

## EFFECTS OF THE TRANSCENDENTAL MEDITATION PROGRAM ON WORK ATTITUDES AND BEHAVIOR<sup>1</sup>

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Research completed December 1975.

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This carefully controlled study replicates and extends previous findings of increased job satisfaction and performance, and improved relationships with supervisors and co-workers in people participating in the Transcendental Meditation program. — EDITORS

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*The study assesses the effects of the Transcendental Meditation (TM) program on work-related behavior and attitudes. Reports of 102 participants in the Transcendental Meditation program who returned a mailed questionnaire indicated substantial increases in job satisfaction, performance, and relations with supervisors and co-workers as a result of the practice of the TM technique. Results were compared to (a) a telephone-book sample reporting on the most significant "training, education, experience, or self-development program" they had undertaken in the last few years and to (b) a sample of night-school students working toward a master's degree in business administration (MBA) who evaluated the MBA program as their most significant improvement program. For the variables mentioned above, the TM program was evaluated as superior to the MBA program and as equal or superior to the variety of programs evaluated by the other sample. Data from a separate study indicated that the self-reported changes are valid if one controls for current levels of satisfaction and performance. After performing this statistical control: (a) TM effects continue to be superior to MBA-program effects and were as good as, or better than, the average effect reported by the other sample; (b) there was a significant increasing effect from participation in the TM program with length of time since starting TM; and (c) unlike results of an earlier study on work-related behavior and attitudes, by Frew, there was no indication that the nature of the job characteristics (including level in the company) moderated the strength of effects found due to the practice of the TM technique. Other results indicated that no positive bias is introduced in this kind of study when respondents know the study is evaluating TM (in fact, more conservative claims were made by those that did know it was a study on TM).*

### INTRODUCTION

Frew (2) has reported a study of self-perceived changes (due to the Transcendental Meditation (TM) program) along six dimensions of work-related behavior and attitudes among employed participants in the Transcendental Meditation program. The individuals practicing the TM technique reported significantly increased job satisfaction, better performance, less desire to leave their jobs, better relationships with supervisors and co-workers, and a decreased motivation to climb the organizational hierarchy. All but the last of these self-reported changes were interpreted by Frew as positive changes due to the Transcendental Meditation program. In an attempt to increase the validity of his study, Frew asked the co-workers of the participants in the TM program to rate the amount of

change seen in them since starting to practice the Transcendental Meditation technique. These observers' perceptions agreed with the self-reports of meditators for the first five variables mentioned above (which adds to one's confidence in the validity of the self-reports). In the case of climbing motivation, the participants in the TM program appeared to the observers to have a greater motivation to climb in the company (unlike their self-reports). Frew also compared the perceived change scores to those of 25 graduate students asked to describe changes due to any significant experience or training in the last few years. While the comparability of this group to the employed meditators seems somewhat doubtful, the amount of change reported by this "control" group was significantly less than reported by the participants in the Transcendental Meditation program.

1. This work was supported by a Grant-in-Aid of Research from Sigma Xi and by a grant from the faculty research funds of the Graduate School of Business, University of Chicago.

Frew's study can potentially be criticized on several grounds. First, retrospective self-reports of change may have no validity as measures of real change. Frew's use of

co-workers' observations to some extent answers this objection; beyond this, additional data on the validity of these reports as measures of real change will be discussed in more detail later. A set of additional potential objections is related to the idea that people may be liable to positively bias their answers about a program in which they believe and/or in which they spend a significant amount of time (e.g., 20 minutes twice a day); also, an investigator may more easily reach and obtain the cooperation of those who feel a program is working for them in a positive way, while the dissatisfied may not participate in the study.

Accordingly, the primary purposes of the present study were: (a) to attempt to replicate Frew's results, (b) to compare reported work-related benefits from TM to some other self-improvement programs that are believed to have beneficial consequences for the employee, (c) to assess the degree to which positive reports about the TM program are affected by the fact that the respondent knows that the investigator is assessing TM, and (d) to extend Frew's study by measuring the extent of increase in effects with length of time of participation in the TM program. Points b and c relate to the potential objections towards Frew's study that were described above. Particularly, it should be noted that the Transcendental Meditation program is compared to another program in which people spend very significant amounts of personal time (and money)—namely, an evening MBA program. Also, the comparison groups in this study are composed of individuals who decided to cooperate with the study by evaluating their program of choice (that is, while the TM group contains self-selected respondents, so do the comparison groups). Thus, any response bias which might exist in the TM group also exists in the comparison groups, and this is a strong point of the present study.

**DIRECTION OF DESIRABLE CHANGE**—Before interpreting the results, we would want to know what direction and degree of change is felt to be desirable from a company's point of view. Without knowing that their task was related to this study, six experts (faculty members in the behavioral science area of the Graduate School of Business—the author not included) rated direction and degree of desirable change along the dimensions of the variables studied here, and they rated their certainty about these judgments. Specifically, they were asked to use "+2" to indicate a case of change in which the idea of "the more the better" would hold, to use "-2" for the case of "the less the better," to use "+1" or "-1" for the case where *only limited change* is best, and to use "0" when no change would be best from the company's point of view. Also, they were to rate their certainty about their judgment on a "1" (very unsure) to "4" (fairly certain of correctness) scale. As an example, it was indicated to the judges

TABLE 1  
AVERAGE OF SIX EXPERTS' JUDGMENTS OF DIRECTION OF  
DESIRABLE CHANGE AND CERTAINTY OF JUDGMENT

DIMENSION OF CHANGE	DIRECTION OF DESIRABLE CHANGE (+2 = continued increase, -2 = continued decrease)	CERTAINTY OF JUDGMENT (1-4 scale)
Job satisfaction	1.83	4.00
Performance (not rated by experts)	(2.00)	(4.00)
Desire to quit and find a new job	-1.00	2.33
Relationship with boss	1.50	3.50
Relationships with co-workers	1.67	3.67
Desire to climb in the company	0.83	2.67

that performance increases would almost always rate "+2" (the more the better) and "4" in certainty.

Table 1 shows the average results. For job satisfaction, there is almost complete agreement that more is better, and this judgment has high certainty. For relations with supervisors and co-workers, the consensus seems to be that fairly substantial improvements are all for the good (the majority gave a rating of "+2" in both of these cases), and there is high certainty in these judgments. For desire to quit and find a new job, the consensus is that only a limited decrease is good. Certainty is relatively low in this case, and one comment indicates why: "It depends on the present status of the company." Finally, for desire to climb in the company, the consensus is even closer to zero (no change is good) than in the last case, and certainty is also low; again, a comment indicates why: "Mobility aspirations are often very detrimental to the company." These results imply, unlike Frew's implicit assumption, that only four of the change variables assessed here are relatively unqualified in terms of their desirability.

## METHODS

Details explaining how the names of participants in the Transcendental Meditation program and other respondents were obtained, how the experimental manipulation (described below) was effected, and how the total questionnaire was constructed, as well as information such as return rates for questionnaires, will all be given in a lengthier paper to follow this paper.\* Only the most important points are discussed here.

Of the names of the TM program participants available, one-half of those individuals (selected at random) were

\*A working paper providing additional details on the study's methodology and providing additional analyses of the data is in preparation. That working paper will supplement this paper.

mailed a questionnaire with a cover letter that stated that a study of the TM program and work was being conducted. The first four pages of the questionnaire were identical for all respondents. The fifth page stated an interest in reactions to the TM program as experienced at work, and it then proceeded to ask for rating on the six dimensions discussed in this summary. These participants in the TM program were in the *told* condition of the "experiment." The other half of the TM program participants were sent a cover letter which merely indicated that a survey about people's reactions to work was being conducted and that there was an interest in how to increase productivity while reducing boredom and dissatisfaction. The fifth page asked the person to name the most significant program of "training, education, experience, or self-development" (this concept was explained in slightly greater detail) undertaken in the last few years. It then asked for ratings on the same six dimensions. These meditators were in the *not-told* condition of the "experiment." Independent of these questionnaires, data were available on length of time meditating for each meditator. Questionnaires were returned by 58 *told* and 56 *not-told* meditators. These 114 meditators had been participating in the Transcendental Meditation program for an average of 25.5 months (S.D. 16.8). Of the 56 *not-tolds*, 44 named the Transcendental Meditation program as the program of choice (they did not noticeably or significantly differ in length of time meditating from either the 58 *tolds* or the other 12 *not-tolds*). Data from these two groups of 58 and 44 participants in the TM program are reported here.

Of more than two-hundred questionnaires sent to names randomly selected from the telephone book (same cover letter and fifth page as the *not-told* group), 24 people returned questionnaires with the fifth page completed. Improvement programs mentioned included travel, job-related training, formal education, several miscellaneous items, and one person who took the "Dale Carnegie" course; these are all evaluated together as one category of programs mentioned by the telephone-book sample. Volunteers were also solicited in four sections of courses in the night-school MBA program of the Graduate School of Business. They took home the five-page *not-told* questionnaire and returned it one week later. Of the 70 returned, 57 named the MBA program as their most significant improvement program undertaken in the last few years; data from these 57 will be analyzed here.

## RESULTS

**AVERAGE SELF-REPORTED CHANGE**—For each of the six dimensions, the respondent was asked to select one of seven categories ranging from "−3" (e.g., large decrease, much worse) through "0" (no change) to "+3" (e.g., large increase, much better). Table 2 shows the

TABLE 2  
MEAN SELF-REPORTED CHANGE IN THE FOUR GROUPS

SELF-REPORT CHANGE	TELEPHONE- BOOK (N = 24)	MBA (N = 57)	TOLD TM (N = 58)	NOT-TOLD TM (N = 44)
Job satisfaction	1.522	0.281	1.421	1.811
Performance	1.522	0.860	1.912	2.114
Desire to quit and find a new job	−0.833	0.982	−0.175	−0.045
Relationship with boss	0.500	0.286	1.455	1.727
Relationships with co-workers	0.750	0.140	1.839	2.068
Desire to climb in the company	0.917	1.158	0.167	0.317

NOTE: The range of each measure is from −3.00 to +3.00, with zero indicating no noticed change.

average amounts of change reported by the four groups discussed above. First, to test the hypothesis that there is some subjectively experienced positive change due to the TM program, *t*-tests were performed comparing the obtained responses to a null value of "0" (no change). For the job-satisfaction, performance, and relations-with-boss-and-co-workers variables, the *t*-tests showed highly significant positive changes regardless of whether the *told* or the *not-told* TM group is considered (the *t*-statistic was greater than 7.0 for each of the eight tests—four variables by two TM groups). For the desire-to-quit-and-find-a-new-job variable and for the desire-to-climb-in-the-company variable, the data gave no indication of a significant subjectively experienced change.

In all six cases, there were some significant differences between the means of the four groups (the smallest *F*-statistic for any of the six dependent variables was  $F(3,179) = 5.21, p < .005$ . Looking to contrasts between particular groups, we find no significant differences between the *told* and *not-told* TM groups for any variable (although there is a trend of better results being reported by the *not-told* group for five of the six variables). Thus, the statistically significant differences must lie between the two TM groups and one or both of the other groups, and/or between these other two groups.

Comparing the telephone-book sample to the two TM groups, we find that there are no significant differences between groups for the job-satisfaction or desire-to-quit variables. Results for the performance and for the desire-to-climb variables are ambiguous: for performance, the *not-told* group reported significantly greater improvements than the telephone-book group ( $t(66) = 2.485, p < .02$ ),\* but the *told* TM group is not significantly

\*Unless otherwise stated, probability levels given throughout this paper are for two-tailed tests. It is especially necessary to evaluate the statistical comparisons of the groups in this fashion since no firm *a priori* predictions about group differences were stated.

greater than this comparison group ( $t(80) = 1.549$ ). For desire to climb, the *told* group is significantly lower ( $t(80) = -2.112$ ,  $p < .05$ ) but the *not-told* group is not significantly lower ( $t(66) = -1.429$ ). However, for the relations-with-boss variable, the *told* group is significantly greater than the telephone-book sample ( $t(80) = 3.190$ ,  $p < .002$ ); for the relations-with-co-workers variable, again the *told* group is significantly greater than the comparison ( $t(80) = 3.935$ ,  $p < .001$ ). These last two results are even more significant if the *not-told* TM group is used instead. Therefore, of the four relatively unambiguously good change variables (as evaluated in table 1), results summarized in table 2 show the TM program to be subjectively evaluated as being at least as good as (performance and satisfaction) or better (interpersonal relations) than the variety of programs mentioned by the telephone-book sample. On the two more ambiguous change variables, TM did not differ from the comparison group in one case and may possibly be lower in the other case.

The TM groups very significantly exceed (in a positive direction—see table 1) the MBA program evaluations for the first five change variables listed in table 2 (in order, the more conservative of the pair of  $t$ -statistics for comparison of the MBA program to the pair of TM groups were:  $t(113) = 4.557$ ,  $t(113) = 6.207$ ,  $t(99) = -2.956$ ,  $t(113) = 5.690$ ,  $t(113) = 10.297$ ; all are significant at least at  $p < .01$ ). For the desire-to-climb variable, the TM groups were significantly lower (for *told*,  $t(113) = -7.739$ ; for *not-told*,  $t(99) = -2.956$ ). It is of passing interest to note that the only subjectively noticed changes for the MBA students due to their program (compared to a null value of "0") were a significant improvement in performance ( $t(56) = 8.224$ ), an increase in desire to climb the company hierarchy ( $t(56) = 5.982$ ), and (at the same time) a greater desire to quit their present job and look for a new one ( $t(56) = 5.222$ ). The Transcendental Meditation program was subjectively evaluated as better than the MBA program for all four of the unambiguous change variables as well as for the desire-to-quit variable (in this last case, the difference between groups arises because the TM program does not produce a change in desire to quit, as measured by self-reports, while the MBA program is seen as increasing this desire). For desire to climb, the TM program (by producing no subjectively experienced change on the average) is lower than the MBA program, which appears to increase upward-mobility aspirations.

**VALIDITY OF SELF-REPORTS AS MEASURES OF REAL CHANGE**—Frew's results give some confidence in the validity of self-reports by showing a general congruence between these self-reports of change and the change in TM program participants as seen by outside observers.

Additional data are presented here on the validity of the first three of the change measures used in this study. These additional data are related to measures obtained in the first four pages of the questionnaire administered to all participants in the study.

The first four questionnaire pages asked for some demographic information of various sorts (e.g., age, sex, education) and for ratings of job characteristics; they also had a scale measuring present level of performance as well as scales measuring four psychological characteristics (including present level of job satisfaction). The additional data, then, are from a separate longitudinal study in which it was possible to measure both self-perceived change and, also, actual change from one point in time to another. The actual changes to be discussed shortly were in the performance and satisfaction variables. A brief description of these measures follows: performance was measured by a three-item scale (one item was a subjective self-rating of performance and the other two measured amount of any recent salary raise for performance and whether the person had a recent promotion); this performance scale had a modest but acceptable level of internal-consistency reliability (.520,  $N = 303$ ). Satisfaction was measured by an item asking about general job satisfaction, one asking about satisfaction with kind of work done on the job, and one asking about frequency with which thoughts of quitting occur (these are the three job satisfaction items used by Hackman and Lawler, 4). Internal-consistency reliability was good for this three-item scale (.852).

Before turning to the longitudinal data, it should be mentioned that the data from the present study revealed some strong and consistent patterns of correlation between the self-reported change measures from the fifth questionnaire page, and the performance and satisfaction measures from the first four pages of the questionnaire. These patterns were generally consistent within each of the four groups of the present study. Table 3 presents these relations for the entire set of 183 respondents in the form of partial correlations controlling for group membership (the partial correlations thus closely mirror the pattern of results seen within any one group that are independent of the group). As can be seen, the present level of performance has a substantial and significant correlation with the amount of performance change the person attributes to the program he is evaluating. Smaller but significant relationships are seen with the last three self-report change variables. The present level of satisfaction has a substantial and significant correlation with self-reported changes in job satisfaction and with self-reported desire-to-quit changes (the small correlation with self-reported performance changes becomes nonsignificant if we also statistically control for present levels of performance and this variable's relation to present satisfaction).

TABLE 3  
CORRELATIONS OF POTENTIALLY CONFOUNDING VARIABLES WITH  
SELF-REPORTED CHANGE IN THE ENTIRE DATA SET  
(N = 183)

SELF-REPORT OF CHANGE	CURRENT PERFORMANCE	CURRENT SATISFACTION
Job satisfaction	0.088	0.392‡
Performance	0.342‡	0.173*
Desire to quit and find a new job	-0.109	-0.475‡
Relationship with boss	0.229†	0.079
Relationships with co-workers	0.239†	0.025
Desire to climb in the company	0.274†	0.122

NOTE: These are partial correlations controlling for three "dummy" variables used to represent membership in one of the four groups.

\* $p < .05$ .

† $p < .002$ .

‡ $p < .0001$ , two-tailed tests.

What do the significant correlations of present performance with self-reported change in performance and of present satisfaction with self-reported changes in job satisfaction and desire to quit indicate about these variables? They indicate a possible confounding in the self-reports. But what might explain the occurrence of these particular correlations? One explanation is that those that are already better off experience more change as a result of self-improvement programs. This does not seem very likely. An alternative explanation is that the psychological response process whereby people generate self-reports of changes is overly biased by a person's present feelings about his situation. That is, a person asked "how much change in trait X have you experienced as a result of self-improvement program Y?" may give a report on change due to Y, but the present data indicate that he may also include in his report a rating of his present status on trait X. If this is so, it possibly threatens the validity of our earlier conclusions comparing one group to another when these conclusions are interpreted as measures of real change. This is especially true since there were some differences among the four groups in terms of their average level of present performance ( $F(3,179) = 6.17$ ,  $p < .005$ ), although there were no significant differences among the four groups in terms of their average level of present satisfaction ( $F(3,179) = 1.61$ ).

To see if any real change is revealed in the self-reports of change, data from 41 individuals participating in the longitudinal study of the TM program were analyzed (although more than 41 participants will eventually be in that study, only 41 observations were available for analysis at the time of this writing). These people completed the four-page questionnaire one to four days before learning the TM technique. One to three months after learning TM, they again completed the four-page questionnaire and also

evaluated the TM program on a "told" version of the fifth page. Thus, data on their final levels of performance and satisfaction at the end of the time period were available. Also, data on their real change in performance and satisfaction (obtained by subtracting their time-1 scores from their time-2 scores) were available. These values can be compared to their self-reported changes in the job-satisfaction, performance, and desire-to-quit variables. (There is no measure of real change related to this third self-report, but there is good reason to think that changes in satisfaction would relate to changes in desire to quit.)

The correlations between (a) the three self-reported change variables and (b) the satisfaction and performance variables (measured at the second point in time) show the same general pattern as the first six correlations in table 3. That is, there is evidence that current levels of satisfaction and/or performance act to confound self-reports of change in these three variables. The degree of confounding was examined by performing multiple regression analyses relating each self-reported change variable to a pair composed of a final score and a difference between final and initial scores. The following regression equations were obtained:

$$(1) \text{ self-reported change in satisfaction} = (.51 \times \text{final satisfaction}) + (.27 \times \text{change in satisfaction}).$$

Each coefficient is significant (respectively, the  $t$ -statistics are  $t(38) = 3.945$ ,  $p < .001$  and  $t(38) = 2.093$ ,  $p < .025$ ).\*

$$(2) \text{ self-reported change in performance} = (.13 \times \text{final performance}) + (.33 \times \text{change in performance}).$$

The first coefficient is not significantly different from zero ( $t(38) = 0.732$ ) but the second is ( $t(38) = 1.929$ ,  $p < .05$ ).

$$(3) \text{ self-reported change in desire to quit} = (-.63 \times \text{final satisfaction}) + (-.20 \times \text{change in satisfaction}).$$

The first coefficient is significant ( $t(38) = -5.187$ ,  $p < .001$ ) while the second approaches accepted level of statistical significance ( $t(38) = -1.630$ ,  $p < .06$ ). (In the above regression equations, the coefficients are for standardized variables.)

In all three equations, the algebraic signs of the regression coefficients for the final levels of the variable (i.e., the level of the variable at the time when change is self-reported) agree with the signs of the correlations in table 3 discussed earlier. Thus, these results from the longitudinal study tend to support the idea that present

\*One-tailed statistical tests were used for the coefficients of the three regression equations since directional predictions for these coefficients were stated prior to the multiple-regression analyses.

levels of satisfaction and performance confound self-reports of changes. However, we have the fact that the coefficients relating real change to self-reported change in equations 1 through 3 are significant even when controlling for the current level of the relevant variable. This fact strongly suggests that the self-reports of change do reflect real change and that, after partialling out the effects of current satisfaction and performance, *the residual in the self-reports is a valid measure of change* (at least for the job-satisfaction, performance, and desire-to-quit variables). This is consistent with Frew's data on the validity of these self-reports.

**GROUP DIFFERENCES AFTER CONTROLLING FOR CONFOUNDING VARIABLES**—Performance and satisfaction were treated as a pair of covariates in a reanalysis of the group differences originally presented in table 2. This statistical control procedure allows an analysis of that portion of variation in the dependent variable that is not correlated with current satisfaction and performance. The results presented in the previous section indicate that this uncorrelated residual relates to real changes for the first three dependent variables examined in this study. While there is no evidence from the data analyzed in the previous section that the second three self-report variables do relate to real changes, the fact that table 3 does indicate a correlation between performance and the second three dependent variables means that it might help to statistically control for performance and satisfaction in these cases also. However, confidence should be greatest in the job-satisfaction, performance, and desire-to-quit variables as measures of real change (after performing the statistical control).

Table 4 and figs. 1 and 2 present the relative values of the group means after controlling for performance and satisfaction. Only relative values can be presented since a statement of some value as an absolute estimated mean would require an assumption of some fixed particular values for the satisfaction and performance covariates: therefore, the lowest group mean (or highest in the case of desire-to-quit) is labeled "reference" and the other means are presented relative to this value. For all six variables, there were again some significant differences between the means of the four groups (the smallest of the six  $F$ -statistics was  $F(3,177) = 3.26, p < .025$ ). Generally, the results are very similar to table 2. As before, there were not significant differences between the *told* and *not-told* TM groups (although, again, five of the six variables showed more positive results in the *not-told* group, and, in this case, three of these differences approached accepted levels of statistical significance:  $p < .1$ ). As before, we will look at differences between the pair of TM groups and each of the other two programs.

In comparison to the telephone-book sample, the TM groups were better for the relations-with-boss and

relations-with-co-workers variables, and there were no significant differences for the job-satisfaction or the desire-to-quit variables. The results for the performance variable were no longer particularly ambiguous: the *not-told* group was clearly higher ( $t(64) = 2.928, p < .01$ ) and the difference for the *told* TM group approached accepted levels of statistical significance ( $t(78) = 1.901, p < .07$ ). Possible differences for the desire-to-climb variable are still ambiguous: there is no significant difference for the *not-told* group ( $t(64) = -0.745$ ) while the difference for the *told* group approaches statistical significance ( $t(78) = -1.963, p < .06$ ). Thus, of the four relatively unambiguously good change variables indicated in table 1, results summarized in table 4 and figs. 1 and 2 show the Transcendental Meditation program to be better than the change programs reported by the telephone-book sample in three of four cases, and to be as good as these other change programs for the job-satisfaction case. Differences in terms of desire to quit and desire to climb were, respectively, insignificant and ambiguous.

In comparison to the MBA program evaluations, the TM groups again very significantly exceed this program in terms of the first five variables. For the desire-to-climb variable, the results summarized in table 4 are now slightly ambiguous in comparison to the more clear-cut results for table 2: there is a significant difference of lower reports of this desire for the *told* group ( $t(111) = -3.742, p < .001$ ) but only marginally for the *not-told* group ( $t(97) = -1.764, p < .1$ ). Altogether, the MBA program comparisons and the telephone-book sample comparisons generally indicate that the Transcendental Meditation program, as evaluated by the present group of TM program participants, produces as much as, or more, positive change on the job than the alternative programs evaluated in this study.

**MODERATING EFFECTS OF THE TIME SINCE STARTING THE TM PROGRAM AND OF JOB CHARACTERISTICS**—Finally, this paper considers two variables that may moderate the strength of the job-related changes due to the practice of the Transcendental Meditation technique. First, theory that explains the effects of the TM program predicts that the effects should be cumulative over time. Therefore the amount of change due to the TM program should be reported as greater if a person has been participating in the program for a longer period of time, so there should be a correlation between length of time since starting to practice the TM technique and the dependent variables assessed in this study. Analysis of this variable represents an extension of Frew's (2) study.

Second, Frew has reported greater self-reports of change from the TM program (a) for people at higher levels in the organization and (b) for people in more democratically as opposed to autocratically managed

TABLE 4  
RELATIVE VALUES OF MEANS AFTER CONTROLLING FOR  
POTENTIALLY CONFOUNDING VARIABLES

SELF-REPORT OF CHANGE	TELEPHONE- BOOK (N = 24)	MBA (N = 57)	TOLD TM (N = 58)	NOT-TOLD TM (N = 44)
Job satisfaction	1.011 + R	R	0.944 + R	1.392 + R
Performance	0.724 + R	R	1.171 + R	1.484 + R
Desire to quit and find a new job	-1.418 + R	R	-0.820 + R	-0.790 + R
Relationship with the boss	0.290 + R	R	1.291 + R	1.656 + R
Relationships with co-workers	0.708 + R	R	1.836 + R	2.144 + R
Desire to climb in the company	0.677 + R	0.824 + R	R	0.294 + R

NOTE: R stands for "reference" and is the lowest estimated mean in the row (or highest for third row).

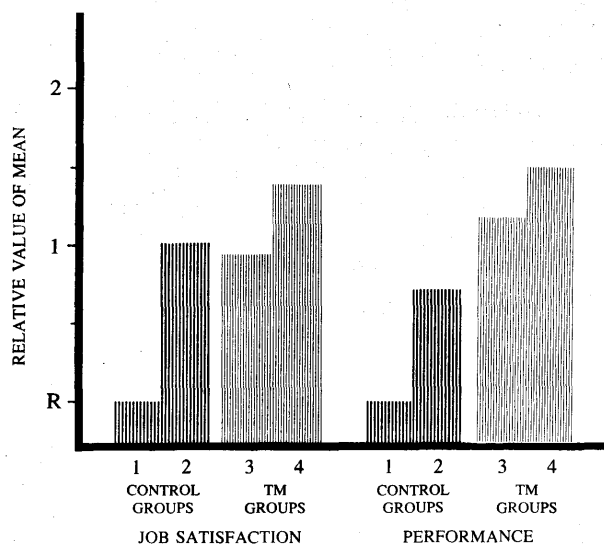


FIG. 1. RELATIVE VALUES OF GROUP MEANS ON JOB SATISFACTION AND PERFORMANCE AFTER CONTROLLING FOR POTENTIALLY CONFOUNDING VARIABLES. Group numbers represent (1) MBA and (2) telephone-book control groups and (3) *told* and (4) *not-told* TM groups. R stands for "reference" and is the lowest estimated mean among the groups.

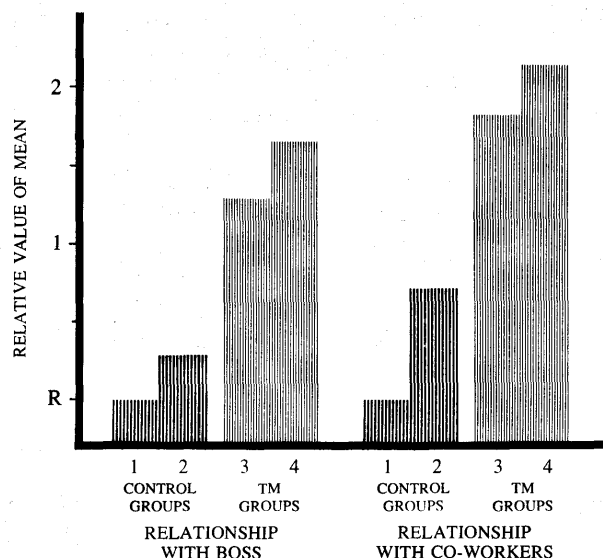


FIG. 2. RELATIVE VALUES OF GROUP MEANS ON RELATIONSHIP-WITH-BOSS AND RELATIONSHIPS-WITH-CO-WORKERS AFTER CONTROLLING FOR POTENTIALLY CONFOUNDING VARIABLES. Group numbers represent (1) MBA and (2) telephone-book control groups and (3) *told* and (4) *not-told* TM groups. R stands for "reference" and is the lowest estimated mean among the groups.

companies (as perceived by the respondents). Friend (3) has interpreted this result as a possible instance where Hackman and Lawler's (4) theory of motivational reactions to job characteristics may be operating; that is, if the Transcendental Meditation program increases efficiency of the human system and/or increases need for self-actualization, then the greatest effects of the TM program at work should be seen when jobs permit more growth of the person (presumably, higher-level jobs and jobs in democratically run companies permit more growth). To test this hypothesis, the first four pages of the questionnaire contained items measuring job charac-

teristics: the two items used by Frew to measure level of job and organizational structure (democratic, authoritarian) and four items measuring, respectively, the four core dimensions of enriched jobs as discussed by Hackman and Lawler (autonomy, variety, task identity, feedback). These six items were substantially interrelated (the internal-consistency reliability for the six was .671), so the six items were combined into a single scale measuring job characteristics. Thus, the second hypothesis to be investigated is that there is a correlation between the dependent variables in the present study and the job-characteristics measure.

TABLE 5  
EFFECTS OF LENGTH OF TIME PARTICIPATING IN THE TRANSCENDENTAL MEDITATION PROGRAM AND  
JOB CHARACTERISTICS ON CHANGE IN THE TWO TM PROGRAM GROUPS  
(N = 102)

SELF-REPORT OF CHANGE	CORRELATION WITH TIME PARTICIPATING IN TM PROGRAM	CORRELATION WITH JOB CHARACTERISTICS SCALE	PARTIAL CORRELATION: TIME PARTICIPATING IN TM PROGRAM	PARTIAL CORRELATION: JOB CHARACTERISTICS SCALE
Job satisfaction	0.178*	0.227*	0.202*	0.065
Performance	0.291†	0.112	0.279†	-0.031
Desire to quit and find a new job	0.068	-0.215*	0.058	0.041
Relationship with boss	0.208*	0.075	0.217*	-0.041
Relationships with co-workers	0.196*	0.106	0.217*	0.001
Desire to climb in the company	0.101	0.034	0.118	-0.144

NOTE: Partial correlations in columns 3 and 4 control for current satisfaction and current performance, and also for two main effects and four interaction terms (see text). The significance levels in these columns are two-tailed probabilities for the *F*-tests from the analysis. The significance levels in columns 1 and 2 are for one-tailed tests on these correlations.

\**p* < .05.

†*p* < .01.

TABLE 6  
SUMMARY OF RESULTS

SELF-REPORT OF CHANGE	DIRECTION OF DESIRABLE CHANGE	DIRECTION OF CHANGE EXPERIENCED DUE TO THE TM PROGRAM	THE TM PROGRAM IN COMPARISON TO MBA PROGRAM	THE TM PROGRAM IN COMPARISON TO MISCELLANEOUS SELF-IMPROVEMENT PROGRAMS	EFFECT WITH INCREASING TIME PARTICIPATING IN THE TM PROGRAM
	(Table 1)	(Table 2, columns 3 and 4)	(Table 4)	(Table 4)	(Table 5)
Job satisfaction	increase	increase	more positive	no difference	increase
Performance	increase	increase	more positive	probably more positive	increase
Desire to quit and find a new job	limited decrease	no change	more positive	no difference	no change
Relationship with boss	increase	increase	more positive	more positive	increase
Relationships with co-workers	increase	increase	more positive	more positive	increase
Desire to climb in the company	limited increase	no change	possibly less positive	unclear (possibly less)	no change

Table 5 presents the correlations between length of time since starting the TM program and the six self-reported measures of change and the correlations between the job-characteristics scale and these change measures. The length of time in the TM program has a significant correlation with four of the variables—the same four variables for which self-reported change was significantly different from zero, and also the same four perceived as being good variables in which to observe positive change (table 1). The job-characteristics measure has positive correlations with only two of the self-reported change variables, although the direction of the correlation for these two does replicate Frew's results.

In order to examine these results more closely, the analysis-of-variance-like procedures discussed by Cohen (1) were applied to the (continuous) time-in-the-TM-program and job-characteristics variables and to a factor representing the condition of the "experiment" for these

TM program respondents (*told* or *not-told*). This analysis examined three main effects of the factors just mentioned, plus three two-way interactions of these factors, plus the one three-way interaction. In addition, current levels of satisfaction and performance were included as covariates (thus, as discussed in an earlier section of this report, the results should more validly reflect real changes). This analysis was applied to each of the six change variables. The main effect of time-in-the-TM-program was significant for the same four variables discussed above. In this analysis, there were no significant effects for "experimental condition" or for the job-characteristics independent variable in any of the six analyses. For the relations-with-co-workers variable, the time-in-the-TM-program × job-characteristics interaction was significant ( $F(1,92) = 4.36, p < .05$ ; a plot of the interaction showed that it indicated a greater effect on time-in-the-TM-program for people at the low end of the job-characteristics continuum); however, this interaction may



not be a replicable or important phenomenon since a total of 24 interactions were evaluated in the six analyses, and one might expect, due just to chance, to find about one of 24 interactions to be significant at the .05 level.

In order to conveniently compare these analyses to the correlations already discussed in table 5, the table presents the correlations for time-in-the-TM-program and for job characteristics after controlling for the other main effects, the interactions, and the two covariates. The probability levels next to these partial correlations are for the *F*-tests from the analyses discussed above. The reason why the partial correlations for job characteristics are virtually zero was revealed by a closer look at the data. Job characteristics have a strong relation to the two covariates, performance and satisfaction (this is consistent with Hackman and Lawler's results), and, as shown earlier (table 3), these covariates relate to self-reported changes. It was found that the covariates mediate virtually all the relation between job characteristics and self-reported change. There is no *direct* linkage of job characteristics to (inferred) change in the present data. These results seem to conflict with Frew's conclusions in regard to job characteristics. The results do, however, indicate increasing amounts of positive change with length of time participating in the TM program for job satisfaction, performance, and relations with supervisors and co-workers.

## SUMMARY AND CONCLUSIONS

People regularly practicing the Transcendental Meditation technique evaluate the TM program as having positive effects at work, and this evaluation is given regardless of whether or not they know the study is specifically evaluating the TM program. After appropriate statistical

controls, the reports seem to validly indicate change. The results are generally greater for those who have been participating longer in the TM program, but do not seem to differ as a function of the nature of the person's job (including level in the company). The Transcendental Meditation program compares favorably to other programs evaluated by people committed to these programs as methods of self-improvement. Results for the six specific variables examined in this study are summarized in table 6.

## ACKNOWLEDGMENTS

Thanks are given to Karen Friend for her extensive help in the data collection and analysis stages of this research. Also, thanks go to the faculty members and subjects who helped in this research for their very necessary participation in this study.

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