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PAPER 247

**IMPROVED MENTAL AND PHYSICAL HEALTH AND  
DECREASED USE OF PRESCRIBED AND NON-PRESCRIBED DRUGS  
THROUGH THE TRANSCENDENTAL MEDITATION PROGRAMME**

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Immediate and cumulative benefits for mental and physical health, and reduced use of prescribed and non-prescribed drugs were reported to result from the Transcendental Meditation programme. The greatest improvements were reported by regular practitioners of the Transcendental Meditation technique. —EDITORS

*A self-report questionnaire was posted to a large and representative sample of individuals who had previously learned Transcendental Meditation. 1,289 completed questionnaires were returned. Significant improvements were reported since learning Transcendental Meditation in mental and physical health, and significant decreases were reported in the use of a wide range of prescribed and non-prescribed drugs. Respondents matched the New Zealand population as a whole regarding age, sex, and marital status. Median time since learning Transcendental Meditation was between six and twelve months.*

*Improvements in both mental and physical health were strongly correlated with regularity of practice of Transcendental Meditation ( $p < .001$  for mental health,  $p < .001$  for physical health) and duration of practice of Transcendental Meditation ( $p < .001$  for mental health,  $p < .01$  for physical health).*

*Significant decreases were reported since learning Transcendental Meditation in the use of all drug categories evaluated:—alcohol, tobacco, mild analgesics, hypnotics (sleeping pills), tranquillizers, antidepressants, antihistamines, asthma inhalers, antihypertensives, drugs for heart disease, marijuana, LSD, and opiates.*

*The results of the study indicate that Transcendental Meditation has important beneficial effects on health which are both immediate and cumulative. The findings suggest that Transcendental Meditation may improve health by at least two mutually enriching mechanisms:*

*(1)Directly improving mental and physical health (as evidenced by the reports of improved health and decreased need for prescribed drugs);*

*(2)Reducing behaviour which is harmful to health (as evidenced by decreased use of tobacco, alcohol, and non-prescribed drugs).*

## INTRODUCTION

Despite utilizing the latest advances in medical technology, recent decades have witnessed escalating health costs with little corresponding increase in life-span or reduction in morbidity. Clearly some new development is needed.

Major improvements in health have often resulted from improvements in the material quality of life such as better nutrition, housing, and sanitation. In developed countries these improvements in material living standards, coupled with the application of modern medicine, have led to the virtual elimination of many forms of disease. However, serious problems still remain, often of subtle and complex causation.

Increasingly the quality of consciousness is being recognized as important, if not vital for health. This has always been apparent to practising doctors; medical research is now quantifying this clinical impression (Vaillant, 1979).

Most medical technologies operate only on the level of material structure or function. The Transcendental Meditation programme, by contrast, is a technology of consciousness. Derived from ancient Vedic Science, as brought to light by His Holiness Maharishi Mahesh Yogi, Transcendental

Meditation is a simple, natural, mental technique which does not require any specific changes in style of life, and can be easily learned by individuals from any educational or cultural background. It is practised for two 15–20 minute periods each day. The regular practice of Transcendental Meditation is said to unfold the full potential of the conscious mind and to cultivate the state of 'enlightenment', or 'wholeness' of consciousness (Domash, 1976).

During the past twelve years several hundred studies have been conducted on the effects of Transcendental Meditation, demonstrating benefits in many different areas (Orme-Johnson and Farrow, 1976; Chalmers et al., in press).

During the practice of Transcendental Meditation a unique psycho-physiological state is generated characterized by deep rest and heightened awareness. Physiological correlates of this state have been shown to include reduced oxygen consumption (Wallace et al., 1971), markedly reduced breath rate (Farrow and Hebert, 1982), decreased plasma cortisol (Jevning et al., 1978; Bevan, 1980), reduced arterial blood lactate (Wallace et al., 1971), increased galvanic skin resistance (Wallace, 1970), increased inter- and intra-hemispheric EEG alpha coherence (Levine et al., 1976; Dillbeck and Bronson, 1981), and increased cerebral blood flow (Jevning and Wilson, 1978).

Transcendental Meditation has been found to be valuable in medical practice (Bloomfield, 1976; Doner, 1976; Lovell-Smith, 1982). Clinical studies have shown that the Transcendental Meditation programme leads to improvements in a wide range of physical and psychological disturbances, promotes positive development for health, and results in reduced use of tobacco, alcohol, and prescribed and non-prescribed drugs (for references, please see Discussion and tables 10 & 11).

In 1978 a group of New Zealand medical doctors, recognizing that there was strong evidence for the beneficial effects of Transcendental Meditation on health, formed an association whose objectives are to have the Transcendental Meditation programme introduced as an integral part of the country's health services. The association proposes that the Transcendental Meditation programme provides a safe and effective supplement to existing health programmes and that its implementation would quickly result in greatly improved standards of health and fiscal savings.

This paper presents and discusses the results of a survey which was conducted by the authors in New Zealand between late 1975 and early 1976. The survey involved a simple questionnaire which was posted to a representative sample of persons who had previously learned Transcendental Meditation. The questionnaire was designed to elicit information on changes since learning Transcendental Meditation in mental and physical health and usage of a variety of prescribed and non-prescribed drug categories in a large and typical population. Secondary aims were to suggest new areas of application of the Transcendental Meditation programme, new avenues of research, and also to investigate ways in which Transcendental Meditation might be useful in reducing health expenditure. In New Zealand, for example, the cost of prescribed drugs forms a substantial part of the national health budget.

## METHOD

**QUESTIONNAIRE DESIGN**—A questionnaire was prepared and then posted to a large and random sample of persons previously instructed in the Transcendental Meditation technique.

Questions covered the following areas:

1. Basic demographic data (age, sex, marital status) to check the sample;

2. Regularity and duration of practice of Transcendental Meditation;
3. Present state of physical and mental health, and changes in physical and mental health since learning Transcendental Meditation;
4. Changes in the use of different drug categories since learning Transcendental Meditation.

Questions were of a multiple choice nature, designed to be brief and simple, and phrased in non-technical language so as to be easily understood by the general public. Bias was minimized by:

1. Use of neutral language;
2. Alternation of response codes of answers which could be interpreted as being desirable;
3. Clear indication on the form that: 'We would like very much to get a completed questionnaire back from EVERYONE: We are just as interested in receiving replies from those who have discontinued the practice.'
4. Anonymity (no names were to be put on the form);
5. Free return postage.

To further reduce possible bias, teachers of Transcendental Meditation and staff working at the Transcendental Meditation centres were excluded from the sample.

**DISTRIBUTION AND RETURN OF QUESTIONNAIRES**—A total of 6,900 questionnaires were distributed of which 1,289 completed questionnaires were returned, a response rate of 19 per cent. This is typical for a postal questionnaire of this type, although three factors may have operated to reduce the response rate:

1. Due to unexpected printing delays the questionnaire was not received by most subjects until the week before Christmas. This is the least desirable time of year for such a questionnaire to be answered due to the bulk of mail, preoccupation with Christmas, and impending departure on vacations.
2. Due to financial constraints the questionnaire had to be posted as an insert to a newsletter and may have been overlooked, or not considered important by some individuals for this reason.
3. The sample was selected from a mailing list of people who had previously received instruc-

tion in the Transcendental Meditation technique. In some cases addresses would have changed, and mail may not have been forwarded.

**ANALYSIS OF DATA**—Data from returned, completed questionnaires were punched onto computer cards at IBM, Wellington, and results tabulated on the University of Otago computer, Dunedin. Since the data on change in mental and physical health convey the best overall indication of the benefit gained and provide the maximum sample numbers, frequency tables were also prepared correlating changes in health with both regularity of practice and time since learning Transcendental Meditation (duration of practice). Chi-squared analyses were then performed to ascertain the significance of these relationships.

In order to further investigate the significance of the changes in mental and physical health for the whole group and for each of the categories of regularity and duration of practice of Transcendental Meditation, and also for each category of drug use, answer codes were quantified and a mean change and standard error for each variable was then calculated. Change in health or drug use, in each case, was treated as a continuous variable with the different answer codes representing equally spaced points on this continuum. For health changes maximum improvement ('very marked improvement') and maximum deterioration ('very marked deterioration') were allocated the numbers '+3' and '-3' respectively, while intermediate values of change were allocated the numbers '+2', '+1', '0', '-1', and '-2' as appropriate. A similar procedure was followed for each category of drug use, with 'completely discontinued' and 'began using' being allocated the numbers '+3' and '-3', while intermediate values were allocated the intervening numbers. In order to examine if the means were significantly different from zero (no overall change) *t*-tests were performed. Comparisons between means for different categories of regularity and duration of practice were also performed by *t*-test. The *t*-tests were two-tailed.

A small number of questionnaires contained either no answer or an ambiguous answer to some questions (e.g. marking two answer codes instead of one). Whenever possible, these were excluded from the analysis. These few cases account for the slight variations in 'N' between some of the tables.

## RESULTS

**GENERAL**—Of the 1,289 respondents to the questionnaire, most were married (55.3%) and between the ages of 15 and 65 (91.7%). Distribution between the sexes was approximately equal (male 49.15%, female 50.85%).

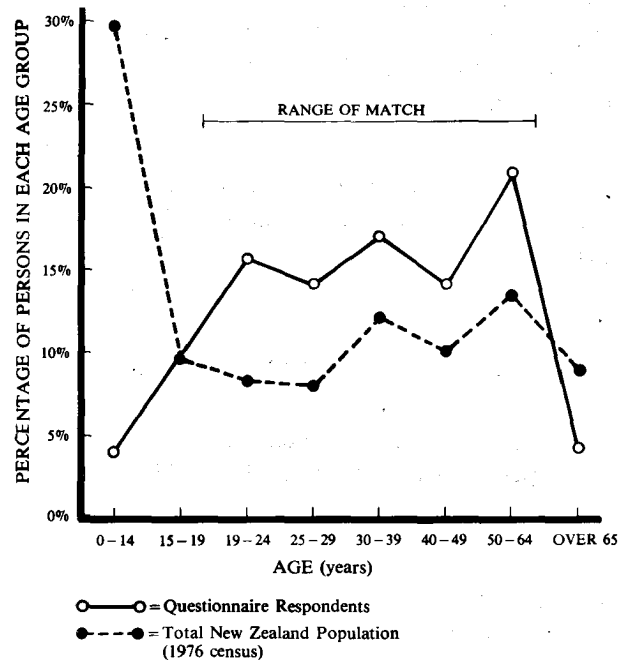


FIG. 1. AGE OF THE QUESTIONNAIRE RESPONDENTS COMPARED WITH THE TOTAL NEW ZEALAND POPULATION (1976 CENSUS).

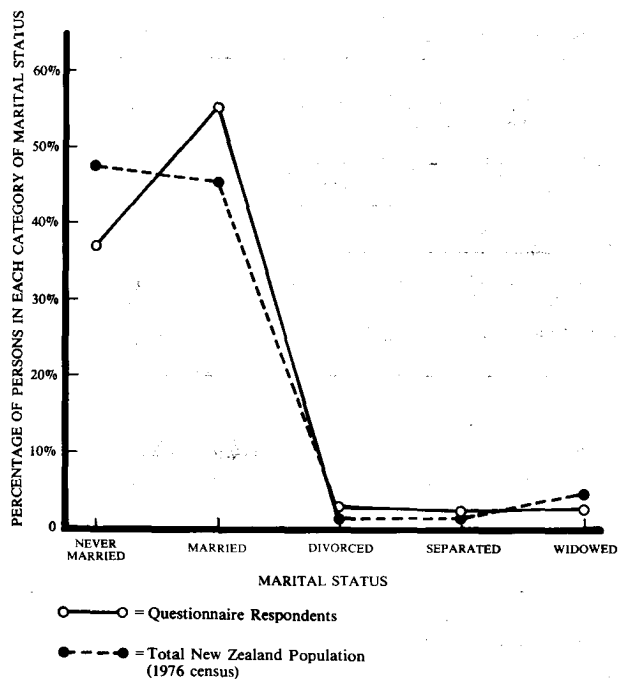


FIG. 2. MARITAL STATUS OF THE QUESTIONNAIRE RESPONDENTS COMPARED WITH THE TOTAL NEW ZEALAND POPULATION (1976 CENSUS).

Comparison between the age and marital status of the questionnaire respondents and data taken from the New Zealand 1976 census is shown in figures 1 and 2. After accounting for the decreased frequency of the very young (under 14 years) and the elderly (over 65 years) the respondents showed a close match with the New Zealand population as a whole. On sex, age, and length of time since learning Transcendental Meditation the questionnaire respondents also closely matched the total population of meditators on the mailing list.

Most respondents had learned Transcendental Meditation between three months and one year previously (56.8%) with the greatest frequency being between three and six months (34.9%). The median time since learning was between six and twelve months.

Most respondents (64.5%) were regular in their practice of Transcendental Meditation with 22% practising 14 times per week, 21.5% practising 13 times per week and 21% practising 11 or 12 times per week. Only 12% of the respondents had discon-

tinued the practice and of these 80% intended to resume again.

An average number of meditations per week per respondent was calculated for each of the time periods since learning Transcendental Meditation. These results are shown in table 1 and figure 3. The 1–2 year and 2–4 year groups showed a slightly reduced regularity, but this was reversed in the over-4-year group who reported a regularity similar to that of the beginning meditators.

**MENTAL AND PHYSICAL HEALTH**—Data on current mental and physical health and changes in health are presented in tables 2 and 3.

The respondents reported generally good health. Most considered their present state of mental and physical health to be either very good (mental 37.7%, physical 41.0%) or excellent (mental 21.4%, physical 23.1%).

The majority of respondents felt that their mental health had improved since learning Transcendental Meditation (73.8%) and about half con-

TABLE 1  
REGULARITY OF PRACTICE VS. LENGTH OF TIME SINCE LEARNING TRANSCENDENTAL MEDITATION

	LESS THAN 3 MONTHS (N = 162)	3–6 MONTHS (N = 450)	6–12 MONTHS (N = 281)	1–2 YEARS (N = 188)	2–4 YEARS (N = 159)	OVER 4 YEARS (N = 48)
Regularity: Mean number of meditations per week per respondent (maximum = 14)	10.90	10.15	9.63	8.46	8.98	10.34

TABLE 2  
PRESENT STATE OF HEALTH

	EXCELLENT		VERY GOOD		GOOD		FAIR		POOR	
	N	%	N	%	N	%	N	%	N	%
Present mental health (N = 1281)	274	21.39	483	37.70	384	29.98	120	9.37	20	1.56
Present physical health (N = 1287)	297	23.08	528	41.02	353	27.43	99	7.69	10	0.78

TABLE 3  
CHANGE IN HEALTH SINCE LEARNING TRANSCENDENTAL MEDITATION

	VERY MARKED IMPROVEMENT		CONSIDERABLE IMPROVEMENT		SOME IMPROVEMENT		NO CHANGE		SOME DETERIORATION		CONSIDERABLE DETERIORATION		VERY MARKED DETERIORATION	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Change in mental health (N = 1282)	114	8.89	276	21.53	556	43.37	309	24.10	22	1.72	3	0.23	2	0.16
Change in physical health (N = 1285)	48	3.73	141	10.97	461	35.88	592	46.07	33	2.57	5	0.39	5	0.39

sidered that their physical health had improved (50.6%).

For the whole group the mean improvement in mental health was + 1.1045 with a standard error of  $\pm 0.0267$  ( $p < .001$ ), while for physical health the mean improvement was + 0.6451 with a standard error of  $\pm 0.0249$  ( $p < .001$ ).

The chi-squared analyses revealed significant correlations between improvements in both mental and physical health and both regularity of practice (mental health:  $\chi^2 = 63.91$ ,  $df = 24$ ,  $p < .001$ ; physical health:  $\chi^2 = 70.64$ ,  $df = 24$ ,  $p < .001$ ) and duration

of practice of Transcendental Meditation (mental health:  $\chi^2 = 71.04$ ,  $df = 20$ ,  $p < .001$ ; physical health:  $\chi^2 = 41.27$ ,  $df = 20$ ,  $p < .01$ ).

The improvements in mental and physical health corresponding to the different intervals of time since learning Transcendental Meditation are shown in figure 4 and tables 4 and 5.

The over-4-year group experienced the greatest improvement in both mental and physical health. In addition, the 6–12 month group experienced significantly greater improvement than the 3–6

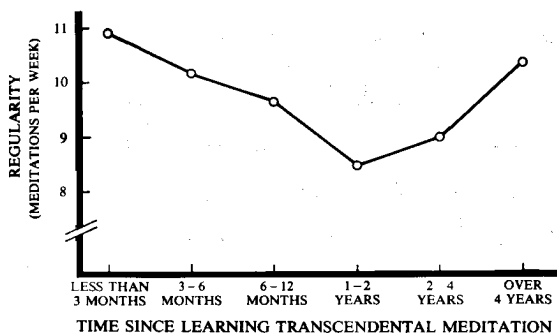


FIG. 3. REGULARITY OF PRACTICE VS. LENGTH OF TIME SINCE LEARNING TRANSCENDENTAL MEDITATION.

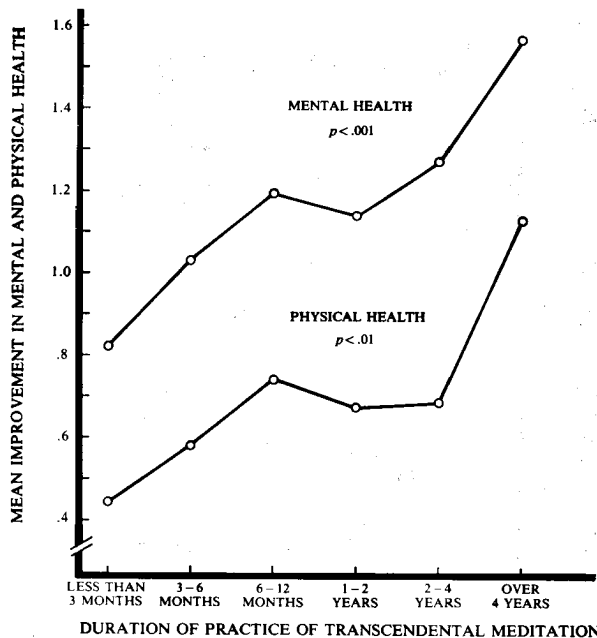


FIG. 4. IMPROVEMENTS IN MENTAL AND PHYSICAL HEALTH VS. DURATION OF PRACTICE OF TRANSCENDENTAL MEDITATION. Significant correlations were found between improvements in mental and physical health and duration of practice of Transcendental Meditation (chi-square test: mental health  $p < .001$ ; physical health  $p < .01$ ). The slight levelling off of benefits in the 1–2 year and 2–4 year group is seen to correspond to the decreased regularity of practice in these groups (refer to figure 3).

TABLE 4

IMPROVEMENTS IN MENTAL HEALTH VS. DURATION OF PRACTICE

DURATION OF PRACTICE OF TM	MEAN IMPROVEMENT* $\pm$ S.E.	DIFFERENCE BETWEEN MEANS $\pm$ S.E.	t	p†
Less than 3 months (N = 161)	0.8199 $\pm$ .0676			
3–6 months (N = 448)	1.0313 $\pm$ .0420	0.2114 $\pm$ .0796	2.66	<.01
6–12 months (N = 283)	1.1943 $\pm$ .0582	0.1630 $\pm$ .0718	2.27	<.05
1–2 years (N = 189)	1.1376 $\pm$ .0688	–0.0567 $\pm$ .0902	0.63	NS
2–4 years (N = 157)	1.2675 $\pm$ .0840	0.1299 $\pm$ .1085	1.20	NS
Over 4 years (N = 48)	1.5625 $\pm$ .1573	0.2950 $\pm$ .1783	1.65	=.1

\*3 = very marked improvement, 0 = no change, –3 = very marked deterioration.

†Two-tailed *t*-test.

TABLE 5

IMPROVEMENTS IN PHYSICAL HEALTH VS. DURATION OF PRACTICE

DURATION OF PRACTICE OF TM	MEAN IMPROVEMENT* $\pm$ S.E.	DIFFERENCE BETWEEN MEANS $\pm$ S.E.	t	p†
Less than 3 months (N = 160)	0.4438 $\pm$ .0559			
3–6 months (N = 451)	0.5787 $\pm$ .0420	0.1349 $\pm$ .0699	1.93	<.06
6–12 months (N = 283)	0.7385 $\pm$ .0528	0.1598 $\pm$ .0675	2.37	<.02
1–2 years (N = 189)	0.6720 $\pm$ .0653	–0.0665 $\pm$ .0840	0.79	NS
2–4 years (N = 158)	0.6835 $\pm$ .0730	0.0115 $\pm$ .0980	0.12	NS
Over 4 years (N = 48)	1.1250 $\pm$ .1565	0.4415 $\pm$ .1727	2.56	<.02

\*3 = very marked improvement, 0 = no change, –3 = very marked deterioration.

†Two-tailed *t*-test.

month group (mental health  $p < .05$ , physical health  $p < .02$ ) who in turn experienced greater improvement than the less than 3 month group, significant for mental health ( $p < .01$ ), and approaching significance for physical health ( $p < .06$ ).

An analysis of improvements in mental and physical health corresponding to the three regularity of practice subgroups is outlined in tables 6 and 7 and illustrated in figures 5 and 6.

For both mental and physical health the improvements experienced by regular meditators (prac-

tising 11–14 times per week) were significantly greater ( $p < .001$ ) than the improvements shown by irregular meditators (practising 1–10 times per week), and this group in turn experienced improvements that were significantly greater ( $p < .001$ ) than those of the group which had stopped the practice of Transcendental Meditation. Even the group which had stopped meditation still reported overall improvements in health.

DRUG USE—The number of respondents indicating each category of change in drug use is recorded in

TABLE 6

IMPROVEMENTS IN MENTAL HEALTH VS. REGULARITY OF PRACTICE

REGULARITY OF PRACTICE	MEAN IMPROVEMENT* ± S.E.	DIFFERENCE BETWEEN MEANS ± S.E.	t	p‡
Stopped TM (N = 152)	0.4671 ± .0629			
Irregular TM (1–10 times/week) (N = 305)	0.9508 ± .0503	0.4837 ± .0805	6.01	<.001
Regular TM (11–14 times/week) (N = 828)	1.2802 ± .0331	0.3294 ± .0602	5.47	<.001

\*3 = very marked improvement, 0 = no change, -3 = very marked deterioration.

‡Two-tailed *t*-test.

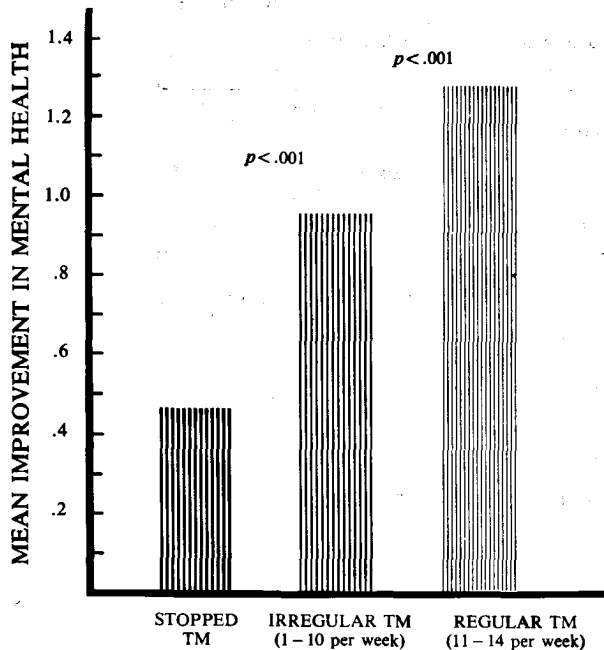


FIG. 5. IMPROVEMENTS IN MENTAL HEALTH VS. REGULARITY OF PRACTICE OF TRANSCENDENTAL MEDITATION. Regular meditators improved significantly more ( $p < .001$ ) than irregular meditators, who improved significantly more ( $p < .001$ ) than those who had stopped Transcendental Meditation (two-tailed *t*-test).

TABLE 7

IMPROVEMENTS IN PHYSICAL HEALTH VS. REGULARITY OF PRACTICE

REGULARITY OF PRACTICE	MEAN IMPROVEMENT* ± S.E.	DIFFERENCE BETWEEN MEANS ± S.E.	t	p‡
Stopped TM (N = 152)	0.1579 ± .0429			
Irregular TM (1–10 times/week) (N = 306)	0.4575 ± .0429	0.2996 ± .0607	4.94	<.001
Regular TM (11–14 times/week) (N = 830)	0.8025 ± .0328	0.3450 ± .0540	6.39	<.001

\*3 = very marked improvement, 0 = no change, -3 = very marked deterioration.

‡Two-tailed *t*-test.

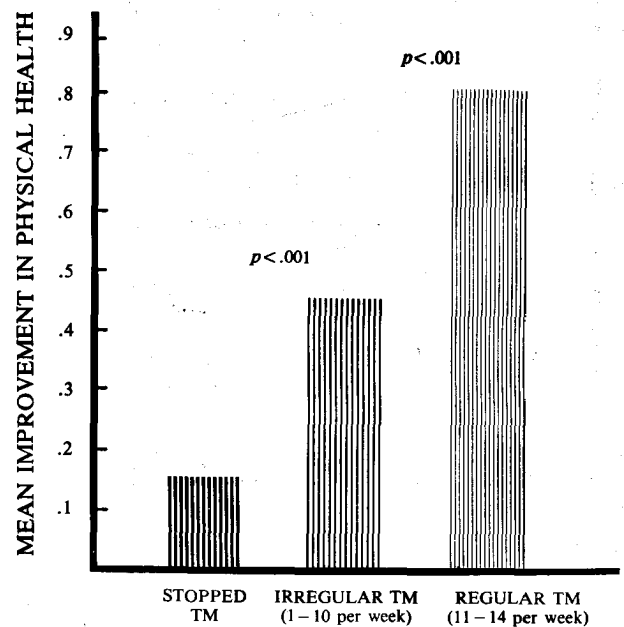


FIG. 6. IMPROVEMENTS IN PHYSICAL HEALTH VS. REGULARITY OF PRACTICE OF TRANSCENDENTAL MEDITATION. Regular meditators improved significantly more ( $p < .001$ ) than irregular meditators, who improved significantly more ( $p < .001$ ) than those who had stopped Transcendental Meditation (two-tailed *t*-test).

table 8. The mean value, standard error, and significance for the change in the use of each drug category is outlined in table 9 and illustrated in figure 7.

Notable decreases were observed in the use of all drug categories, especially in the usage of the illegal drugs (marijuana, LSD, opiates) and also of hypnotics (sleeping pills) and tranquilizers. Mean decreases were highly significant in all categories (anti-hypertensives,  $p < .01$ ; all other categories,  $p < .001$ ).

The drug categories which involved the largest number decreasing or discontinuing use were alcohol (410), mild analgesics (277), tranquilizers (185), and tobacco (181). Compared to the numbers decreasing or discontinuing use, the numbers increasing or beginning use in any drug category were very small.

Of those initially using, the percentage who discontinued, decreased, or increased use in each drug category is illustrated in figure 8 for prescribed drugs and figure 9 for non-prescribed drugs.

TABLE 8  
CHANGE IN DRUG USE SINCE LEARNING TRANSCENDENTAL MEDITATION (1,289 SUBJECTS)

DRUG CATEGORY AND INITIAL FREQUENCY OF USE	NUMBER OF RESPONDENTS INDICATING EACH CATEGORY OF CHANGE						
	Completely Discontinued	Markedly Lower Usage	Slightly Lower Usage	No Change	Slightly Increased Usage	Markedly Increased Usage	Began Using*
PRESCRIBED DRUGS							
Mild analgesics (N = 587)							
Regular use	6	17	8	11	2	1	2
Occasional use	51	102	93	290	6	0	
Hypnotics (N = 158)							
Regular use	15	6	14	19	0	0	1
Occasional use	51	21	10	21	1	0	
Tranquillizers (N = 248)							
Regular use	27	32	20	25	1	1	6
Occasional use	63	24	19	32	4	0	
Antidepressants (N = 78)							
Regular use	13	10	9	22	0	0	5
Occasional use	15	2	3	4	0	0	
Antihistamines (N = 104)							
Regular use	3	2	3	6	2	0	1
Occasional use	17	9	12	46	3	1	
Asthma inhalers (N = 53)							
Regular use	2	5	4	5	1	1	3
Occasional use	9	4	9	13	0	0	
Antihypertensives (N = 67)							
Regular use	5	9	7	32	4	1	4
Occasional use	3	1	2	3	0	0	
Drugs for heart disease (N = 25)							
Regular use	2	1	1	8	0	0	0
Occasional use	4	2	3	4	0	0	
NON-PRESCRIBED DRUGS							
Alcohol (N = 927)							
Regular use	19	47	44	83	5	4	1
Occasional use	43	109	148	395	25	5	
Tobacco (N = 351)							
Regular use	57	29	39	104	11	5	4
Occasional use	32	17	7	44	2	4	
Marijuana (N = 104)							
Regular use	15	15	4	3	1	0	1
Occasional use	23	14	6	19	4	0	
LSD (N = 36)							
Regular use	7	0	0	0	1	0	0
Occasional use	18	5	1	3	1	0	
Opiates (N = 5)							
Regular use	2	0	0	0	0	0	0
Occasional use	3	0	0	0	0	0	

\* Less than 0.6% of persons began use in any of the drug categories.



TABLE 9  
MEAN CHANGE IN DRUG USE SINCE LEARNING TRANSCENDENTAL MEDITATION

DRUG CATEGORY AND TOTAL NUMBER USING	MEAN CHANGE IN DRUG USE*	STANDARD ERROR	<i>t</i>	<i>p</i> (TWO-TAILED <i>t</i> -TEST)
PRESCRIBED DRUGS				
Mild analgesics (N = 589)	0.8387	± .0451	18.6	<.001
Hypnotics (N = 159)	1.7107	± .0999	17.1	<.001
Tranquillizers (N = 254)	1.5591	± .0898	17.4	<.001
Antidepressants (N = 83)	1.2651	± .1815	7.0	<.001
Antihistamines (N = 105)	0.8286	± .1168	7.1	<.001
Asthma inhalers (N = 56)	0.9286	± .2068	4.5	<.001
Antihypertensives (N = 71)	0.4930	± .1686	2.9	<.01
Drugs for heart disease (N = 25)	1.1200	± .3130	3.6	<.001
NON-PRESCRIBED DRUGS				
Alcohol (N = 928)	0.6886	± .0342	20.1	<.001
Tobacco (N = 355)	1.0197	± .0771	13.2	<.001
Marijuana (N = 105)	1.6571	± .1332	12.4	<.001
LSD (N = 36)	2.3333	± .2031	11.5	<.001
Opiates (N = 5)	3.0000	...	...	<.001

\*A positive value indicates a decrease in usage: 3 = completely discontinued (100% decrease), 0 = no change, -3 = began use.

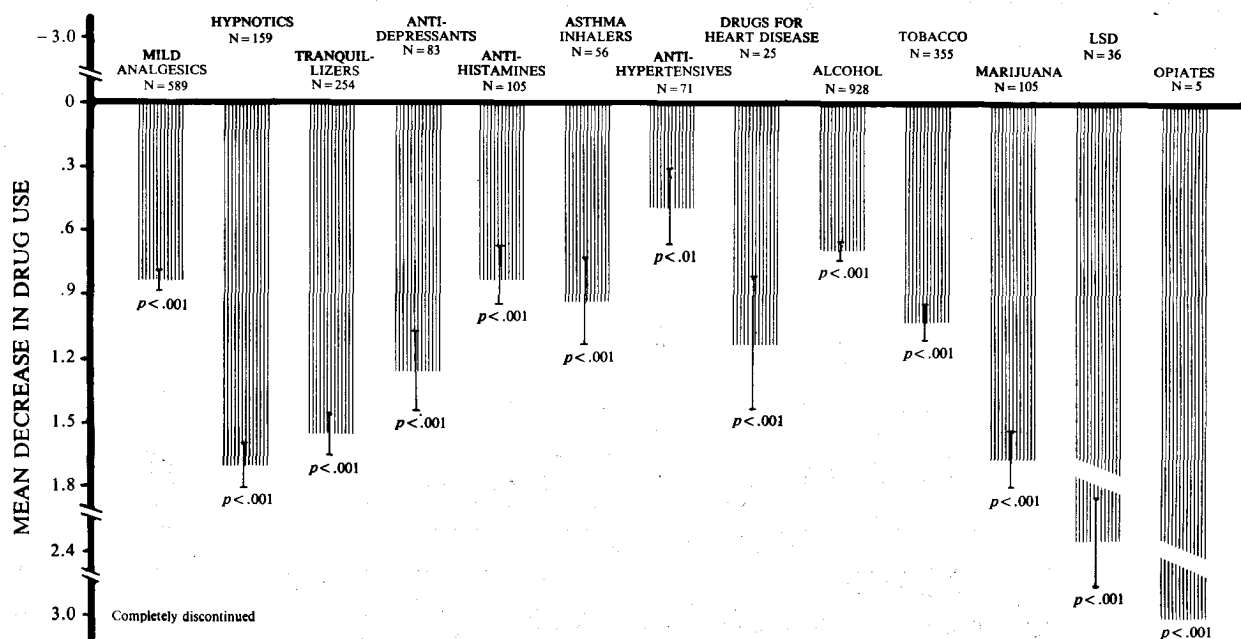


FIG. 7. MEAN CHANGE IN DRUG USE SINCE LEARNING TRANSCENDENTAL MEDITATION: MEAN OF ALL INDIVIDUAL CHANGES FOR EACH DRUG CATEGORY. Notable and significant decreases were reported in the use of all drug categories (two-tailed *t*-test: antihypertensives  $p < .01$ ; all other drug categories  $p < .001$ )

For each drug category, the percentage of persons who discontinued or decreased use is as follows: mild analgesics, 47.2%; hypnotics, 74.1%; tranquillizers, 74.6%; antidepressants, 66.7%; antihistamines, 44.2%; asthma inhalers, 62.3%; anti-

hypertensives, 40.3%; drugs for heart disease, 52.0%; alcohol, 44.2%; tobacco, 51.6%; marijuana, 74.0%; LSD, 86.1%; and opiates, 100.0%.

Of those initially not using, less than 0.6% began use in any of the drug categories.

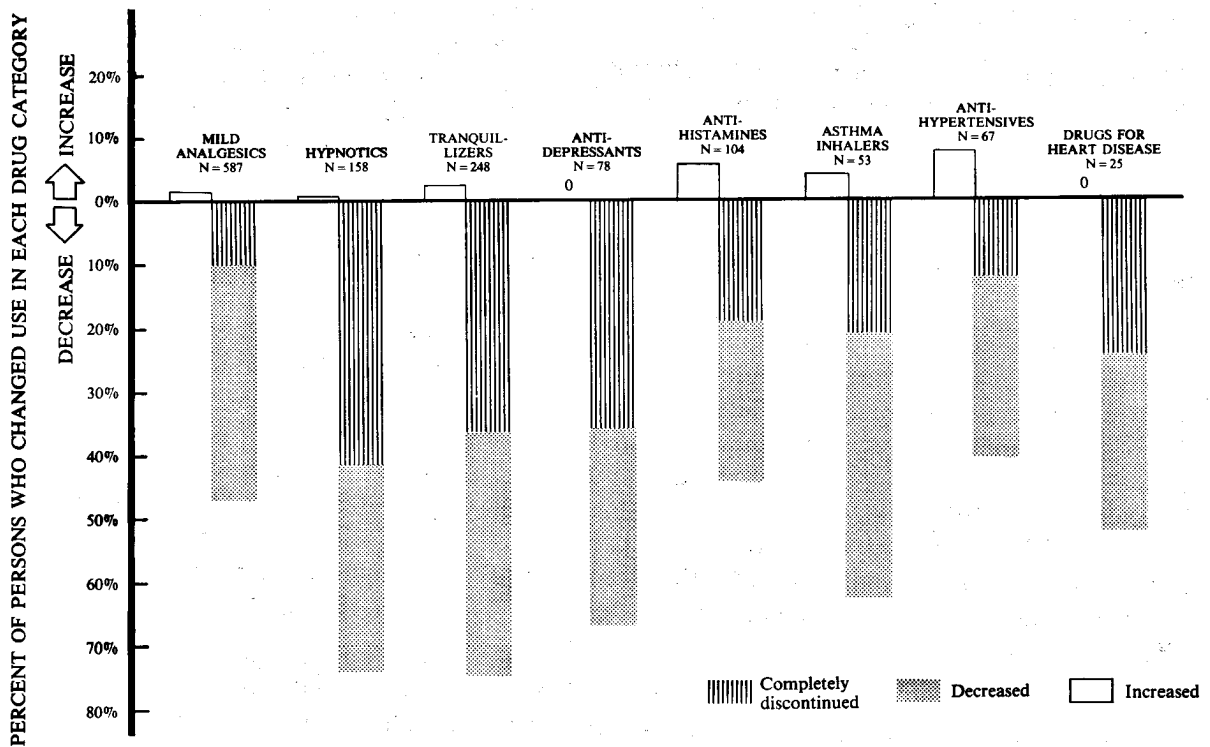


FIG. 8. CHANGE IN USE OF PRESCRIBED DRUGS SINCE LEARNING TRANSCENDENTAL MEDITATION (OF THOSE INITIALLY USING).

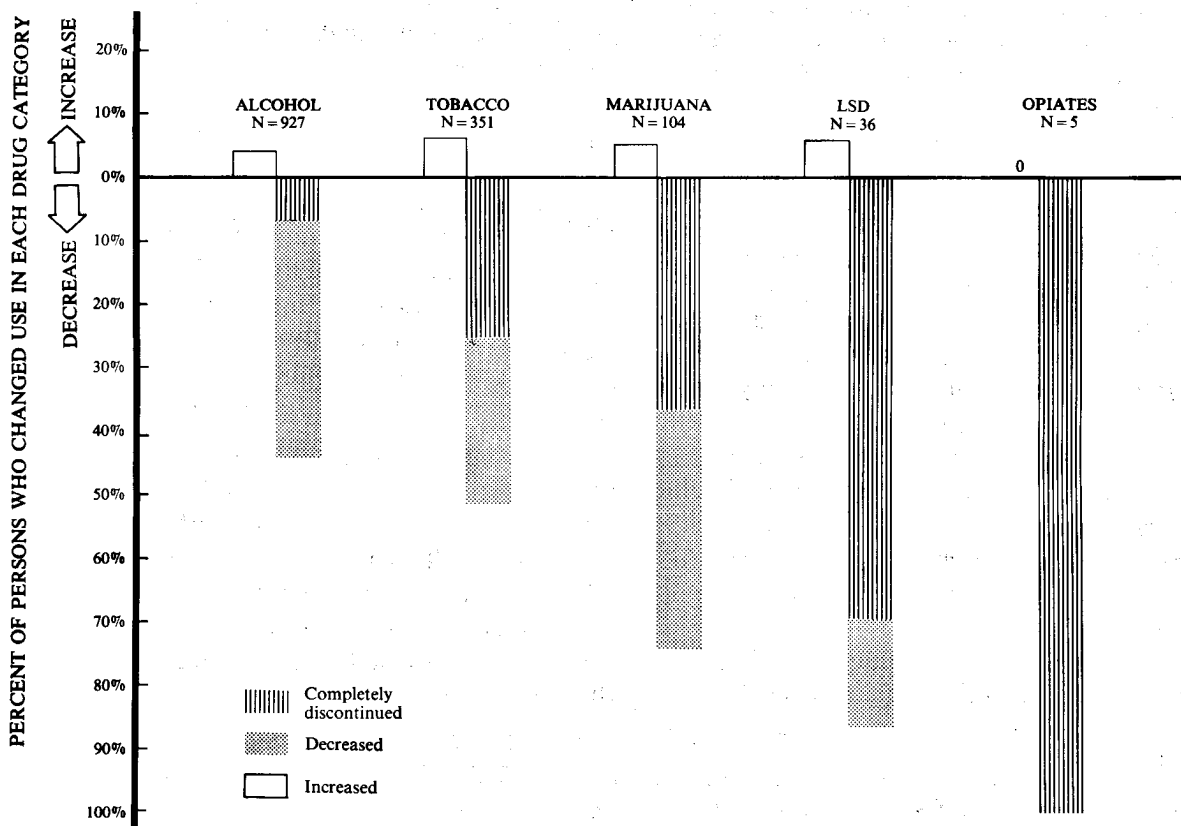


FIG. 9. CHANGE IN USE OF NON-PRESCRIBED DRUGS SINCE LEARNING TRANSCENDENTAL MEDITATION (OF THOSE INITIALLY USING).

## DISCUSSION

The results of the questionnaire are internally consistent in that respondents reported improvements in both mental and physical health, and reductions in the use of prescribed and non-prescribed drugs. The study supports the findings of previous research that the Transcendental Meditation programme effects a broad range of improvements in both physical and mental health. Of particular importance is the finding that improvements in health were closely related to both regularity and duration of practice of Transcendental Meditation. These findings demonstrate that there are both immediate and cumulative benefits from the practice of Transcendental Meditation, and also indicate that the reported improvements were a real effect due to the practice of Transcendental Meditation, and not merely due to a placebo response or novelty effect.

The design of this study makes it a valuable complement to existing research on the effects of Transcendental Meditation on health, since it has surveyed a representative sample of the general population who had learned Transcendental Meditation in the community (as they would do if referred by a medical practitioner) rather than as part of any experimental situation. The improvements in health shown in this study may therefore be considered typical of what an average person who learns and practises Transcendental Meditation could expect.

For a population of individuals one would generally expect a net deterioration in health over a period of time and increases in the usage of different drug categories. While younger age groups tend to be relatively healthy and do not usually require prescribed medicine on a regular basis, the deterioration in health that generally occurs with ageing results in a greater need for prescribed drugs in older subjects. In the respondents of this study this age-related deterioration appears to have been reversed. The very small number of respondents reporting a deterioration in mental or physical health, or increases in the usage of any of the drug categories is remarkable, especially since many of the questionnaire respondents were middle-aged or elderly.

In the light of reported improvements in mental and physical health shown in this study it seems likely that the decreased usage shown in the different categories of prescribed drugs occurred as a result

of these improvements. No suggestion is made when a person learns Transcendental Meditation that he should decrease or stop his use of prescribed drugs. In fact, teachers of Transcendental Meditation are very careful not to interfere with the treatment or advice given by the person's own doctor, and if asked, always recommend that whatever the doctor has advised or prescribed should be followed.

The improvements in health which are most likely to account for the reduced prescribed drug usage include the following conditions: headaches and/or musculo-skeletal pains, insomnia, anxiety, depression, minor allergies (such as allergic rhinitis), bronchial asthma, hypertension, and angina pectoris. These improvements are summarized in table 10, together with references to previous studies showing improvements in these conditions as a result of the Transcendental Meditation programme.

It therefore appears that Transcendental Meditation has a beneficial influence on many common disorders. The decreased use of hypnotics and tranquillizers is particularly note-worthy since these are widely used and are associated with a strong degree of psychological, and in some cases physical dependence, which makes reduction difficult. A marked decline in the use of antidepressants was also reported. It is of interest that these changes were associated with reports of improved mental health in the present study; this is in contrast to the frequent exacerbation of anxiety or depressive symptoms upon withdrawal of psycho-active medication, and suggests that Transcendental Meditation offers a more fundamental solution to these problems than pharmacological treatments alone. Furthermore, epidemiological evidence has revealed a powerful effect of the Transcendental Meditation programme in preventing psychiatric illness (Suurkula, in press).

The reduction in usage of antihypertensives presumably reflects the trend towards normal blood pressure found to occur in hypertensive subjects who practise Transcendental Meditation. Subjects with so-called normal blood pressure have also been found to show a reduction to more ideal levels with the practice of Transcendental Meditation (Cooper and Aygen, 1978; Wallace et al., in press; Lovell-Smith et al., in press).

This effect has important implications for the prevention of cardiovascular disease in general and of ischaemic heart disease in particular. Other risk factors for ischaemic heart disease which have been

TABLE 10  
SOURCES OF REDUCTIONS IN PRESCRIBED DRUG USAGE RESULTING FROM THE TRANSCENDENTAL MEDITATION PROGRAMME

DRUG CATEGORY REDUCED	RELEVANT MEDICAL CONDITIONS LIKELY TO HAVE IMPROVED	PREVIOUS STUDIES ON THE TM PROGRAMME RELATING TO THESE CONDITIONS
Mild analgesics	Headaches and/or Musculo-skeletal pains	Kirtane, in press.
Hypnotics	Insomnia	Miskiman, 1976a and 1976b; Fuson, in press; Ferguson, in press; Kirtane, in press.
Tranquillizers	Anxiety	Hjelle, 1974; Penner et al., 1974; Candelel and Candelel, 1975; Davies, 1976; Shapiro, 1976; Bloomfield, 1976; Bloomfield and Kory, 1976; Ferguson and Gowan, 1976; Dillbeck, 1977; Throll, in press.
Antidepressants	Depression	Candelel and Candelel, 1975; Glueck and Stroebel, 1975; Fehr, 1976; Shapiro, 1976; Bloomfield, 1976; Bloomfield and Kory, 1976; Ferguson and Gowan, 1976; Hahn and Whalen, in press; Kirtane, in press.
Antihistamines	Allergies (e.g., allergic rhinitis)	Kirtane, in press.
Asthma inhalers	Bronchial asthma	Honsberger and Wilson, 1973a and 1973b; Wilson et al., 1975; Kirtane, in press.
Antihypertensives	Hypertension	Wallace et al., 1972a; Blackwell et al., 1975; Simon et al., 1976; Agarwal and Kharbanda, in press; Kirtane, in press.
Drugs for heart disease	Angina pectoris	Zamarra et al., 1976; Kirtane, in press.

shown to be reduced by the Transcendental Meditation programme include serum cholesterol (Cooper and Aygen, 1978 and 1979), diabetes (Kirtane, in press), obesity (Müller-Kainz, 1977), and psychological factors (see sections on personality in Orme-Johnson and Farrow, 1976; and Chalmers et al., in press).

A further major risk factor for ischaemic heart disease, as well as for other serious cardiovascular and respiratory disorders, is tobacco smoking. The reduction in use of tobacco reported by the respondents in this study is therefore of particular importance for prevention of the most common causes of mortality and serious morbidity seen in developed nations. Similarly, the reduction in alcohol use found in the present study has profound implications for mental, physical, and social health.

Individuals learning Transcendental Meditation receive instructions solely on the practice of the technique, and no advice is given on life-style, diet, or personal habits such as use of alcohol or tobacco. The reductions in use of these substances are therefore likely to represent spontaneous improvements in health habits resulting from the practice of Transcendental Meditation (Aron and Aron, in press). Previous methods aimed at improving health habits have generally been inadequate because they have failed to correct the underlying causes of self-damaging behaviour—lack of personal fulfilment and inability to cope with stress. The improvements in health habits resulting from the Transcendental Meditation programme would ap-

pear to be the direct result of effective neutralization of stress on both a psychological and physiological level, leading to an increased sensitivity to one's own needs and an increased capacity to fulfil desires without strain. Abuse of tobacco and alcohol is very unusual among long-term practitioners of Transcendental Meditation (Aron and Aron, in press).

The reductions in use of non-prescribed drugs found in this study are particularly striking and can be understood to be the result of similar mechanisms to those operating for reductions in tobacco and alcohol use. Again, this effect is especially notable since other drug rehabilitation methods have been largely ineffective.

Previous studies corroborating the findings of reduced usage of tobacco, alcohol, and non-prescribed drugs as a result of the Transcendental Meditation programme are given in table 11.

The results of this study indicate improvements in the following four factors which were shown by Palmore (1974) to be among the most important influences favouring longevity: health habits, self-health rating, physical function, and cardiovascular health. Furthermore, good mental health was shown by Vaillant (1979) to be a potent influence in predicting longevity and good physical health in later life. Such improvements may help to explain the finding of reversal of biological ageing observed to result from the Transcendental Meditation programme (Clements and Clements, 1980; Wallace et al., 1982; Toomey et al., in press).

TABLE 11

PREVIOUS RESEARCH REPORTING REDUCED USE OF NON-PRESCRIBED DRUGS AS A RESULT OF THE TRANSCENDENTAL MEDITATION PROGRAMME

AUTHOR	DRUGS STUDIED AND FOUND TO BE USED LESS (X)						
	Tobacco	Alcohol	Marijuana and related substances	LSD and other Hallucinogens	Amphetamines	Barbiturates	Opiates
Aron and Aron, in press	X	X	X	NA	NA	NA	NA
Bräutigam, 1976	NA	X	X	X	X	X	X
Dhanaraj, in press	X	X	X	X	X	X	NA
Geisler, 1978	NA	NA	X	X	X	X	X
Katz, 1976	NA	X	X	NA	NA	NA	NA
Lazar et al., 1972	X	X	X	X	X	X	X
Monahan, 1977	X	X	X	X	NA	NA	X
Nidich, in press	NA	X	X	NA	NA	NA	NA
Schenkluhn and Geisler, 1976	NA	NA	X	X	X	X	X
Shafii et al., 1974	NA	NA	X	NA	NA	NA	NA
Shafii et al., 1975	NA	X	NA	NA	NA	NA	NA
Throll, in press	X	X	X	X	NA	NA	NA
Wallace et al., 1972b	X	X	X	X	X	X	X
Winquist, 1976	NA	NA	X	X	X	X	X

NA: Not applicable because drugs of this category were not studied.

This study has concerned itself only with the benefits of the Transcendental Meditation programme for individual health. Other studies, however, have demonstrated that even a very small fraction of a population practising Transcendental Meditation can produce improvements in the collective health of society as a whole, as evidenced by reduced negative trends such as crime and accidents (Borland and Landrith, 1976; Dillbeck et al., in press; Hatchard, in press). Thus by creating coherence in collective consciousness (Orme-Johnson et al., 1982), the Transcendental Meditation programme fosters an environment which is conducive to better health throughout the community.

## CONCLUSIONS

The findings of this study support the view that Transcendental Meditation can make a vital contribution to improving standards of health in society. The evidence presented in this study suggests that Transcendental Meditation improves health by at least two mutually enriching mechanisms:

1. Directly improving mental and physical health (as evidenced by the reports of improved health and decreased need for prescribed drugs);

2. Reducing behaviour which is harmful to health (as evidenced by decreased use of tobacco, alcohol and non-prescribed drugs).

Other mechanisms, such as promoting behaviour which is beneficial to health, and the generation of coherence in society as a whole, were not investigated in this study but are likely to be of at least equal importance.

Compared to existing medical technologies Transcendental Meditation is also inexpensive, and any costs incurred through implementing the programme would be recovered through improved general health and resulting savings, for instance in the cost of prescribed drugs, reduced time lost from work, and ultimately decreased demand for medical services.

The widespread implementation of the Transcendental Meditation programme should be seriously considered by health planners and clinicians.

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