COGNITIVE AND SELF DEVELOPMENT AMONG URBAN CHILDREN PARTICIPATING IN AN AFTER-SCHOOL EDUCATIONAL PROGRAM

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This study found that urban children of low-income families who learned the Transcendental Meditation Technique (or Word of Wisdom Technique for younger children) as part of an after-school enrichment program showed increased analytical ability, improved self concept, and improved general intellectual performance in comparison to controls who participated in the after-school program without learning one of these techniques.—EDITOR

The purpose of the research project reported here was to assess the effect of the Transcendental Meditation technique and the children’s ‘Word of Wisdom’ technique in accelerating cognitive and personality development among a group of economically less advantaged inner-city children receiving educational support at a service organization.

Previous research on educational interventions with disadvantaged children has been primarily with Head Start programs, implemented at the preschool level. Research indicates that these early intervention programs with preschool children from low-income families lead to reliable short-term gains in personal-social development and in school achievement (Datta, 1979). However, it is difficult to estimate the magnitude of these effects due to sample differences between experimental and control groups and subsequent use of norm-referenced comparisons and statistical projections (Datta, 1979). These short-term studies thus indicate the importance of comparable control samples. Long-term longitudinal studies show relatively consistent gains in school achievement from early educational intervention programs (Palmer & Anderson, 1979). For children already well into elementary school the possible gain from educational interventions is less well studied.

Educational interventions such as Head Start, which emphasize specific educational content, are supported by a broader body of educational research emphasizing that the student’s cognitive preparedness, and also affective entry characteristics such as self-concept, contribute more to educational outcomes than do instructional variables (Bloom, 1976). However, in addition to cognitive preparedness defined as specific knowledge prerequisites, cognitive variables such as intelligence, cognitive style, and memory, which are usually considered as stable individual difference variables, contribute substantially to academic outcomes. Because these characteristics are important to learning, their development among disadvantaged students warrants investigation.

Over the past fifteen years, evidence has grown that the Transcendental Meditation program of Maharishi Mahesh Yogi can foster cognitive and affective development among student populations. The Transcendental Meditation technique is a mental technique practiced twice daily with eyes closed; it is described as providing an experience of consciousness in its pure or unified state, separate from the mental activity of thought, feeling or perceptual processes (Maharishi Mahesh Yogi, 1986). Meta-analysis indicates that the immediate physiological effects of practice of the Transcendental Meditation technique, in contrast to eyes-closed rest, include reduced respiration rate and increased skin resistance (Dillbeck & Orme-Johnson, 1987); at the same time there is enhanced EEG coherence in alpha frequencies in the frontal cortex (Dillbeck & Bronson, 1981; Levine, 1976).
The regular experience of the state of pure consciousness is predicted to develop and integrate the more active levels of mental functioning, i.e., cognitive and affective processes (Maharishi Mahesh Yogi, 1972). This prediction is elaborated in theoretical models that present pure consciousness as the unified source of other levels of mental processing and relate the development fostered by this experience to current models of childhood and adult cognitive development (Alexander, Davies, Dixon, Dillbeck, Druker, Oetzel, Muchman, & Orme-Johnson, 1990; Dillbeck & Alexander, 1989; Dixon, 1990).

The Word of Wisdom technique is practiced by children from ages 4–9 prior to learning the Transcendental Meditation technique; the Word of Wisdom technique is practiced with eyes open for a few minutes twice daily. The technique is also predicted to foster greater balance in mind and body and greater integration of brain functioning (Maharishi Mahesh Yogi, cf. Dixon, 1990).

Both the Transcendental Meditation technique and the children’s Word of Wisdom technique have been found to promote development of cognitive competencies and self-concept among general samples of students. Among college students, intact-group longitudinal studies of those who learned the Transcendental Meditation program in contrast to controls indicated strengthened self-concept and reduced distance of actual and ideal self after one month, as measured by role repertory methodology (Turnbull & Norris, 1982), and increased self-actualization after three months (Nidich, Seeman, & Dreskin, 1973; Seeman, Nidich, & Banta, 1972). Another longitudinal study employing existing groups found increased fluid intelligence and improvement on reaction time measures correlated with intelligence over a two-year period among college students who were already practicing the Transcendental Meditation program in contrast to controls (Cranston, 1990). A similarly designed study found gains among students who were participants in the Transcendental Meditation program on a factor-derived measure of psychological health (Gelderloos, Hermans, Ahlström, & Jacoby, 1990).

Random-assignment studies found that college students who learned the Transcendental Meditation program, in contrast to controls resting twice daily with eyes closed, displayed improved memory (clustering) and speed of solving arithmetic problems over a six-week period (Miskiman, 1977), and increased perceptual flexibility after two weeks (Dillbeck, 1982). Another random assignment study among young adults in their early twenties found increased field independence reflected on several measures over a three-month period in comparison to non-treatment controls (Pelletier, 1974). A random assignment study of graduate students also found evidence of improved academic performance after one semester of practice of the technique (Kember, 1985).

Similar results have been found among secondary students. A random assignment longitudinal study found that students who learned the Transcendental Meditation technique, in contrast to those who either studied about its principles or received no additional treatment, displayed after 14 weeks increased fluid intelligence, self-esteem and tolerance, and decreased anxiety (S hecter, 1978). A one-semester longitudinal study with intact groups found that secondary school students who learned the Transcendental Meditation technique and participated in a class on its principles showed reduced trait anxiety and increased grade point average compared to control students in psychology classes (Kory & Hufnagel, 1977).

Research on students of elementary school age has evaluated the effects of the Transcendental Meditation technique or for younger students the Word of Wisdom technique. Cross-sectional studies found that elementary school children practicing the Word of Wisdom technique showed advanced cognitive development in comparison to controls, as measured by Piagetian tasks, controlling for age and socioeconomic status (Alexander, Kurth, Warner, & Travis, 1989; Warner, 1987). In a cross-sectional study, children aged 7–11 practicing the technique suitable for their age displayed higher performance on a measure of field independence than matched children (Gelderloos, Lockie, & Chuttoorgoon, 1987).

In longitudinal studies, elementary and secondary school children already practicing the Word of Wisdom technique or the Transcendental Meditation technique showed increased academic achievement on standardized tests over one school year, in contrast to normative data (Nidich & Nidich, 1989; Nidich, Nidich, & Rainforth, 1986). A longitudinal study of matched pairs of elementary school children used a time series design with daily repeated measurements of memory and field independence (Rod and Frame Test) six weeks before and six weeks after a self-selected member of each pair learned the Transcendental Meditation technique; children learning the technique showed improved performance (Dillbeck & Szal, 1989). In the first pre-post longitudinal study of the Word of Wisdom technique, Dixon (1990) tested four-year-old preschool children about to learn the technique, in comparison to other preschool children, on a battery of cognitive measures, and post-tested them after six months. Differences in age, gender, socioeconomic status, parental education, and previous preschool experience were controlled statistically. Regularly practicing children showed enhanced performance on factor-derived measures associated with psychological differentiation (field independence, conceptual maturity, and sustained attention) and.
intelligence (first unrotated principal component of the test battery) in comparison to controls.

The above results are potentially important for early educational interventions. In addition to providing environmental support, information, and skills central to academic success, it may be possible to strengthen children affectively and cognitively from within, thereby supporting their ability to make best use of the other components of an intervention treatment. To address this question, the present research assesses the effect of the Transcendental Meditation technique or Word of Wisdom technique on intellectual functioning and self-concept among a group of urban children who were receiving social and educational support from a social service agency. A relatively rigorous comparison of the effects of these programs is possible in the study presented here because all subjects were already participants in programs to receive social and educational support at a single site. Based on previous research, it was hypothesized that children participating in the Transcendental Meditation technique or Word of Wisdom technique would show evidence of improved cognitive functioning and self-concept.

A treatment group of 30 children and 32 matched control children from a social service agency in Newark, New Jersey, were pre-tested on several measures of cognitive and personal development, in June 1988. Most children were participating in a special intensive program of the agency involving structured educational and recreational activities after school, on Saturdays, and during the summer. Almost all children were Black or Hispanic. The treatment group was instructed in the Transcendental Meditation technique, or Word of Wisdom technique for younger children, immediately thereafter in early July. These children participated in an interdisciplinary course on principles of growth in nature and in their own lives at the social service agency, which was offered daily as part of the summer camp for six weeks, and twice-weekly after school during the school year. The students practiced their respective techniques in two groups during each class session, and were encouraged to be regular in their twice-daily practice of the Transcendental Meditation technique or Word of Wisdom technique at home.

After a 45-week period, children were retested. Fifty of the children were able to be retested; others had moved away or were unable to be tested due to logistical difficulties. The subject description and analyses that follow are based on these 50 children. Children were tested by a trained psychologist and a college educator who were blind to the group membership. Tests were also scored blind to group membership.

Each group consisted of eight girls and 17 boys. The mean age of the control group children at pre-testing was 110.3 months (nine years, two months) with a standard deviation of 11.5 months, and the mean age of the treatment group children was 109.7 months with a standard deviation of 12.7 months. Eleven of the children in the treatment group learned the Transcendental Meditation technique, while 14 learned the children’s Word of Wisdom technique.

Five tests measuring six aspects of cognitive and personal development were used in the study: Raven’s Progressive Matrices Test (PM) (fluid intelligence); Children’s Embedded Figures Test (CEFT) (field independence); Sustained Attention—errors of omission (EO) on a computerized vigilance task; Impulsivity—errors of commission (EC) on the vigilance task; Joseph Pre-School and Primary Self-Concept Screening Test (SC); and Draw-a-Person Test (DAP), used as an additional measure of child self-concept. The DAP measure of self-concept used here was the score for the self picture divided by the average of the scores for the man and woman pictures.

The multivariate data were first simplified through principal components analysis prior to assessing the effects of the treatment (TM and SCI participation) (Stevens, 1986). The pre-test data of the 50 children (PM, CEFT, DAP, and SC raw scores, and the EO and EC scores in the natural logarithmic metric) were analyzed by principal components analysis, with components rotated orthogonally by the varimax procedure to ensure ease of interpretation. There were three principal components with eigenvalues larger than 1.0. The first component was positively associated with both the fluid intelligence (PM) and field independence (CEFT) measures, and was therefore defined as “analytical ability,” because field independence is described as a perceptual measure of psychological differentiation and the development of analytical abilities. The second component was positively associated with both measures of self-concept, and is subsequently referred to by that term. The third component was associated with lower omission errors and higher commission errors on the computer task. This component is less clearly interpretable, and appears to indicate different test-taking styles by the children.

A fourth component was also derived from the tests. This component is the first unrotated principal component, i.e., the underlying component that correlates most highly with all the original variables. The first unrotated principal component for a set of mental tests has a long tradition as the primary measure of general intelligence (“g”), and is referred to here as “general intellectual performance.” The intellectual performance component is associated with better performance on each of the six measures.
The effects of the treatment program (Transcendental Meditation technique or Word of Wisdom technique) were assessed for each of these four empirically derived components. Component scores were computed for pre- and post-testing based on the pre-test component loadings. The effects of the treatment on each of the components was assessed by analysis of covariance, with the pre-test value as the covariate. Age and gender were also included as covariates, but were not significant and thus were dropped from the final model. Analysis of covariance F values were converted into t values for one-tailed hypothesis tests, since the direction of effect was clearly predicted (Rosenthal & Rosnow, 1984, p. 244). There was a significant improvement in experimental subjects in component 1 (general intellectual performance, t(47) = 1.88, p < .05), and the first unrotated principal component (general intellectual performance, t(47) = 2.93, p < .005), but no change for component 3 (computer task performance style, t(47) = 0.22, n.s.). The analysis of covariance assumption of homogeneity of regression slopes was met by the data. As a check for equality of the groups at pre-test, t tests were run for each of the components; there were no significant pre-test differences.

In summary, although the groups were equivalent at pre-test, the treatment group showed a significant increase in comparison to the controls on analytical ability, self-concept, and general intellectual performance.

REFERENCES


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