

THE EFFECTS OF A STRESS MANAGEMENT PROGRAM IN A HIGH SECURITY GOVERNMENT AGENCY

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Forty-four employees of a regional of a branch federal government agency volunteered to participate in a three month stress management program. After a series of pretests, the participants were randomly assigned to one of the two groups: Transcendental Meditation (TM) or an education control designated "Corporate Stress Management" (CSM). After the twelve-week intervention period, and again after three years, participants were re-administered the same test battery. The three-month results revealed a reduction in anxiety and depression in the TM group. The three-year results suggested a reduction in anxiety, depression, and improved self-concept in the TM group.

Keywords: Stress management; Transcendental meditation; Workplace

Stress is widely recognized as a major impediment to the natural growth and function of both individuals and organizations. Within industry, losses due to stress-related absenteeism, disability, and decreased productivity have been estimated to be as high as \$200 billion annually (United Nations International Labor Organization, 1993). Not surprisingly, it is now common to find companies offering employees stress management programs. The Nation Survey of Work Site Health Promotion Activities found that 26.6% of private

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worksites with more than 50 employees offered stress management programming (Fielding, 1989).

This study arose from a request to implement a stress management program in a high-security U.S. government agency worksite reported to be highly stressful. The task was to create a simple, but effective, short-term intervention that would alleviate the subjective perception of workplace stress that many of the employees were reporting. The agency already had a commercial stress management package within its health care department, "Manage Your Stress" ("Manage", 1980), but it had fallen into disuse. We decided to resurrect this program as an educational control and measure its impact as well as that of a frequently researched meditation technique, Transcendental Meditation. For indicators of intervention impact we relied on blood pressure and self-report measures of well-being.

Transcendental Meditation as a Stress Management Program

Transcendental Meditation (TM) has been described as a simple and effortless mental technique practiced while sitting with eyes closed. During the TM technique, the mind is said to go beyond (transcend) the ordinary thinking process and experience silent wakefulness free of thought content (Maharishi, 1969). The TM technique has been extensively researched to measure its psychological, physiological, and social effects both independently and in comparison to standard stress-reduction techniques or other forms of meditation (Alexander, Rainforth, & Gelderloos, 1991; Chalmers, Clements, Schenkluhn, Weinless, 1989; Sheppard & Boyer, 1990; Wallace, Orme-Johnson, & Dillbeck, 1992). For example, in a meta-analytical study of TM's effect on trait anxiety in 146 separate treatment outcomes, Eppley, Abrams, and Shear (1989) found TM's effect size to be significantly larger than any of the other stress reduction methods tested, even after controlling for study design, expectancy, or experimenter bias. On the other hand, relatively little research has been conducted on TM as a stress management technique in the workplace. One prospective study of TM at two settings in the automotive industry found regular practitioners of TM improved more than controls on a general health subscale, trait anxiety, work relationships, and job satisfaction (Alexander, Swanson, Rainforth, Carlisle, Todd, & Oates, 1993).

Based in the previous research findings, and the stated objective of the agency to reduce perceived worksite stress, we proposed a longitudinal study. We compared anxiety, depression, and self-concept, the three psychological variables reported to be at risk by the staff, and blood pressure in the two intervention groups. One group was instructed in the TM program and a second, demographically similar group drawn from the same ranks of the organization, was instructed in a stress education program matched for instructor time and outcome expectancy. Based on the prior success of TM, we hypothesized that the TM group would show a greater improvement in all variables than the educational (CSM) group.

METHOD

Design

The overall design consisted of a randomized, single blind, worksite based trial consisting of two groups: 1) the Transcendental Meditation (TM) program and 2) the Corporate Stress Management (CSM) program. The programs were matched for instruction time and expectancy of beneficial outcomes. A third group to receive no treatment was proposed and rejected after a survey of staff and managers determined that it would not be well received in this setting.

Participants

Forty-four (44) employees volunteered to participate in the study following an introductory lecture on the nature of stress and the purpose of the research project. The participants consisted of managers (15%), clerical (26%), and technical (59%) staff. Pretest demographics were: mean age (50.5 years), mean educational level (15.2 years), male/female ratio (0.85), with an ethnic mix of 43% White, 41% Black, 9% Hispanic, and 7% Asian.

Measures

Participants were asked to have their blood pressure checked by the in-house medical staff and complete a battery of questionnaires. The

medical staff measured blood pressures manually with a mercury-column sphygmomanometer after a five minute quiet rest period. The medical staff remained blind to all other aspects of the research design. The questionnaire battery included: the State-Trait Anxiety Inventory: alpha coefficient = .92 for State Anxiety and .91 for Trait Anxiety (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), the IPAT Depression Scale: alpha coefficient = .85 (Krug & Laughlin, 1976), and the Tennessee Self-Concept Scale: alpha coefficient = .94 (Roid & Fitts, 1989).

Tests were group-administered during work hours. Participants completed each scale at their own pace. Total test time was approximately one hour. When all testing and blood pressure measurements were completed, participants were randomly assigned to one of the two groups: Transcendental Meditation (TM) or the corporate stress management (CSM) package entitled "Manage Your Stress". None of the participants had any previous exposure to either program. Each group consisted of 22 participants.

Procedure

The TM group was instructed in the Transcendental Meditation Technique through a combination of individual and group sessions (lasting about 5 hours total) as taught by a qualified instructor of TM. Participants were asked to practice the TM technique at home for 20 minutes, twice daily, and attend regularly scheduled group meetings at the worksite. These meetings were of approximately one hour duration and held bi-weekly for 12 weeks (for a total of approximately 11 instructor hours) to insure correct practice of the technique and assess regularity of practice at home via self-report questionnaire.

Participants CSM were exposed to the same amount of instruction as those in the TM group. This program was conducted by a stress management researcher from a near-by health clinic with familiarity with the CSM program. Several stress management practices (deep breathing, muscle relaxation) and self-awareness exercises (to recognize areas of psychological stress in one's personal life) were discussed in individual and group sessions. However, no specific stress management regimen for home (like the 20 minutes of meditation 2 times/day in the TM group) was asked of this group, although they

were invited to try out any or all of the stress-management practices discussed in the group sessions. As in the TM group, participants were asked to attend regularly scheduled group meetings.

At the end of the 12 week treatment period, and again after a lapse of three years, participants were invited for blood pressure checks by the medical staff and completed the original questionnaires battery. A \$20 incentive was offered at the 3-year testing to increase motivation.

Over the three year period, 17 TM participants (9 female) and 15 CSM (8 female) participants completed pre- and posttesting. Of the 12 participants who attrited, 8 (3-TM, 5-CSM) left the agency and 4 (2-TM, 2-CSM) withdrew for personal reasons, most frequently citing lack of time. An additional three TM and four CSM participants had incomplete blood pressure records and were not included in the blood-pressure analysis.

Analyses

There were no significant pretest or posttest differences between the TM and CSM groups on the demographic variables. A between-group review of the pre-mean psychological data suggested that the TM and CSM groups started at approximately the same place on the scales with the exception of the depression scale which indicated a greater initial level of reported depression in the TM group. This initial difference is not significant however because of large standard deviations around these means (for TM: mean = 52.8, SD = 30.8; for CSM: mean = 40.1, SD = 38.4, $F = 1.07$).

Data for the TM and CSM groups were analyzed for between-group differences using one-way ANCOVA, with baseline differences in the variables as the covariates. A probability level of $p < .05$ was chosen as the alpha level for all statistical tests. Planned contrasts allowed pairwise comparisons of the two groups. These contrasts were one-tailed due to the directions of the predictions (Rosenthal & Rosnow, 1984).

RESULTS

Participants were surveyed bi-weekly to determine home practice rates during the 12-week intervention. Anonymity was maintained to

encourage accurate reporting. Both group reported similar practice frequencies with greater than 85% reporting five or more practices/week.

A second survey was conducted as part of the 3-year posttesting to measure long-term regularity with their program. After three years without any program support or instructor contact, TM participants reported significantly higher practice rates (73% at five or more/week) than those in the CSM group (13% at five or more/week). These significantly lower figures in the CSM group were anticipated given the lack of a specific stress management regimen prescribed in that group.

Table I presents the mean psychological and blood pressure results of those who completed both pre- and posttesting. After the three-month intervention, trait anxiety and depression was significantly lower in the TM group than the CSM group. Differences between groups after three months on the other variables were not significant. However, both groups showed a reduction in state anxiety with the within-group difference from baseline reaching significance in the TM group ($p < 0.03$).

TABLE I Between-group ancova before and after Stress Management, Means and (Standard Deviations)

<i>Measure/group</i>	<i>Baseline</i>	<i>3-month</i>	<i>3-years</i>
<i>State Anxiety</i>			
TM	36.2 (9.9)	30.0 (7.5)	30.6 (10.3)**
CSM	36.0 (12.4)	34.1 (13.3)	39.8 (13.0)
<i>Trait Anxiety</i>			
TM	38.1 (8.7)	29.4 (5.5)**	33.5 (14.7)*
CSM	37.6 (13.4)	35.1 (12.6)	40.3 (8.5)
<i>Depression</i>			
TM	52.8 (30.8)	34.6 (27.2)*	30.9 (30.8)***
CSM	40.1 (38.4)	37.9 (32.7)	62.8 (36.2)
<i>Self-concept</i>			
TM	343.0 (29.2)	348.6 (32.5)	367.8 (32.4)**
CSM	346.8 (42.7)	348.9 (37.5)	339.4 (23.1)
<i>Systolic blood pressure</i>			
TM	125.2 (20.8)	122.5 (21.1)	121.9 (21.2)
CSM	126.0 (27.4)	127.2 (27.8)	130.7 (23.1)
<i>Diastolic blood pressure</i>			
TM	73.6 (7.3)	75.9 (7.9)	79.4 (11.9)
CSM	79.6 (12.6)	81.8 (14.7)	82.5 (9.9)

* $p < 0.05$, ** $p < 0.025$, *** $p < 0.01$.

When the participants were tested after three years, there were significant between-group differences in state anxiety, trait anxiety, depression and self-concept, with the TM group showing greater reductions in the three psychological distress variables and gain in self-concept, relative to the CSM group. Indeed, the TM group showed improvement on all four variables from baseline whereas the CSM group showed decreases from baseline. As was the case at the three month testing, no significant differences were found in systolic or diastolic blood pressure in either group.

DISCUSSION

The data suggest that a significant reduction in trait anxiety and depression values occurred over the three month treatment period in the group practicing TM relative to the CSM group. There was also a significant drop in state anxiety from baseline in the TM group. After a three year lapse without ongoing program or instructor support, state anxiety, trait anxiety, depression, and self-concept all measured significantly improved in the TM group. Also, participants TM reported greater continuing involvement with their stress management program than those in the CSM group.

These results are consistent with those obtained in previous research on Transcendental Meditation using the State-Trait Anxiety Inventory (Alexander *et al.*, 1993; Eppley *et al.*, 1989) as well as other measures of reduced anxiety and depression (Abrams & Siegel, 1978; Brooks & Scarano, 1985).

Self-concept as measured by the Tennessee Self-Concept Scale was unchanged by the intervention at the three month point, but showed significant between-group differences after three years. Self-concept is thought to be a relatively stable personality trait and it might be argued that it took three years for differences of this nature to appear.

The blood pressure measures were unaffected by the intervention. Neither systolic or diastolic blood pressures varied significantly over either the three month or three year periods. This is in contrast with several studies that have reported a decrease in hypertension with the practice of TM (Schneider, Staggers, Alexander, Sheppard, Rainforth,

Kondwani, Smith, & King 1995; Wallace, Mills, Orme-Johnson, Dillbeck, & Jacobe 1983). However, these studies were conducted on patients with already elevated blood pressure levels. Inspection of the pre-mean systolic and diastolic pressures in our study indicates that despite their perceived job stress level, these workers on average did not have elevated blood pressure.

For the most part, our hypotheses and the stated needs of the agency were supported. Several issues still remain to be answered, however. This study did not attempt to equalize home practice times although for the first three months when there was instructor support, the practice levels were similar. Therefore, it could be argued that the three-year differences between the groups were the result of differential levels of home stress-reduction practice. This will have to be addressed in future research. It does suggest that an important difference in the two programs is that the TM program is the more self-perpetuating in the absence of outside support. This, of course, may be an important consideration when a company is trying to make a cost/benefit analysis of long-term stress-management.

Another issue is the generalizability of these findings to other work settings or populations. This research occurred in a mid-sized, highly stressful government agency. Other business organization sizes, structures, or with different inherent stress levels may fare differently. However, Alexander *et al.* (1993) found similar reductions in trait anxiety in both a large Fortune 100 manufacturing company and a small distribution and sales company. Our participants population had a strong representation of ethnic minorities, particularly African-American, which suggests that the benefits of TM are not culturally specific. Few prior stress interventions have included ethnically diverse samples.

These results suggest that there may be relatively simple ways of dealing with both short and long-term anxiety, depression, and low self-concept in the workplace. In many ways, the workplace is the ideal location within our society to help people through a comprehensive stress-reduction program that teaches pro-active ways of keeping anxiety and its consequences from erupting in the first place. Potential benefits from such a program include: improved staff psychological well-being, greater positive interpersonal interaction, and greater flexibility to handle job stress. Hopefully, corporate America will

continue to support research of these promising stress-management programs.

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