the intervention and waitlist control groups), six were excluded from the analysis because they could not determine and describe the scores for their SUDs. Participants experienced significantly greater SUDs at pre-TFT than at post-TFT (pre-TFT: $7.30 \pm 1.26SD$, post-TFT: $0.64 \pm 1.37SD$, $p < .001$, Cohen's $d = 3.54$, mean difference = $6.67 \pm 0.33SE$, 95%CI for the mean difference [6.00, 7.33]). TFT was administered focusing on 53 negative emotions or items of discomfort associated with the main complaints of the participants ([Tables 1 and 2](#)). The time of the intervention was limited to a single session lasting 24 to 57 minutes, with an average duration of 36 minutes.

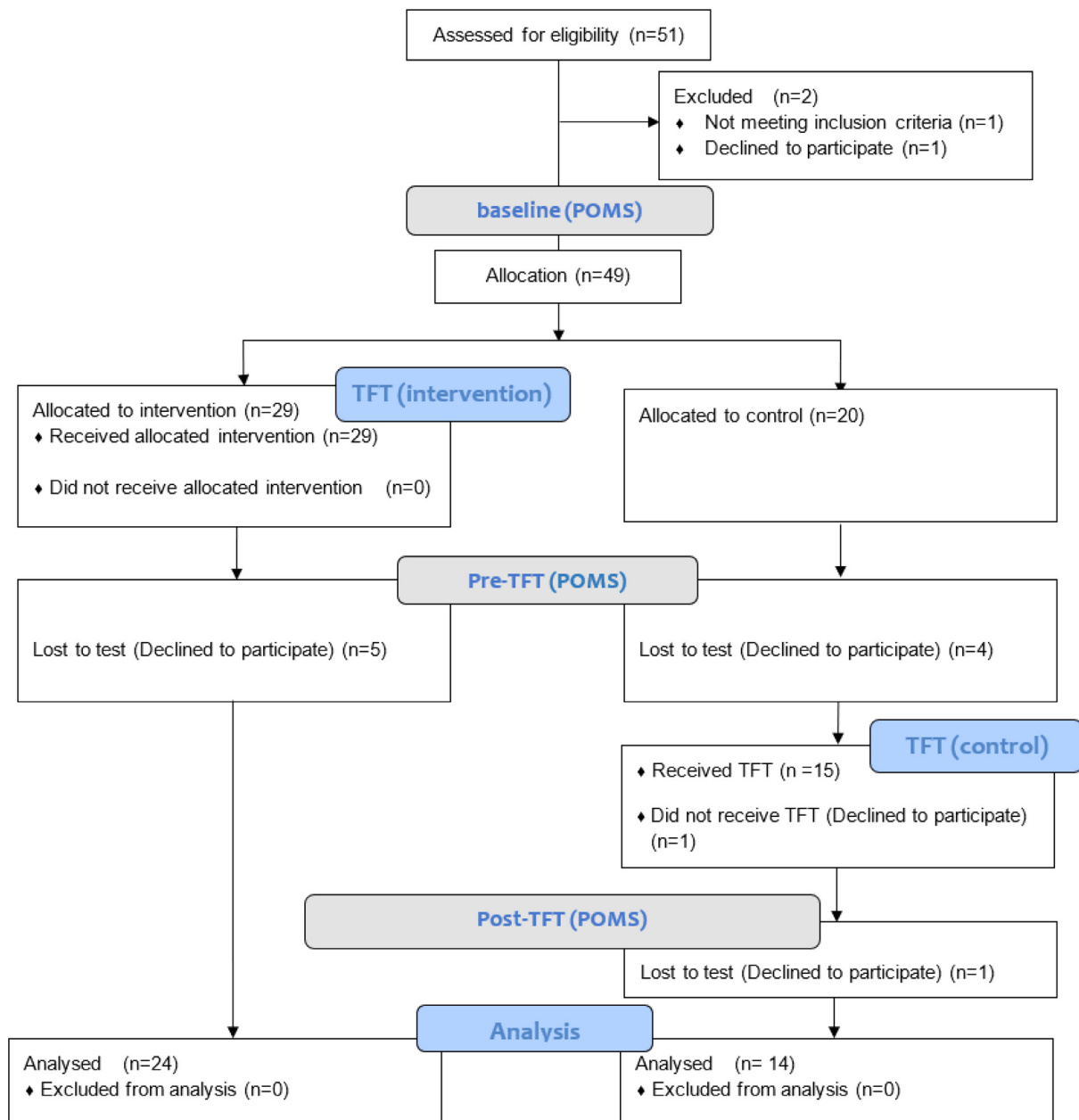


Fig. 1. Flow diagram.

Table 1
Main complaints of the participants.

Main complaints	(n=39)
Interpersonal stress	15
Peak performance	7
Anxiety	6
Compulsive symptoms	3
Panic symptoms	3
Self-harm	1
Eating disorder	1
Diet	1
Physical pain	1
Fatigue	1

Table 2
Categories of negative emotions associated with participants' main complaints.

Target categories (n=53)	%
Trauma	55
Interpersonal stress	15
Anxiety	13
Uneasiness	11
Addictive urges	6

Table 3
Means and standard deviations of heart rate variability scores by time.

	Baseline		Pre-TFT		Post-TFT	
	M	SD	M	SD	M	SD
SDNN	55.77	28.14	54.39	25.82	64.54	30.36

Note: SDNN (milliseconds).
Pre- and Post-TFT both included thinking about the problems.

HRV

The data of 39 patients who received TFT were analyzed. Table 3 shows the means and standard deviations on SDNN variables according to time. SDNN showed significant differences on the time: $F_{(1.42, 54.12)} = 12.77, p < .001, \eta^2 = .25$. A post-hoc test (Holm) showed that SDNN at baseline and pre-TFT while focusing on the distressing experiences were significantly lower than post-TFT (baseline: $p < .01$, Cohen's $d = .50$, mean difference = $-8.774 \pm 2.79SE$, 95%CI for the mean difference [-15.70, -1.80], pre-TFT: $p < .001, d = .81$, mean difference = $-10.16 \pm 2.02SE$, 95%CI [-15.21, -5.10]), but pre-TFT did not significantly decrease compared to the baseline ($p = .38, d = .14$, mean difference = $1.38 \pm 1.56SE$, 95%CI [-2.52, 5.28]).

Table 4
Means and standard deviations of POMS2 subscales according to test time for each group.

	Intervention (n = 24)				Control (n = 15)				p-value and effect size (p, η^2)					
	Baseline		Pre-TFT		Baseline		Pre-TFT		Main effect		Interaction			
	M	SD	M	SD	M	SD	M	SD	Time	Group				
AH	8.21	4.70	5.50	5.18	6.53	5.10	6.20	5.97	.06	,	.02	.75	,	.00
CB	9.67	4.55	8.33	4.40	8.73	4.67	7.00	5.48	.01	,	.03	.44	,	.01
DD	8.54	5.09	6.54	4.59	7.40	5.22	6.07	4.95	.03	,	.03	.58	,	.01
FI	10.71	4.44	9.29	4.94	11.27	5.12	9.93	5.48	.11	,	.02	.67	,	.00
TA	11.21	4.00	8.96	4.85	10.13	5.25	8.40	5.03	.01	,	.04	.55	,	.01
VA	8.63	4.66	11.08	4.43	8.87	5.03	8.67	4.79	.12	,	.01	.43	,	.01
F	11.79	4.31	12.33	3.99	11.40	4.36	11.20	3.86	.69	,	.00	.56	,	.01
TMD	39.71	19.31	27.54	22.07	35.20	24.50	31.33	27.02	.03	,	.03	.96	,	.00

Note. Anger-Hostility (AH), Confusion-Bewilderment (CB), Depression-Dejection (DD), Fatigue-Inertia (FI), Tension-Anxiety (TA), Vigor-Activity (VA), Friendliness (F), and Total Mood Disturbance (TMD).

POMS2 (groups × time)

The sample size for the analysis was 39 (intervention group; n = 24, control group; n = 15). Table 4 shows the means and standard deviations on POMS2 subscales (excluding AH) according to the test time for each group. A score of CB, DD, TA, or TMD indicated significant differences in the tests' main effects: CB: baseline-pre mean difference $1.53 \pm 0.58SE, p < .05, \eta^2 = .03$, 95%CI for the mean difference [0.35, 2.72]; DD: $1.67 \pm 0.72SE, p < .05, \eta^2 = .03$, 95%CI [0.21, 3.13]; TA: $1.99 \pm 0.75SE, p < .05, \eta^2 = .04$, 95%CI [0.46, 3.52]; TMD: $8.02 \pm 3.65SE, p < .05, \eta^2 = .03$, 95%CI [0.62, 15.41]. The main effects of the treatment group, and the interaction between the treatment group and time for all subscale scores and TMD, were not significant.

POMS2 (Comparison between the times in the waiting group)

The sample size for the analysis was 14. The means and standard deviations for the POMS2 (Time 3) subscale scores were as follows:

AH = $55.50 \pm 4.83SD$, CB = $6.93 \pm 4.43SD$, DD = $5.79 \pm 5.19SD$, FI = $7.50 \pm 4.75SD$, TA = $6.29 \pm 3.41SD$, VA = $10.00 \pm 4.74SD$, F = $11.00 \pm 4.30SD$, TMD = $22.00 \pm 22.78SD$. Only the score of FI indicated significant differences between pre-test and post-test ($p < .05$, Cohen's $d = .64$, mean difference = $1.79 \pm 0.74 SE$, 95%CI for the mean difference [0.18, 3.39]).

Intervention fidelity

The study was conducted following the CONSORT guidelines and in compliance with the protocol previously submitted to the Ethics Committee. Intervention fidelity was reviewed based on the guidelines by Sprange et al.⁵⁷ identifies the criterion that was not completed.

1. Intervention design

- (1) All participants received the same program.
- (2) The time of the intervention was limited to a single session of less than 60 minutes (ranging between 24 and 57 minutes).
- (3) Participants were recruited from a psychology class and the healthcare room.
- (4) The date and time of the sessions were arranged according to the availability of both the students and the investigators.
- (5) Recruitment was continuously conducted during the study period.

2. Training of providers

- (1) The provider was the first author who completed the TFT training.
- (2) The same provider delivered all sessions.

3. Intervention delivery

- (1) The intervention was delivered following a written intervention manual of the study plan.
- *(2) The training session was observed, recorded on paper, and the procedures were checked by the second investigator; this differs from Sprange et al.'s⁵⁷ method which recommended the use of two investigators.

4. Receipt of intervention

- (1) The protocol and methods of applying mental health techniques to daily life were explained to the participants in writing and orally.
- (2) The provider regularly verbally confirmed with the participants that they understood what to do during the intervention.

5. Enactment of intervention

- *(1) Prioritizing students' schedules made it difficult to collect POMS data, which led to 22% incomplete outcome data.
- *(2) The charts for tapping procedures were provided to all the participants; however, individual specific self-help instructions were not provided given the brevity of the sessions.

Discussion

Our research question asked whether a brief intervention of TFT can improve students' mental health in a single counseling session. The results suggested that one brief session of TFT improved students' psychological distress quickly and efficiently. This session was limited to one session by the first author and it did not include counseling, which minimized extraneous variables. A TFT intervention with an average duration of 36 minutes significantly improved participants' experiences of distress. Participants expressed their distress intensity before the intervention to be 7.30 SUDs points on a scale of 0-10, which dropped by 6.67 SUDs points on average (91% reduction) after the intervention. This was an extremely large clinical effect, considering the effect size using Cohen's *d* to be 3.54. The effects were also confirmed by objective assessments using the physiological HRV scale that showed an improvement of 18.7% post-TFT as compared to pre-TFT.

However, this study did not find significant improvements on overall mood using POMS2 following a single TFT session, indicating that a single brief intervention may not be enough to improve daily moods. A majority (55%) of the sessions focused on traumatic emotions derived from students' traumatic experiences. Considering that 71.9% of Japanese students experience traumatic events,¹⁵ if multiple counseling sessions can be conducted, counselors can work students through any deeper and more far-reaching issue that students might have. TFT can help to alleviate any associated negative feelings, which will improve their daily moods.

Based on evaluations of intervention fidelity,⁵⁷ "Yes" is scored as 3 points, and "No" as 0 for each outline. The score ranged 91% - 100% as Excellent, 81% - 90% as Very good, 71% - 80% as Good, 61% - 70% as Satisfactory, and 60% and less as Unsatisfactory. The fidelity score of this study was 30 out of a possible total score of 39 points, which is considered "Good fidelity."

This study was conducted in 2019, just before the onset of the COVID-19 pandemic. Given the social and personal challenges created by the pandemic, TFT may be applied as a brief self-help intervention to alleviate the psychological burdens experienced by students, especially as the EFT study showed significant reductions in

nurses' stress, anxiety, and burnout after a single online group session during the pandemic.⁵⁸

Limitations

This study has some limitations. We did not follow up to check whether psychological improvements remained in the long-term. Furthermore, the single session counseling model is also a limitation, as virtually all models of student counseling involve multiple sessions. In addition, we did not compare the effectiveness of TFT with that of other counselling methods. Moreover, as we did not restrict or monitor the kinds of problems to be addressed, they ranged from simple anxiety to panic attacks, eating disorders, and self-harm. The lack of categorization and specificity of problems may be a limitation.

Even though the investigators followed the study plan, there are some limitations concerning the study design. That is, there was only one observer who recorded and checked the session, instead of two. Further, we could not administer the POMS2 post-test to 22% of the students owing to their change of schedule. The planned study period was not sufficient and led to the decrease of the final sample size.

Lastly, we reviewed blinding as the risk of bias.⁵⁹ The allocation group was created by the second and third investigators but concealed to all participants and the treatment provider, the first investigator. The outcome data was recorded by the second investigator who was aware of the allocation. To decrease the risk of bias, the allocation concealment should have been kept from the investigator who recorded outcome data.

Conclusion

In conclusion, we suggest that TFT can effectively and efficiently reduce the perceived intensity of distress experienced by students and can enhance their physiological resilience in the limited time-frame of a single counseling session.

TFT can be emphasized as a self-treatment and counselors can encourage students to practice it themselves after learning it in one or two sessions. Further sessions can be held to develop skills and capacities to target more complex problems. For instance, in our study, all participants were provided acupoint tapping charts; however, the self-care procedures for their specific problems were not provided. To enhance the effectiveness of a single short intervention and further positive effects on students' lives, counselors could provide online and digital instructions to incorporate TFT into self-help routines for complex and specific psychological problems.

As typical with other forms of counseling, this study did not find longer-term improvement of moods (assessed 7-10 days later) after a single counseling session. It is recommended that future research investigate the longer-term effects of multiple sessions (e.g., 4–8) of TFT on students' moods and other mental health issues.

Funding

This study was funded by the International Pacific University, Japan. This source had no role in the design of this study and or any role in the execution, analyses, interpretation of the data, or decision to submit results.

Ethical considerations

All procedures were approved by the ethical committee of the International Pacific University for research (approval number: 2018-013). Written informed consent was obtained from all participants before beginning the experiment. This study has been carried out in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Declaration of Competing Interest

The authors have no conflicts of interests to declare that are directly relevant to the content of this article. TFT Center of Japan is a private training institute of psychotherapy.

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References

- Inami K, Matsuda M, Okamura K. ["Mental health survey" in college students (1): transition analysis of the school year by data for five years.]. *Daigakusei ni okeru "mentaru herusu chousa" (1) 5-nenkan no deta niyoru gakuseisui bunsaki (in Japanese)*. 2014;59(1):1–10. <https://www.fuji.ac.jp/wordpress/wp-content/uploads/2015/06/5901.pdf>.
- Karasawa Y. Growth process of a male student with anxiety disorder: inflection of nonverbal method (drawing and collage) and human community resources. *Japan J Student Counsel*. 2015;36(2):97–109. <http://id.ndl.go.jp/bib/000000061780>.
- Miura R, Aoki K. Factors related to the mental health of the university student: A review. *Yamaguchi Kenritsu Daigaku Gakujutsujouhou*. 2009;2:175–183.
- Ichimiya A, Fukumori H, Babazono A, Minematsu O. Relationship of Japanese university students' mental state with repeating years, leave of absence, and withdrawal from school-social anxiety can hinder a student's ability to study. *Clinical Psychiatry*. 2004;46(11):1185–1192. <https://doi.org/10.11477/mf.1405100582>.
- Ichimiya A, Babazono A, Fukumori H, Minematsu O. The longitudinal change of mental state of freshmen in a Japanese university: the result of the past 14 years questionnaire survey. *Clinical Psychiatry*. 2003;45(9):959–966. <https://doi.org/10.11477/mf.1405100730>.
- Mouri M, Shikikawa S, Takemura S, Hikiwatari J, Naruse M. [General health survey of students in the A Prefecture.] Eiken niokeru gakusei no seishinkenkouchou (in Japanese). *Japan Bull Soc Psychiatry*. 2004;13.
- Takagaki K, Yokoyama S, Kambara K, Kagawa F, Miyake Y, Okamoto Y. Stressors and depressive symptoms in university students who do not receive counseling. Bulletin of general health research. *Hiroshima University Health Service Center*. 2020;36:9–17. <https://doi.org/10.15027/50080>.
- Nakazato K. [Study for structures of worry, counseling needs, and general health of students in medical and life science schools: results from investigations of the senior students.] Iryoukei oyobi seimeikei daigaku niokeru gakusei no nayami no kouzou, Soudan nizu, seishinkenkoudo nikansuru kenkyu: 4-nenseigakubu gakusei no chousa no kekka kara (in Japanese). *Japan J Student Counsel*. 2008;29.
- Matsuda M, Inami K, Okamura K. ["Mental health surveys" in college students (2): discussions of counseling service from analysis of mental health index and complaints.] Daigakusei ni okeru "mentaru herusu chousa" (2) seishinkenkoudo to nayami no bunsaki yori soudan sabisu wo kangaeru (in Japanese). *Fuji Ronsou*. 2014;59(1):11–21. <https://www.fuji.ac.jp/wordpress/wp-content/uploads/2015/06/5901.pdf>.
- Matsuura K. Real life support for students with complex problems. *Japan J Student Counsel*. 2011;31(3):241–251. <http://id.ndl.go.jp/bib/000000061780>.
- Miyashita T, Igarashi T, Masui A. [Change of freshmen's mental health in college of education over 23 years: through UPI (University Personality Inventory) test.] Kyounin youseikei daigaku sinnyusei no 23 nenkan ni wataru mentaru herusu no henka: UPI (University Personality Inventory) no chousa wo toshite (in Japanese). *School Mental Health*. 2009;12:71–80. https://doi.org/10.24503/jasmh.12.2_71.
- Kimura M, Umegaki Y, Mizuno H. Factors related to seeking help from a student counseling service for depression and suicidal ideation. *Japan J Education Psychol*. 2014;62(3). <https://doi.org/10.5926/jjep.62.173>.
- Miyake Y, Okamoto Y. Mental health of university students. *Japan J Psychosomat Med*. 2015;55(12):1360–1366. https://doi.org/10.15064/jjpm.55.12_1360.
- Nagae N, Masuda T, Yamada S, Kanetsuki M, Nedate K, Kim Y. Development of a Japanese version of the Posttraumatic Cognition Inventory (JPTCI): prevalence of negative life events among university student. *Japan J Behav Therapy*. 2004;30(2):113–124. https://doi.org/10.24468/jibt.30.2_113.
- Takii M, Ueda J, Tominaga Y. Examination of the difference of traumatic event by the difference in posttraumatic stress reactions, physical symptoms, depressive symptoms, and anxiety sensitivity. *Anxiety Disord Res*. 2013;4(1). <https://doi.org/10.14389/adr.4.10>.
- Feinstein D. What does energy have to do with Energy Psychology? *Energy Psychol J*. 2012;4(2). <https://doi.org/10.9769/EPJ.2012.4.2.DF>.
- Church D, Feinstein D. Energy psychology in the treatment of PTSD: Psychobiology and clinical principles. *Psychology of Trauma*. Published online 2013:211–224.
- Feinstein D. Energy psychology: Efficacy, speed, mechanisms. *Explore*. 2019;15(5). <https://doi.org/10.1016/j.explore.2018.11.003>.
- Callahan R, Trubo R. *Tapping the Healer Within*. McGraw-Hill; 2001.
- Callahan RJ. The impact of Thought Field Therapy on heart rate variability. *J Clin Psychol*. 2001;57(10). <https://doi.org/10.1002/jclp.1082>.
- Callahan RJ. Raising and lowering of heart rate variability: some clinical findings of Thought Field Therapy. *J Clin Psychol*. 2001;57(10):1175–1186. <https://doi.org/10.1002/jclp.1084>.
- Callahan RJ. Thought Field Therapy: Response to our critics and a scrutiny of some old ideas of social science. *J Clin Psychol*. 2001;57(10). <https://doi.org/10.1002/jclp.1093>.
- Pignotti M, Steinberg M. Heart rate variability as an outcome measure for Thought Field Therapy in clinical practice. *J Clin Psychol*. 2001;57(10). <https://doi.org/10.1002/jclp.1086>.
- Sakai C, Paperny D, Mathews M, et al. Thought Field Therapy clinical applications: utilization in an HMO in behavioral medicine and behavioral health services. *J Clin Psychol*. 2001;57(10). <https://doi.org/10.1002/jclp.1088>.
- Johnson C, Shala M, Sejdijaj X, Odell R, Dabishevci K. Thought Field Therapy—soothing the bad moments of Kosovo. *J Clin Psychol*. 2001;57(10). <https://doi.org/10.1002/jclp.1090>.
- Sakai C, Connolly S, Oas P. Treatment of PTSD in Rwandan child genocide survivors using thought field therapy. *Int J Emerg Ment Health*. 2010;12(1):41–50.
- Connolly S, Caroline S. Brief trauma intervention with Rwandan genocide-survivors using Thought Field Therapy. *Int J Emerg Ment Health*. 2011;13(3):161–172. <https://pubmed.ncbi.nlm.nih.gov/22708146/>.
- Connolly S, Roe-Sepowitz D, Sakai C, Edwards J. Utilizing community resources to treat PTSD: a randomized controlled study using Thought Field Therapy. *Afr J Trauma Stress*. 2013;3(1):24–32.
- Robson RH, Robson PM, Ludwig R, Mitabu C, Phillips C. Effectiveness of Thought Field Therapy provided by newly instructed community workers to a traumatized population in Uganda: a randomized trial. *Curr Res Psychol*. 2016;7(1). <https://doi.org/10.3844/crpsp.2016.1.11>.
- Irgens A, Dammen T, Nysaeter TE, Hoffart A. Thought Field Therapy (TFT) as a treatment for anxiety symptoms: a randomized controlled trial. *Explore*. 2012;8(6). <https://doi.org/10.1016/j.explore.2012.08.002>.
- Irgens AC, Hoffart A, Nysaeter TE, et al. Thought field therapy compared to cognitive behavioral therapy and wait-list for agoraphobia: a randomized, controlled study with a 12-month follow-up. *Front Psychol*. 2017;8(JUN). <https://doi.org/10.3389/fpsyg.2017.01027>.
- Dunnewold AL. Thought Field Therapy efficacy following large scale traumatic events. *Curr Res Psychol*. 2014;5(1). <https://doi.org/10.3844/crpsp.2014.34.39>.
- Schoninger B, Hartung J. Changes on self-report measures of public speaking anxiety utilization treatment with Thought Field Therapy. *Energy Psychol J*. 2010;2(1). <https://doi.org/10.9769/EPJ.2010.2.1.BS.JH>.
- Seidi PAM, Jaff D, Connolly SM, Hoffart A. Applying Cognitive Behavioral Therapy and Thought Field Therapy in Kurdistan region of Iraq: a retrospective case series study of mental-health interventions in a setting of political instability and armed conflicts. *Explore*. 2021;17(1). <https://doi.org/10.1016/j.explore.2020.06.003>.
- Edwards J. Healing in Rwanda: The Words of the Therapists. *Int J Heal Car*. January 2016. Published online.
- Folkes C. Thought Field Therapy and trauma recovery. *Int J Emerg Ment Health*. 2002;4(2):99–103. <https://pubmed.ncbi.nlm.nih.gov/12166020/>.
- Wolpe J. *The Practice of Behavior Therapy*. 4th Ed Pergamon Press; 1990.
- Brown RC, Witt A, Fegert JM, Keller F, Rassenhofer M, Plener PL. Psychosocial interventions for children and adolescents after man-made and natural disasters: a meta-analysis and systematic review. *Psychol Med*. 2017;47(11). <https://doi.org/10.1017/S0033291717000496>.
- Edwards J, Vanchu-Orosco M. A meta-analysis of randomized and non-randomized trials of Thought Field Therapy (TFT) for the treatment of Posttraumatic Stress Disorder (PTSD): preliminary results. *Paper presented at the Association for Comprehensive Energy Psychology*. 2017.
- Montgomery P, Grant S, Mayo-Wilson E, et al. Reporting randomised trials of social and psychological interventions: the CONSORT-SP 2018 Extension. *Trials*. 2018;19(1). <https://doi.org/10.1186/s13063-018-2733-1>.
- Tanner BA. Validity of global physical and emotional SUDS. *Appl Psychophysiol Biofeedback*. 2012;37(1). <https://doi.org/10.1007/s10484-011-9174-x>.
- Salas MM, Brooks AJ, Rowe JE. The immediate effect of a brief energy psychology intervention (emotional freedom techniques) on specific phobias: A pilot study. *Explore J Sci Heal*. 2011;7(3):155–161. <https://doi.org/10.1016/j.explore.2011.02.005>.
- Church D, De Asis MA, Brooks AJ. Brief group intervention using Emotional Freedom Techniques for depression in college students: a randomized controlled trial. *Depress Res Treat*. 2012;2012:1–7. <https://doi.org/10.1155/2012/257172>.
- Rogers R, Sears S, College L. Emotional Freedom Techniques (EFT) for stress in students: a randomized Controlled dismantling study. *Energy Psychol*. 2015;7(2):26–32. <https://doi.org/10.9769/epj.2015.11.01.r>.
- Boath E, Good R, Tsaroucha A, Stewart T, Pitch S, Boughey AJ. Tapping your way to success: using Emotional Freedom Techniques (EFT) to reduce anxiety and improve communication skills in social work students. *Social Work Education*. 2017;36(6):715–730. <https://doi.org/10.1080/02615479.2017.1297394>.
- Malik M, Camm J. Heart Rate Variability. *Futura*; 1995.
- Mccraty R, Shaffer F. Heart Rate Variability: New perspectives on physiological mechanisms, assessment of self-regulatory capacity, and health risk. *Global Advances in Health and Medicine*. 2015;4(1). <https://doi.org/10.7453/gahmj.2014.073>.
- Holzman JB, Bridgett DJ. Heart rate variability indices as bio-markers of top-down self-regulatory mechanisms: A meta-analytic review. *Neurosci Biobehav Rev*. 2017;74. <https://doi.org/10.1016/j.neubiorev.2016.12.032>.
- Shaffer F, McCraty R, Zerr CL. A healthy heart is not a metronome: an integrative review of the heart's anatomy and heart rate variability. *Front Psychol*. 2014;5. <https://doi.org/10.3389/fpsyg.2014.01040>.

50. Kim H-G, Cheon E-J, Bai D-S, Lee YH, Koo B-H. Stress and Heart Rate Variability: a meta-analysis and review of the literature. *Psychiatry Investigation*. 2018;15(3). <https://doi.org/10.30773/pi.2017.08.17>.
51. Thayer JF, Yamamoto SS, Brosschot JF. The relationship of autonomic imbalance, heart rate variability and cardiovascular disease risk factors. *Int J Cardiol*. 2010;141(2). <https://doi.org/10.1016/j.ijcard.2009.09.543>.
52. Wu W, Lee J. Improvement of HRV methodology for positive/negative emotion assessment. In: *Proceedings of the 5th International ICST Conference on Collaborative Computing: Networking, Applications, Worksharing*. IEEE; 2009. <https://doi.org/10.4108/ICST.COLLABORATECOM2009.8296>.
53. Russoniello CV, Zhirnov YN, Pougatchev VI, Gribkov EN. Heart Rate Variability and biological age: implications for health and gaming. *Cyberpsychol Behav Soc Network*. 2013;16(4). <https://doi.org/10.1089/cyber.2013.1505>.
54. Heuchert JP, McNair DM. POMS 2®: Profile of Mood States Second Edition. Published online 2012.
55. Konuma H, Hirose H, Yokoyama K. Relationship of the Japanese translation of the Profile of Mood States Second Edition (POMS 2®) to the First Edition (POMS®). *Jun-tendo Med J*. 2015;61(5). <https://doi.org/10.14789/jmj.61.517>.
56. Callahan J, Callahan RJ. *Thought Field Therapy: Basic Diagnostic Training Step B and Advanced TFT & HRV*. Callahan Techniques; 2003.
57. Sprange K, Mountain G, Craig C. Evaluation of intervention fidelity of a complex psychosocial intervention Lifestyle Matters: a randomised controlled trial. *BMJ Open*. 2021;11(4). <https://doi.org/10.1136/bmjopen-2020-043478>.
58. Dincer B, Inangil D. The effect of Emotional Freedom Techniques on nurses' stress, anxiety, and burnout levels during the COVID-19 pandemic: a randomized controlled trial. *Explore*. 2021;17(2). <https://doi.org/10.1016/j.explore.2020.11.012>.
59. Munder T, Barth J. Cochrane's risk of bias tool in the context of psychotherapy outcome research. *Psychother Res*. 2018;28(3). <https://doi.org/10.1080/10503307.2017.1411628>.