PERFORMANCE ON A LEARNING TASK BY SUBJECTS WHO PRACTICE THE TRANSCENDENTAL MEDITATION TECHNIQUE

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Subjects practicing the Transcendental Meditation technique displayed superior learning ability. — EDITORS

Ten randomly selected subjects who regularly practiced the Transcendental Meditation technique were compared with ten randomly selected nonmeditators with respect to their performance on a maze learning task. The meditators reached the criterion level of performance in a mean of 10.1 trials, whereas the nonmeditators required significantly more trials — a mean of 22.0 (p < .01; t-test). The meditators also had fewer errors per trial. The superior learning ability displayed by the meditators could be explained by decreased anxiety and improved ability to focus attention effectively.

INTRODUCTION

The Transcendental Meditation (TM) technique has been shown to produce distinct physiological changes during meditation and a wide range of beneficial effects outside of meditation. The technique has been described as a “method for sharpening the mind to its ultimate point of refinement” and improving “man’s ability in all walks of life” (2). This idea that the conscious capacity of the mind can be increased to its full scope, thereby enabling one to use one’s full mental potential in both thought and action, has great implications in the area of learning. The aim of the present study, therefore, is to present an initial study that will inspire further research on the possibility that the Transcendental Meditation technique enhances learning ability.

Current research on the Transcendental Meditation program does not indicate an investigative approach to this question. However, informal reports by meditators in Canada and the United States suggest that they find scholastic tasks easier to perform after practicing the TM technique for a few months. They might therefore be expected to show superior performance in an experimental learning situation. This experiment tested the hypothesis that those practicing the Transcendental Meditation technique would perform better on a learning task (i.e., reach the criterion level of performance in fewer trials) than those not meditating.

METHOD

All subjects were unpaid male and female university undergraduates within the age range 18–24 years, with a mean age of 20 years. They were all from a parental background within the socio-economic indices 52.07–76.01 (1) and were within the Quick Test IQ range 96–115, with a mean IQ of 106. The Transcendental Meditation group consisted of ten subjects randomly selected from 21 volunteers. They had been practicing Transcendental Meditation regularly (20 minutes each morning and evening) 6–24 months. The nonmeditation group also consisted of ten subjects randomly selected from 21 volunteers, none of whom had past or present experience with any type of meditative practice.

Performance on a learning task was tested by requiring the subjects to discover the path through a maze. The path was in the form of a series of holes, ¾ in. in diameter, in a piece of ¼-in. black plastic 8½ × 11 in. The maze was covered by a second sheet of ¼-in. plastic with a grid of 366 holes each ¾ in. in diameter. A sheet of paper was inserted between the maze and the top sheet of plastic, thereby hiding the maze. The subject, attempting to discover the pattern of the maze, chose a hole either by guessing or by remembering from previous trials. Using a pencil, he attempted to perforate the paper covering the hole. If the choice was correct, the paper was perforated; if not, a pencil mark remained on the unperforated paper.

All subjects were told that their task was to learn the path through the maze, that the goal of the task was to complete the maze correctly three consecutive times, and that time was not a factor. They started from the top row of holes and moved either horizontally or vertically to an adjacent hole until they reached the bottom row of holes. If they could not perforate the paper at a hole (indicating an incorrect move), they returned to the last correct position and selected another hole. When they completed the
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FIG. 1. MEAN NUMBER OF TRIALS TO CRITERION. A group of ten meditators and a group of ten nonmeditators were tested on their ability to learn a path through a maze. The figure indicates the number of attempts necessary to reach the criterion level of performance. A low number of trials to criterion indicates superior performance.

Maze, a fresh sheet of paper was immediately inserted and they started again.

RESULTS

Figure 1 presents the mean number of trials to criterion for the two groups (meditators and nonmeditators). A t-test for independent samples demonstrated that the Transcendental Meditation group reached criterion in significantly fewer trials (10.1) than the nonmeditation group (22.0) ($t = 10.17, p < .01$).

The mean number of errors for each trial is presented in fig. 2. As this figure shows, the error rate dropped more dramatically for the Transcendental Meditation group than for the nonmeditation group. These two results indicate that the meditators performed significantly better than the nonmeditators; they reached the criterion level of performance on the learning task in fewer trials and with fewer errors per trial.

DISCUSSION

Maze learning often involves massive "intradirectional interference" (in this case, the selection of alternate directions and moves from a wide variety of possibilities). "The high drive state of the anxious subjects will multiply these interfering response tendencies. Since the habit strength of the incorrect, interfering responses will often be greater than that of the correct response, high drive will make it even more likely that subjects will respond incorrectly" (3). Thus, anxiety associated with high drive reduces performance. When anxiety is reduced, performance improves in complex learning tasks involving a competing response situation, such as the present one (4). This relationship between anxiety and performance suggests a possible explanation of these results—by reducing anxiety Transcendental Meditation reduces the effect of interference and thereby promotes superior expression of learning ability.

Observing and talking with the subjects suggest, however, that selective attention is also an important factor and one that would clearly explain the data. If the meditators attended more efficiently to the task than the nonmeditators and were distracted less by irrelevant stimuli, their performance would probably be superior. Wallace (5) discusses a neurophysiological mechanism that may be involved in the Transcendental Meditation technique that would explain how irrelevant stimuli may be filtered out more efficiently in meditators. Enhancement of the interactions among the hypothalamus, the thalamus, and the reticular activating system would decrease irrelevant sensory input to the thalamic nuclei. The result would be reduced "noise" in the nervous system. On the psychological level it is apparent that input passes through the sensory system and stimulus-analyzing mechanisms before exciting its representation in the storage system. At the same time, expectations and previously encountered material determine the relevance and sequence of sensations at each moment. That material which is most appropriate (as determined by the combination of external and internal inputs) is selected for further analysis. The Transcendental
Meditation technique may be aiding in this filtering process by reducing “noise” in the nervous system as well as by enhancing the selectivity and effectiveness of attention.

This intriguing result, implying the expansion of one’s ability to learn and to focus attention effectively as a consequence of practicing the Transcendental Meditation technique, should be thoroughly explored in longitudinal studies.

REFERENCES


