Phonemic Intelligence Research and Data Summary

The hypothesis of PI, which has been demonstrated in related research investigations, is that phonemes activate specific areas in the brain. Our brain has many parts and each part specializes in one type of intelligence predominantly. The science of PI uses specific phonemes to create specific intelligence in specific areas of the brain.

PI techniques employ phonemes to stimulate neuronal activity in targeted areas of the brain.PI techniques increase connectivity, and by the mechanism of neuroplasticity create new neural pathways, strengthening the brain and increasing intelligence. Through the use of these phonemes, the brain also develops non linear, non linguistic forms of thought, enhancing intuition, innovation and creativity.

I. PI/MST Research Study, Chennai, India: 2010

The study used Duke University's health profile (DHP) to assess the effect of PI on 42 medical students (ages 18-23) from SRM Medical College, SRM University in Chennai, India six weeks before final exams.

The DHP for adults is a 17 item self-report instrument, derived from 63 items, containing six health dimensions such as physical (PHS), mental, MHS, social, SHS, general (GHS), perceived health (PH), self-esteem (SE), and four dysfunction dimensions such as anxiety, depression, pain and disability.

PI techniques introduced sounds into various parts of the body and incorporated brainwave entrainment tones, stimulating different regions of the brain. PI was introduced for 20 minutes per day for six weeks. Students were seated comfortably and kept eyes closed while following pre-recorded instructions.

Students were randomized into two major groups:
Group I (n=21): Control group
Group II (n=21): PI practice group R

Results showed that after 6 weeks of practice of PI by Group II the level of SHS, GHS, SE, and PS showed significant increase ($p<0.001$), while anxiety, depression scores were further decreased when compared with control Group I. There were no significant changes in Group I. Results also showed improved academic scores, better coping skills, and reduced stress hormones in Group II after 6 weeks of practicing PI for six weeks (Indian Journal of Medical Science, 2010).

II. Phonemic Effects on the Human Brain as seen with EEG: A Pilot Study by Brain Science International: 2012

Four healthy young adults were subjected to QEEG data collection while listening to phonemes used in the Phonemic Intelligence Core Technique. The data was analyzed with independent component analysis (ICA), an advanced EEG evaluation technique. **Neuronal activation was demonstrated at >3 standard deviations above normal baseline in the anterior cingulate cortex of all volunteers.**

The anterior cingulate cortex (ACC) is important in decision making, error detection, and impulse control. The ACC is an important hub in the neuronal networks that play an active role in the executive functions of the brain to perform properly. This is an area currently targeted by the social-emotional learning programs (SEL) currently being instituted by public and private schools.

III. Detroit Public Schools: 2014-15 School Year

Three DPS schools implemented the practice of the Phonemic Intelligence Core Technique during the 2014-15 school year. A small controlled research study of the PI intervention was performed utilizing six fifth-grade classrooms. Three classrooms in the experimental group performed the PI technique daily, and three control classrooms were identified for comparison. We analyzed Star Math testing data and found that **those classrooms performing PI daily scored higher on Star Math tests** than the control classrooms ($p<0.5$). Also, those classrooms participating with PI reported 30% fewer code-of-conduct infractions than control classrooms. The study is in the final submission phase for publication in a peer-reviewed journal.

IV. Analysis of Cerebral Cortical Response to Non-Linguistic Phonemes: 2016

A neuroradiologist at Harvard Medical School and the Massachusetts General Hospital completed data acquisition for a functional magnetic resonance imaging (fMRI) pilot study conducted at the Martinos Center for Biomedical Imaging at Harvard. Early analysis of the data has suggested that discrete phonemes have **unique fMRI signatures in the human brain**. The fMRI scans identified increased blood flow to important areas of the brain, such as the orbitofrontal, periorlandic cortex, parietal cortex, and the cerebellum, while the study subjects were listening to phonemes used in the Phonemic Intelligence Core Technique.

V. PI School Program Study, India: 2018/19

The PI School Program was implemented in all government schools of Goa, as well as pilot programs in Puducherry, Tamil Nadu, and Gujarat for a total of nearly 50,000 students in 917 government schools during the 2018-2019 school year. A psychometric test study for all states and analysis of academic performance for Goa was conducted by Dr. Gopukumar Kumarpillai, a neuropsychologist with post-doctoral research training at The National Institute of Mental Health and Neurosciences (NIMHANS) and Foothills Hospital, Calgary University, Canada.

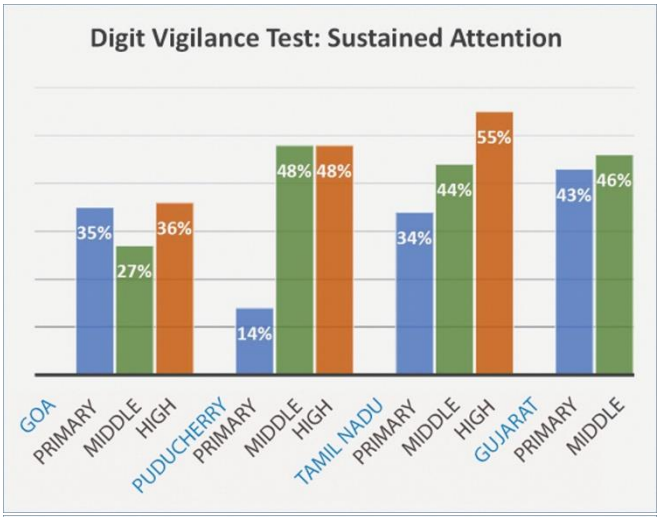
Academic Performance Results for Goa
Analysis of academic performance showed a significant improvement in students moving up to higher grades for all 3 groups tested- primary, middle and high schools. The results from the high school students were dramatic:

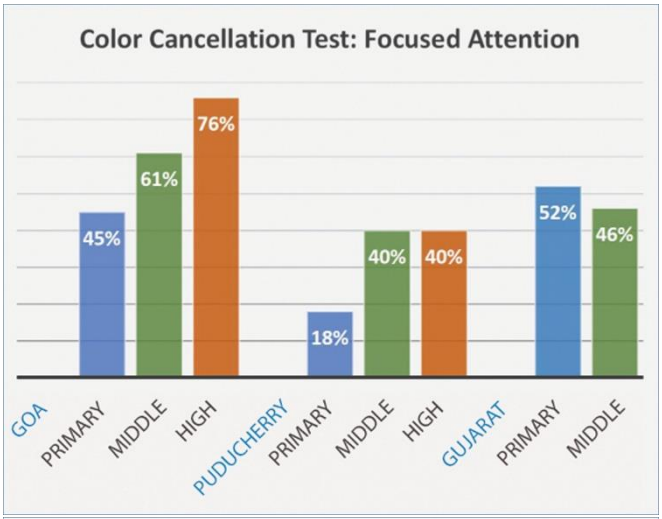
- 91.5% of government high school students increased their academic grade level under the PI intervention.
- 57.4% of students achieved grades representing “Above Average” or better after the PI intervention.
- The number of students receiving “Unsatisfactory” or failing Grade-I fell to 6.7%, a remarkable reduction of 91.5%.

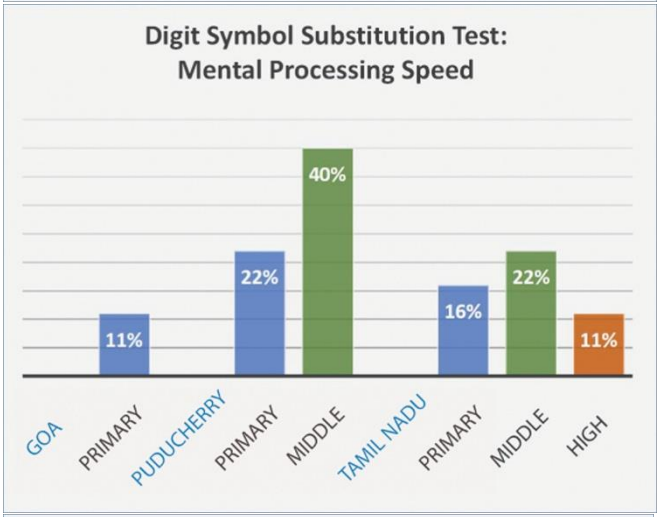
The research supports the conclusion that PI training proved effective in a school setting to overcome cognitive difficulties and improve upon classroom behavior and academic performance of students.

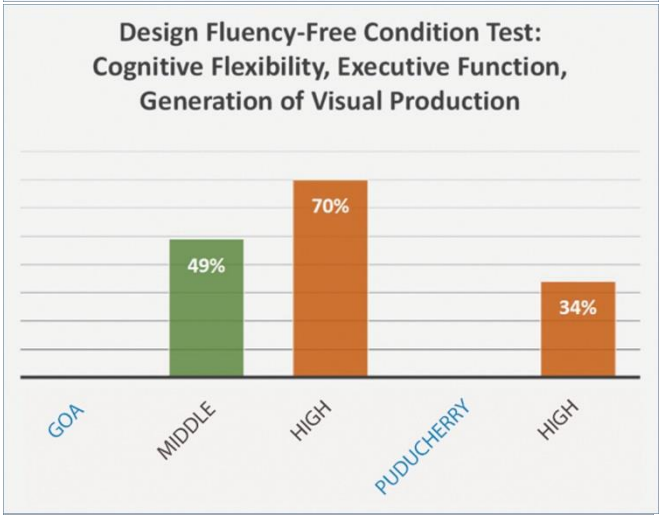
Psychometric Test Results
The result of the psychometric testing demonstrated significant improvements after the PI training program compared to before PI training. The percentage improvements were predominantly significant in relation to attention/concentration, executive functions, motor speed, mental speed, and working memory.

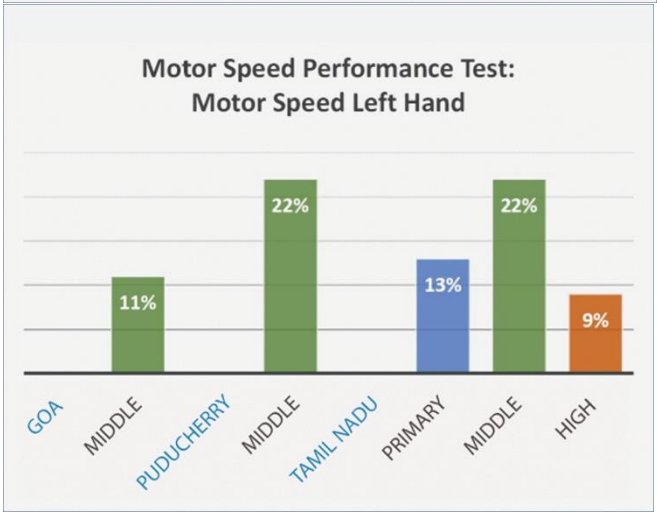
Percentage Improvement in Psychometric Tests

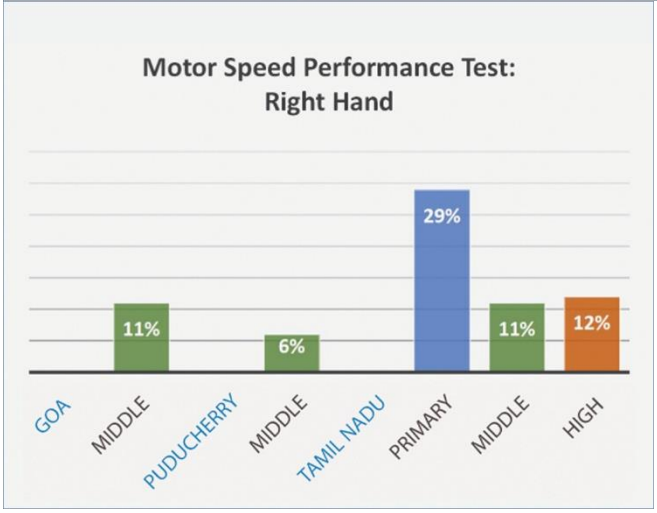


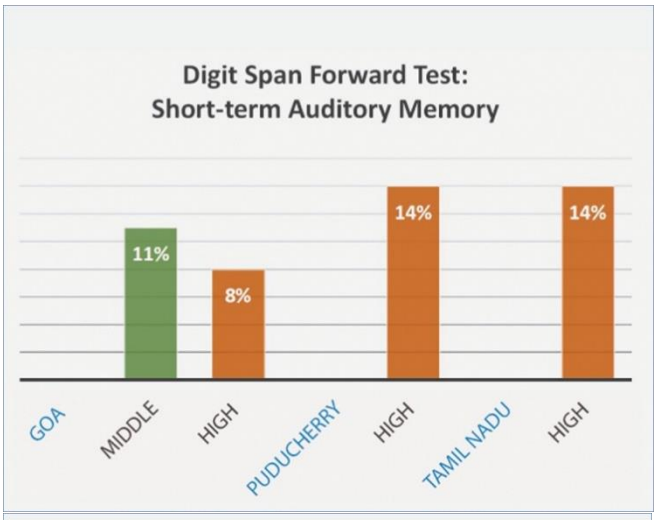


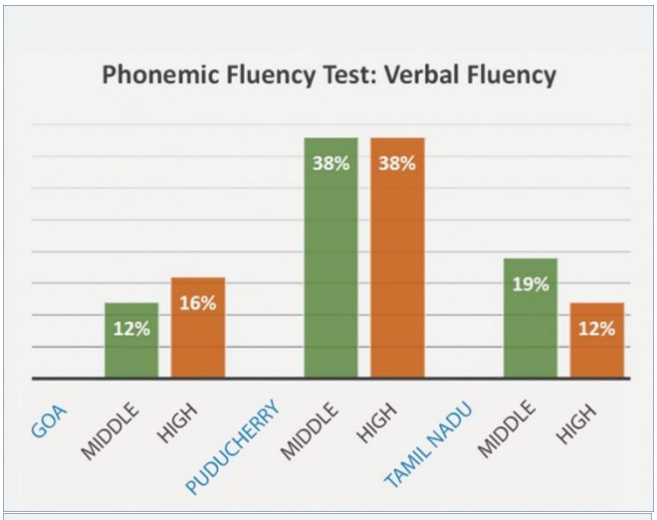


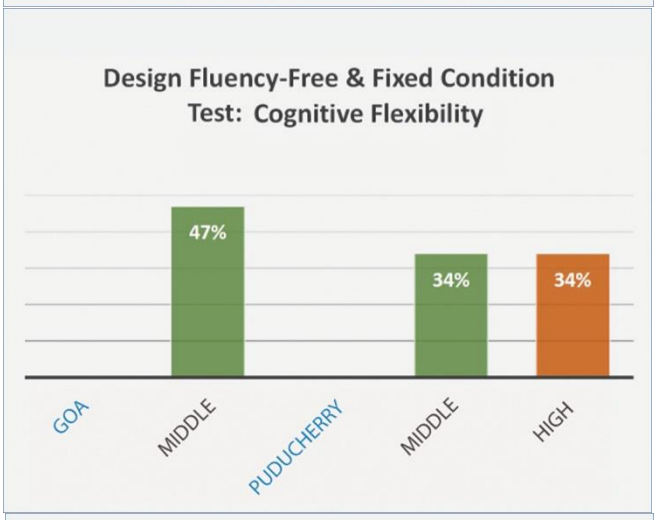


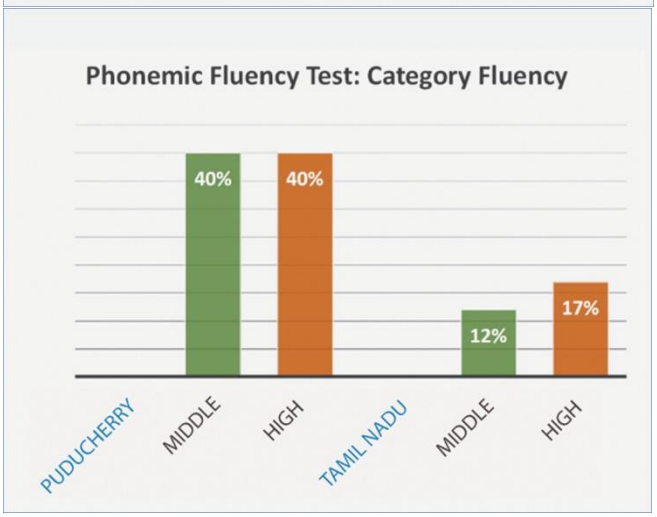


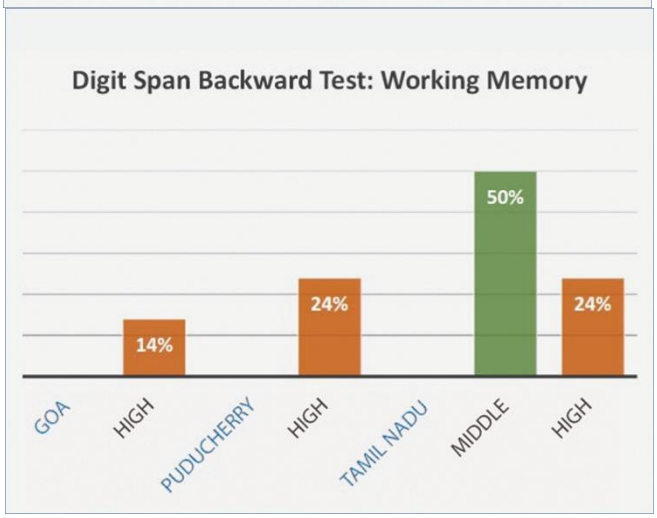



Digit Span Forward Test:
Short-term Auditory Memory
11%
8%
14%
14%
GOA
MIDDLE
HIGH
PUDUCHERRY
HIGH
TAMIL NADU
HIGH


Phonemic Fluency Test: Verbal Fluency
12%
16%
38%
38%
19%
12%
GOA
MIDDLE
HIGH
PUDUCHERRY
MIDDLE
HIGH
TAMIL NADU
MIDDLE
HIGH


Design Fluency-Free & Fixed Condition
Test: Cognitive Flexibility
47%
34%
34%
GOA
MIDDLE
PUDUCHERRY
MIDDLE
HIGH


Phonemic Fluency Test: Category Fluency
40%
40%
12%
17%
PUDUCHERRY
MIDDLE
HIGH
TAMIL NADU
MIDDLE
HIGH


Digit Span Backward Test: Working Memory
14%
24%
50%
24%
GOA
HIGH
PUDUCHERRY
HIGH
TAMIL NADU
MIDDLE
HIGH