

Effect of Transcendental Meditation on Employee Stress, Depression, and Burnout: A Randomized Controlled Study

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Abstract

Context: Workplace stress and burnout are pervasive problems, affecting employee performance and personal health.

Objective: To evaluate the effects of the Transcendental Meditation program on psychological distress and burnout among staff at a residential therapeutic school for students with severe behavioral problems.

Design: A total of 40 secondary schoolteachers and support staff at the Bennington School in Vermont, a therapeutic school for children with behavioral problems, were randomly assigned to either practice of the Transcendental Meditation program or a wait-list control group. The Transcendental Meditation course was provided by certified instructors.

Main Outcome Measures: Outcome measures were assessed at baseline and at four months, and included perceived stress, depression, and burnout. A multivariate analysis of covariance was used to determine overall effects.

Results: Analysis of the 4-month intervention data indicated a significant improvement in the main outcomes of the study resulting from practice of the Transcendental Meditation program compared with controls (Wilks Λ [3,28] = 0.695; p = 0.019). Results of univariate F tests indicated a significant reduction of all main outcome measures: perceived stress (F [1,32] = 13.42; p = < 0.001); depression (F [1,32] = 6.92; p = 0.013); and overall teacher burnout (F [1,32] = 6.18; p = 0.018). Effect sizes ranged from 0.40 to 0.94.

Conclusions: The Transcendental Meditation program was effective in reducing psychological distress in teachers and support staff working in a therapeutic school for students with behavioral problems. These findings have important implications for employees' job performance as well as their mental and physical health.

Introduction

Workplace stress and burnout are pervasive problems,¹ potentially affecting employee performance² and personal health. The issue is thus of prominent importance not only to employers but also to health care professionals. Schoolteachers are among the professionals who may experience a tremendous amount of stress in their work environment. Research indicates that approximately 70% of teachers are under frequent stress, with student discipline

problems contributing the most to teacher stress and burnout.^{3,4} Burnout, a syndrome of emotional exhaustion, negative attitudes toward others, and dissatisfaction with one's job performance,^{5,6} is associated with increased absenteeism and job turnover, alcohol and drug abuse, and lower job performance.^{7,8} Burnout, especially exhaustion, and other psychological distress factors affect not only job performance but also mental and physical health.⁹

Training in mind-body techniques may have the potential to counter the effects of employee stress and burnout. Such techniques could, in theory, provide employees with a pragmatic tool for mitigating or reducing the impact of ongoing stimulation of the "fight-or-flight" response in the face of chronic psychosocial stressors. In this way, training in such a mind-body program could aid the employee in adapting to and in functioning in a high-pressure work environment, and in combating the potential long-term health sequelae of chronic stress. One previously published study, carried out in educational settings,¹⁰ showed meditation instruction to reduce teachers' perceived stress and burnout. Although these results were promising, the study deployed a meditation protocol that is not otherwise established in the biomedical literature, and the results have not been replicated.

Among the most widely studied meditation and relaxation programs is the Transcendental Meditation^a (TM) program.¹¹ TM is a simple technique for reducing mental stress and is practiced twice daily for approximately 20 minutes. The technique was first introduced in the West by Maharishi Mahesh Yogi more than 50 years ago. For the purposes of rigorous scientific assessment and dissemination, important advantages of the TM program include a standardized and reproducible instruction format, a thorough certification program for instructors, and widespread availability of instructors in essentially all population centers in North America. Performed while sitting in a comfortable position, the mental technique allows the mind to experience finer levels of the thinking process and to achieve a state of deep relaxation. Research on the TM technique has shown significant reductions in psychological distress,¹² including decreased anxiety,¹³ depressive symptoms,¹⁴ and emotional distress,¹⁵ as well as improvement in psychological well-being in individuals with chronic illnesses.^{12,16}

This program differs from other meditation programs in terms of how the brain functions during the practice.¹⁷ Focused-attention meditation, corresponding to gamma (20- to 50-Hz) electroencephalographic (EEG) waves, aims to improve one's ability to

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Focused-attention meditation ... aims to improve one's ability to focus attention during activity ... mindfulness, techniques ... aim to cultivate a nonjudgmental attitude toward experience. Automatic self-transcending techniques, such as TM ... allows the mind to settle to quieter levels of thought.

focus attention during activity, which would be advantageous in dealing with a threat. Open monitoring, or mindfulness, techniques produce theta (4- to 8-Hz) EEG waves. Such techniques aim to cultivate a nonjudgmental attitude toward experience. Automatic self-transcending techniques, such as TM, involve the effortless use of a sound without meaning (mantra), which allows the mind to settle to quieter levels of thought. TM increases alpha EEG coherence and synchrony, which provide long-range integration of distal cortical-neural groups necessary for sensory, motor, and cognitive behavior.¹⁸ Meta-analyses have found that the TM technique was more effective than other meditation and relaxation techniques for reducing trait anxiety.^{13,19}

The current study was, to our knowledge, the first study to investigate the effects of TM on stress and burnout in a group of employees (teachers and support staff) working at a therapeutic school, a special school for students with severe behavioral problems. The purpose of the study was to evaluate changes in perceived stress, depressive symptoms, and burnout in those employees randomized to learn TM compared with wait-list controls over a four-month period. Specifically, we hypothesized that TM instruction would result in reductions in stress, depression, and burnout among employees enrolled in the trial.

Methods

Subjects and Setting

From among approximately 75 potentially eligible employees working at a residential therapeutic school for students with behavioral problems, 40 teachers and support staff volunteered for the study. They were randomized to 2 groups: either TM ($n = 20$) or wait-list controls ($n = 20$). Recruitment, intervention, and follow-up took place between February 2010 and August 2010.

The study took place at the Bennington School in North Bennington, VT, a therapeutic school for children with behavioral problems. This residential school was thought to represent an excellent location for the project because the teachers at such an institution, in the face of students who need a higher level of care, are presumed to be especially at risk of stress and burnout. In addition, the administrative team at the Bennington School was highly supportive of the project.

Interventions

The treatment group was taught the TM technique in a standard 7-step course. Two certified TM instructors who had previously undergone 6 months of residential training and had more than a dozen years of teaching experience were used for this study. The same standardized TM course sequence was used for all study participants; this sequence is well described in the literature.^{20,21} Participants attended 2 didactic lectures, followed by an individual interview with the instructor. After these steps, the instructor provided individual instruction in the technique to each participant. On each of the 3 days after individual instruction, participants met with the instructor as a group to review

and discuss experiences. Participants were advised to practice the technique twice a day for 15 to 20 minutes at home. Adherence to the instruction protocol was achieved through regular communication among the two teachers and the principal investigator of the study (SN).

Subjects in the wait-list control group continued with their usual schedule and were not instructed in TM until after the four-month intervention study was concluded.

Outcome Measures

After completing written informed consent, participants were administered a battery of tests at baseline, before instruction in the TM program. The baseline testing took place at the end of March 2010. Subjects were then administered the same battery of tests approximately four months later, at the beginning of August 2010.

The primary outcome measures were stress, depression, and burnout. The Perceived Stress Scale was used to assess participants' stress. This scale is a 14-item instrument that measures the degree to which situations in one's life are appraised as stressful. Each item is ranked on a 5-point scale. Coefficient α reliability is reported to be 0.85.²² Previous research has shown the instrument to be sensitive to changes induced by mind-body practice.²³

The Mental Health Inventory-5, which was used to assess depressive symptoms, is taken from the 36-Item Short-Form Health Survey.²⁴ The Mental Health Inventory-5 has been found to have high sensitivity and specificity for detecting depression.²⁵ Results from this instrument have also been well correlated with the Zung Self-Rating Depression Scale.²⁶ The Mental Health Inventory-5 consists of 5 questions rated by the participant on a 6-point scale. Total scores range from 5 to 30.

The Maslach Burnout Inventory-Educators Survey was used to evaluate teachers' burnout. This is a 22-item inventory with total score²⁷ and emotional exhaustion (9 items), depersonalization (5 items), and personal accomplishment (8 items, higher scores are better) subscales.⁶ Scores on each item can range from 0 to 6. The Cronbach α range from 0.76 to 0.90.²⁸ Younger teachers have been found to have higher levels of burnout than older teachers.⁶ Previous research has shown the instrument to be sensitive to changes induced by practice of mind-body stress reduction.²⁹

Lower scores on all primary outcomes—perceived stress, Mental Health Inventory-depression, and overall teacher burnout—are more desirable.

Compliance with home practice of TM was measured by each participant's self-report at posttesting.

Randomization and Allocation Concealment

Simple randomization procedures were used to assign participants to groups. The schedule of treatment group allocations was concealed by the study statistician, with individual treatment group assignments revealed to the project manager only when study participants completed baseline testing and were ready to commence treatment. All measures were self-administered questionnaires, to avoid any tester bias.

The consent form and all study procedures were approved by the institutional review board at Maharishi University of Management, Fairfield, IA.

Statistical Analysis

A multivariate analysis of covariance, covarying for baseline dependent variables and age, was used to determine overall effects. Univariate F tests were then used to determine specific effects on the main outcomes of the study. All p values were reported as two-tailed.

Sample size was dictated by funding and pragmatic limitations, as is typical for pilot studies of this type.

Results

Table 1 shows the demographic characteristics of the study participants by group. Overall, about 48% of subjects were men, the average age was 36.1 years, and the ethnicity was predominantly white.

Variable	Transcendental Meditation (n = 20)	Wait-list control (n = 20)
Sex, % men	50	45
Ethnicity, % white	100	95
Mean age, years (SD)	33.68 (8.31)	38.60 (10.90)
Perceived Stress Scale, mean (SD)	38.90 (6.48)	36.70 (6.88)
Mental Health Inventory-5 (depression), mean (SD)	12.95 (3.64)	13.10 (3.74)
Maslach Burnout Inventory, mean (SD)	37.60 (20.95)	37.50 (18.19)

SD = standard deviation.
All p values > 0.05.

Analysis of the 4-month intervention data indicated a significant improvement in the main outcomes of the study due to practice of the TM program compared with controls (Wilks Λ [3,28] = 0.695; p = 0.019), as detailed in Table 2. Results of univariate F tests indicated a significant reduction of all main outcome measures: perceived stress (F[1,32] = 13.42; p < 0.001); Mental Health Inventory-5 (depression) (F[1,32] = 6.92; p = 0.013); and overall teacher burnout (F[1,32] = 6.18; p = 0.018). Effect sizes (Glass' Δ) ranged from 0.40 to 0.94, suggesting moderate to large effects.

For the individual Maslach Burnout Inventory scales, there was a significant decrease in emotional exhaustion in the TM group (-2.73 ± 7.63) compared with wait-list controls (1.40 ± 5.33 ; F[1,32] = 4.60; p = 0.040). For personal achievement, which is a positive factor, the TM group showed an increase of 0.98 ± 3.79 compared with a reduction in personal achievement in the control group of -2.16 ± 6.61 (F[1,32] = 3.35; p = 0.077). Change in the depersonalization scale was in the predicted direction but did not reach statistical significance.

Compliance with practice of the TM technique was high; 100% of the participants meditated at least once a day. Of those, 56% meditated regularly at home twice a day.

Participants reported no unexpected, study-related serious adverse events.

Discussion

The results of this randomized controlled study indicate that the TM program was effective at four-month follow-up in reducing psychological distress and burnout in employees working in a therapeutic school for students with behavioral problems. Significant reductions were found in the TM group compared with controls for all of the main outcome variables: perceived stress, depressive symptoms, and teacher burnout. Medium to large effect sizes were observed, with the largest effect on perceived stress.

Psychological distress and exhaustion are associated with physiologic wear and tear, called allostathic load,³⁰ and have important health implications.⁷ Chronic psychological and physiologic stress factors have been linked to hypertension, obesity, and negative health behaviors, which are major contributors to cardiovascular morbidity and mortality,³¹ as well as other chronic diseases.³²⁻³⁵ A ten-year prospective study indicated that total burnout and emotional exhaustion scores on the Maslach Burnout Inventory were strong predictors of increased risk of mortality.²⁷

Studies indicate that practice of TM reduces psychological and physiologic response to stress factors, including decreased sympathetic nervous system and hypothalamic-pituitary-adrenal axis, and reductions in elevated cortisol (stress hormone) levels.³⁶⁻³⁸ Research also shows a more coherent and integrated style of brain functioning, evidenced by EEG imaging, which is associated with lower stress reactivity.³⁹ Recent research with college students practicing TM, compared with controls, indicated significant reductions in psychological distress, including anxiety and depression, which were associated with decreased blood pressure.¹² In addition, the practice of TM has been shown to reduce risk of mortality compared with controls.⁴⁰

Strengths of the present study included a randomized controlled design, with subjects allocated to either immediate start of TM or a wait-list control group. All study participants worked in the same school; therefore, the effects of the work environment were equivalent between groups. Compliance with the daily practice of the TM technique was high.

Study limitations included potentially limited generalizability because the project was carried out at a single site. Adherence among participants was high, and results likewise may not be generalizable to other meditation or stress management programs in which there may be potentially less motivation to adhere to a

Variable	Transcendental Meditation (n = 17)	Wait-list control (n = 19)	p value	Effect size
Perceived Stress Scale, mean (SD)	-4.65 (5.94)	1.79 (4.63)	< 0.001	0.94
Mental Health Inventory-5 (depression), mean (SD)	-2.83 (2.96)	-0.32 (3.87)	0.013	0.67
Maslach Burnout Inventory, mean (SD)	-5.61 (10.69)	1.58 (12.42)	0.018	0.40

SD = standard deviation.

daily home program. In addition, because participants could not be blinded to their treatment assignment, the use of self-report outcome measures introduced the possibility of bias. It is worth reemphasizing, however, that TM practice has been shown to achieve reductions in serum cortisol levels and other physiologic markers of stress in numerous previously published reports, as reviewed earlier.

We elected to use a wait-list control as the comparison group for this project. A chief advantage of the wait-list control is that every participant eventually gets the intervention. This, in turn, facilitates both recruitment and retention. An attention control intervention, such as a support group, also offers some advantages but can have a placebo effect, and some participants assigned to such a control arm might be “disappointed” and inclined to drop out. Although the wait-list control was thus an appropriate choice for this project, it is possible that our findings could be attributable in part to the additional attention, or group social interaction, experienced by the participants assigned to learn TM before the follow-up data collection.

Health care utilization was not measured in our study. An economic analysis would be a useful addition to any future studies of mind-body techniques for employee wellness. Previously published data do suggest that the TM program can result in reductions in health care utilization.^{41,42}

We described 3 main outcome measures but did not adjust for multiple comparisons, because this was intended primarily as an exploratory study. Nevertheless, introducing a Bonferroni correction would have left 2 of the 3 main outcomes (perceived stress and depression), with *p* values still statistically significant (below a critical value for significance of 0.017), with the third measure very close to being significant (*p* < 0.018 for the Maslach Burnout Inventory).

Overall, 90% of the participants were posttested. The participants who were not posttested were out of town at the time of test administration and could not be reached. Intent-to-treat analysis, using composite mean change scores for missing data, continued to show significant differences in perceived stress, depression, and teacher burnout (*p* < 0.025). Future studies are encouraged to include larger numbers of school employees from different backgrounds.

The study has important implications for reducing psychological distress and burnout in teachers and support staff. This, in turn, may affect both classroom teaching and mental and physical health. Results suggest that additional studies of TM in other stressful work environments, such as health care, may also be warranted. ♦

^a Transcendental Meditation and TM are service marks registered in the US Patent and Trademark Office, licensed to Maharishi Foundation, and used under sublicense.

Disclosure Statement

Randi Nidich is a part-time consultant to Maharishi Foundation USA Inc, Fairfield, Iowa. The other authors have no conflicts of interest to disclose.

Authors' Contributions

Charles Elder, MD, MP, FACP, participated in the critical review, drafting, and submission of the final manuscript. Sanford Nidich, EdD, and Randi Nidich, EdD, participated in the study design, acquisition and analysis of data, and drafting of the final manuscript. Francis Moriarty, EdD, participated in acquisition and analysis of data, and drafting of the final manuscript. All authors have given final approval to the manuscript.

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Antidote

Meditation is the antidote to all the poisons of your life.
It is the nourishment of your authentic nature.

—Chandra Mohan Jain, 1931-1990, professor of philosophy, Indian mystic, guru, and spiritual leader