THE EFFICACY OF PRANIC HEALING IN IMPROVING THE PERFORMANCE OF SCHOLASTICALLY BACKWARD CHILDREN

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Abstract

Pranic Healing is an alternative method of medical therapy based on the concept of a Human Bio-energy field around the body which influences physical and mental health. Empirical observations and a few structured studies suggest that modification of the bioenergy field is associated with improvement of various disorders. Scholastic backwardness a common problem encountered among children, with several causes. Few studies exist which address the efficacy of any interventions for this disorder. This pilot study explores the efficacy of Pranic Healing for scholastic backwardness. 26 children with poor scholastic performance as recognized from school records were subjected to Pranic healing thrice a week over a period of three months. Changes in their performance at school, performance on standard psychological tests and changes in their bio-energy field were evaluated by serial examinations before and after the intervention

Improvement in performance on psychologic tests was observed in 40-70 %, in bioenergy field patterns in 80% and in their behaviour and school performance in 90%. We conclude that Pranic Healing may be of benefit in children with scholastic backwardness. A controlled trial to test this hypothesis further is being conducted.

1. **Introduction:**

Pranic Healing is an alternative method of medicine based on the observation that the human body is surrounded by an energy field which reflects and influences the health. Parts of the Human Bio-energy field which are altered during disease state are discribed by Sui (1998) are the Inner Aura and Chakras, as shown in Figure 1. The Inner Aura extends on all sides of physical body for about 3 to 6 inches. Chakras are energy centres which control the function of major vital organs of the body (Sui, 1998; Sushil, 2000). Human bio energy field (aura and chakras) has hitherto been studied by the method of hand perception by trained practioners of Pranic Healing/Energy Therapy. The Pranic Healers are trained to perceive, assess and modify the energy field and chakras of the patient without any physical contact. Many physical, mental, physiological, environmental and pathological changes are known to influence the human bioenergy field (Sui 1998, Malikarjun 1978). These manifest as changes in the dimension of the Inner Aura and different Chakras. Changes observed in this bio-energy field are known to reflect specific ailments (Malikarjun 1978, sui 1998, Koratkov 1998, Vrunda 1998, Wardell and, Mentgen ,1999

Further, favorable changes induced in the field by a trained Healer are known to result in healing. It is a non-touch, non- invasive form of therapy. Efficacy of Pranic Healing in treating various human ailments is supported by empirical observations as well as by a few clinical trials (Jain, 1997; Vrunda, 1999). While the basic tenets of Pranic Healing are different from conventional medicine, a scientific approach to such practice can help to document the efficacy of Pranic Healing in human diseases. The present study is one such attempt.

In the recent past, a new, more objective and visual method studying the bioenergy field has become available in the form of Gas Discharge emission Visualization technique (Korotkov et al, 1995). This is a camera based on Kirlian effect ; which gathers the information from energy field around the finger tips of the patient, and gives quantitative interptretation about the type of energy field and various chakras. The perception of bioenergy field and its characteristics by these two methods have been compared systematically Vrunda 1997).

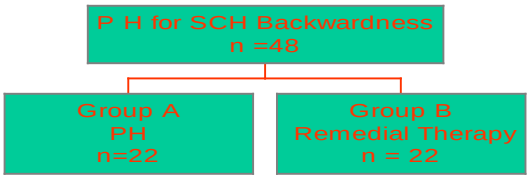
Prevalence rates of scholastic backwardness range between 3% to 15% of the school-age population and are known to vary according to geographic areas Agarwal KN, Agarwal Dkgrom the Department of Paediatrics, Banaras Hindu University, Varanasi. observed ithe rural primary school children for two years, 12.97 per cent of those having IQ greater than or equal to 90 were found to have poor achievement in arithmetic test and teacher's assessment. These learning disabled children had impaired perceptual maturity and conceptual grasps). Boys are recognized to have scholastic backwardness 4-8 times as often as girls do. Many parents are found asking, "why does my child have difficulty in learning?" Some of the known reasons are genetic defects; birth trauma; aberrant organization or dysfunction of the brain and brain maturational lag (Blumsack J, Lewandowski L, Waterman B), etc. Inadequate lateralization of functions in the brain hemispheres, suboptimal cultural exposure and certain adverse psychosocial and emotional factors are also implicated. However, the exact etiology of scholastic backwardness may be determined only among a small fraction of the cases. More often, scholastic backwardness is a circumscribed occurrence in an otherwise normal child. Of the several selective areas of scholastic skills and abilities, one or a few may be affected: eg. verbal expression, comprehension, written expression, basic reading skills, reading comprehension, mathematics calculations, mathematics reasoning, spellings, etc.

While the method by which Pranic Healing influences health, in the conventional scientific terms, is as yet unknown, its efficacy in varied disorders is now being recognized increasingly (Vrunda 1999). Favourable observations in a pilot study involving nine children with scholastic backwardness encouraged us to initiate this formal study. These children were referred by their parents who were aware of Pranic Healing. All nine experienced significant improvement in their school performance as well as in other areas such as behaviour at home (Chandra 1999). The purpose of this study was to examine the efficacy of Pranic Healing in children with scholastic backwardness.

Material and methods:

Fourty four children with scholastic backwardness were recruited were randomised into two groups of 22 each.. Group A as PH group and Group B as remedial therapy Group. Changes in their performance at school, performance on standard psychological tests and changes in their bio-energy field were evaluated by serial examinations before and after the intervention.

Randomization and distribution of the subjects



Inclusion Criteria:

Children who were recognized by either their parents or teachers to be performing poorly at school during at least two past consecutive years were included in the study. Poor performance at school was recognized by grades in annual school report cards of less than 40% in two or more topics in school curriculum, with or without failures in examinations.

Exclusion criteria:

Children with mental retardation, significant neurological deficits, epilepsy, visual or hearing defects, specific learning disability localized to isolated types, overt psychiatric disorders (such as depression, psychosis, etc) which might interfer with the academic performance.were excluded.Children with adverse family factors such as parental alcoholism, recent divorce or significant mental illness in a first-degree relative were also excluded.

Each child fulfilling the above inclusion criteria was subjected to the following evaluation on day one of The study and again at the end of three months:

- Conventional psychological tests.
- Bio-energy field evaluation by Pranic healer and Gas discharge Visulization photography.
- Parents' subjective evaluation.
- Review of school performance based on score cards of examinations.

The psychological tests were administered by a Clinical Psychologist and included a clinical psychiatric interview schedule (to exclude any mental illness) followed by the a series of structured tests including:
Colored Progressive Matrices (CPM) - C.P.M. is a test designed specifically for young children. The scale as a whole is described as a "Test

of observation and clear thinking". It chiefly assesses the cognitive processes and intellectual maturity.

The test consists of a pattern. One part of the pattern is blank. Six options are given below the pattern. The child has to choose the correct option so that the pattern appears complete.

Wide range Assessment of Memory & Learning (WRAMAL) - It is a test which consists of learning and memory scale. This test was chosen because it extensively assesses memory as well as learning. Its self - test are

a) **Picture Memory** - which consists of showing a picture for Ten Seconds - then asking questions.

b) **Sentence Memory** - It consists of saying one sentence which, is then repeated by the child. The sentences increase in their level of difficulty in terms of the number of words and information.

c) **Story Memory** - It consists of telling a story and then asking questions. This is a recognition test.

d) **Number - Letter Memory** :- It is a test where, a series of letters and numerals are asked, and the child has to repeat. It starts with two letters and goes upto ten letters.

e) **Verbal Learning** - It consists of a list of thirteen words which are presented to the child. The child repeats the words he remembers. It is done for four trials. Delayed recall is done after ten minutes.

To assess the child's Visuo - spatial ability the following tests were given -

a) **Drawing test of WRAVMA**

b) Matching test of WRAVMA

The WRAMAL and WRAMA are not standardized for Indian Children. They were used because of the wide & exhaustive assessment possible in short time.

Parents' subjective assessment of the child' behavior and school performance were noted on day one and at the end of 3 months Subjective report of the child & parents

Raven's Colored Progressive Matrices Test (RCPM)
Benton Visual Retention Test (BVRT) Coman E,1999).
Wide Range Assessment of Memory & Learning (WRAMC),
Intelligence Quotient (IQ) assessment. (Hill DE, Ciesielski KT 1997 & Gioia GA 1998)
Parent Rating Scale.
Knox cube test (Bornstein RA,1983)

These tests were administered in a standardized setting, with predetermined time limits.
The Bioenergy field assessment of these children was performed by two methods: a manual, semi quantitative method by trained Pranic Healer and an objective method by Gas Discharge Emission Visualization photography (Koratkov etal 1998). The bio-energy field evaluation by a trained Pranic Healer included documentation of the extant of the Inner Aura from the body surface in inches and the size of eight standard ‘chakras’ (Table 1), which were classified as normal, congested or depleted. Bio-energy field evaluation using Gas Discharge Visualization apparatus as described by Koratkov et al (1998) involves recording the bio-energy field around the tips of all ten fingers elicited by an electrical field. The bioenergy patterns photographed are depicted on a computer screen and the following measurements are made with the help of the computer: a) mean Area : b) Form Coeff and c) fractal coefficient, which is a measure of the complexity of the outer border of the aura recorded. The mean values & S.D.of each of these parameter for all the ten fingers were noted.
Parents’ subjective assessment of the child’ behavior and school performance were noted on day one and at the end of 3 months. The parents graded child’s behaviour parameters as improved, same as before intervention or worse.

Pranic Healing was administered to all children in group A individually by a trained Pranic healer thrice a week for three months, i.e. approximately over 36 sessions. Apparent structure of the Healing session included the child setting on a chair and Healer sitting or standing at 3-4 feet disstaance and treating the energy field of the child. The therapy essentially is without any actual touch/re-arranging the cloths to the child. The Healer starts with moving the hand from head to toe at a distance of one foot or more away from the patient’s body, called as general sweeping. After this the Pranic Healer moves his or her hand over the energy field of affected part and related areas. These sessions consisted of cleansing of the body aura and

chakras and energizing of chakras recognized to be abnormal, as described by Sui (1995).Once the cleansing is done then Prana is received with one hand by visualizing a beam of light being received by that hand. The Prana is then directed with other hand to the area/Chakras being treated, by holding the hand or moving it in a linear/circular motion over the affected part or related Each session lasting for about an hour.

RESULTS:

34 children(22 from Group A and 12 from Group B) with a mean age of 8.4 years;16 boys and 18 girls completed the study.
Table 2 compares the results of the their evaluation before and three months of initiating Pranic Healing.

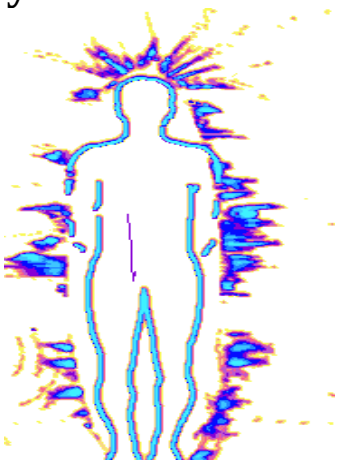
Table 2 A: Details of psychological evaluation school performance.
B: Bio-energy field changes

Test	Post assessment – in Percentile					
	Improved		No change		decrement	
	Group A	Group B	Group A	Group B	Group A	Group B
CPM	70	70	20	20	10	10
BVRT	10	12	70	76	10	12
WRAML	40	39	50	52	10	8
Parent Rating Scale	90	46	13	41	0	0
Knox cube test	50	53	20	21	30	26
School grade	90	90	8	8	2	2
Bio field	90	90	10	10	0	0
Child feed back	95	90	5	10	0	0
Healer feed back	95	--	5	--	0	0

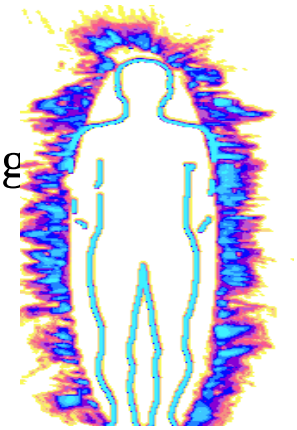
Table no 2.B Bio-energy field changes (according to the Healer)

Impact of Pranic Healing on Human Bio-energy field as demonstrated by Aura photography

Pre Healing BVRT



Post Healing



Name of the area	Pre assessment	Post assessment
Body aura	3.5 inches	5.8 inches
Crown Chakras	affected in all	normal
Ajna Chakras	affected in all	normal
Basic Chakras	affected in all	improved in all
Mein meing Chakras	affected in all	improved in all

Bo-energy field changes (According to Auraphotography)

Parameter	Pre assessment Mean	S.D	Post assessment Mean	S.D.
Area	5282..605		6381.603	
Coefficient of variation.	90.188123		103.9621	
Fractal Diamention	2.7829		3.0000	

Discussion:

Pranic healing is a novel alternative method of therapy, now being used in a wide range of medical and psychological disorders, That the scientific community world wide is awakening to many such 'unconventional' methods is evident by the observations that these are becoming well known now; that the National Institutes of Health, USA has established an independent wing to cater to these with a huge budget and that a dedicated journal of Alternative Medicine now offers a platform for sharing scientific investigations in these issues (A Jain 1998). *According to the obsevations of Wardell DW, Mentgen 1999 in Healing touch as an energy-based approach to healing.&*

Villaire M 1999 experience showed a significant difference in surgery unit patients with Healing touch therapy,
Scholastic backwardness is a disorder which is common and distressing to parents and teachers. No definitive interventions other than non-specific training in scholastic topics are now available to these children. The causes of this syndrome are many and are not always remediable. Pranic Healing has been empirically attempted in similar disorders with favorable results. Specific conditions for which it has been systematically studied are back pain, ischemic heart disease, hypertension, etc. The research division of Pranic Healing foundation of India is committed to a detailed scientific evaluation of its efficacy in various disorders. In this case series, it is observed that a large proportion of the children studied had a beneficial outcome following Pranic healing. The exact mechanism by which this improvement is brought about is not known. However, as per the tenets of Pranic Healing, changes induced in the body aura by the healer are responsible.
There is increasing research evidence that early intervention in a range of children's problems can have a positive effect on both children and families. There are a number of widely used screening tests available for the early detection of children's developmental problems,; however, the routine uptake of these tests has been disappointing. They are time consuming; in some instances they require special training **Oberklaid F (** 2000 **)**Scholastic backwardness as is a entity with extremely poorly defined path ophysiology & is therefore difficult to treat.Various psuchplogical tests are in use for assessing these children. Raven's Colored Progressive Matrices Test (RCPM) was administered to 894 normal healthy adults who were randomly selected in six Italian cities and in the Republic of San Marino. Gender, age, and education significantly influenced overall test performance, and performance on different RCPM subsets. Findings from this large random sample provide demographic corrections to test scores for use in clinical practice(Measso G 19930,
Gioia GA (1998) has tried to re-exame the factor structure of the Wide Range Assessment of Memory and Learning: implications for clinical interpretation The intercorrelation matrices of the standardization sample of the Wide Range Assessment of Memory and Learning (WRAML), a multi-component measure of memory functioning in children ages 5 to 17 years, were submitted to a hierarchical exploratory principal factor analysis (PFA). The PFA solutions were examined and compared with the published principal components analysis (PCA) solutions with the goal of examining the validity of the clinical scale configuration (Verbal Memory, Visual Memory, and

Learning) proposed by the test authors. Results of the PFA differ from the PCA and do not provide statistical support for the existing three-scale structure nor the division between memory and learning.Specific factor loadings on the majority of sub-tests are higher than the common factor loadings indicating low shared variance. The low communalities together with the poor interpretability of the factor structure suggests that the subtests should be interpreted clinically as unique entities first and secondarily as factors. Theoretical and practical implications of the findings are discussed. The specificity of this screening instrument was 0. 77 for a sensitivity of 1 According to Hill DE, etal Memory results are related to deficits in strategic planning and attentional distractiveness. The WRAML may be a useful clinical tool to evaluate differential memory deficits in children .
Burns GL, Patterson performed analysis on a sample of 1,263 children and adolescents. & identified 3 meaningful factors (i.e., Oppositional Defiant Behavior Toward Adults, Inattentive Behavior and Conduct Problem Behavior) and a fourth,poorly defined factor. A confirmatory factor analysis (CFA) evaluated the fit of the 3 meaningful factors in a second sample of 1,264 children and adolescents.The 3-factor model with 2 correlated errors provided a excellent fit. This3-factor model also provided a significantly better fit than 2- and 1-factor models. Multiple group CFA indicated that the factor pattern, item-factor loadings, factor correlations, and correlated errors were equivalent across the samples. The CFA on sex yielded similar results. Initial normative information is presented for boys (n = 1,322) and girls (n = 1,205) within 4 age ranges (i.e., 2-5, 6-9, 10-13, 14-17) for the 3 factors
The Knox Cube Test is used in conjunction with some neuropsychological test batteries as a measure of visual attention and memory, but no data are available regarding the validity of this measure in a neuropsychological context. The present investigation examined the construct validity of the Knox Cube Test as a measure of attention span, and also as a neuropsychological instrument. Two independent samples were administered a battery of tests including the Knox Cube Test. The test was found to be strongly related to most of the measures, and in both samples the highest correlations were found with dig+it span backwards,Trail Making Test and Speech Perception Test. Factor analysis in the two samples revealed that the highest loadings for the Knox Cube Test were observed on a factor interpreted as measuring attention and concentration. These findings were discussed in regard to the validity of the Knox Cube Test, and its potential use in clinical neuropsychological examination. According to Lindeboom J, Matto D Due to its low internal consistency, the Knox Cube test cannot

reliably distinguish differences among normal subjects, but may still be useful to detect impairment.

Healers' evaluation of the children before during and after the healing showed the following results.
They were more focused and enthusiastic
On questioning on general matters, their answers were more relevant and spontaneous.
They were happier and more co-operative during healing sessions.
They enjoyed healing sessions and discussed their studies with the healer.
They were calmer
They memory had improved considerably

According to the Parental feedback: all children Improved.
The parents of these children had the following things to say:
Memory and attention of the child is improved.
I need less time to explain and make the child understand, more affectionate, less sibling rivalry.
Less reminders are required for study, notes are more complete, fewer complaints from school, appetite and general health improved.
My child now takes care of her sick mother without being told, which took a lot of persuasion before.
The children described the changes in themselves as follows:
I feel happy,
I can learn easily,
I can understand and remember better,
I feel less tired,
I understand and complete my work in school faster
I feel like studying and passing my exams.
Increase in " good" remarks in the note books by teachers who were unaware of the intervention.
One boy was selected in the football team of the school & was made captain for one of the matches.
I don't get angry easily,
I help my parents on my own,
The favorable changes were observed in their Bio-energy field as documented by the Healer and Aura photographs

All above mentioned parameters revealed significant improvement in various dimensions of the child's performance and has yielded successful results The successful completion of this study has paved the way for further multiple armed research studies in the same and allied fields.

This study has several limiting factors. The small number of subjects, absence of a control group, short duration of study, need of frequent visiting to the Healer and difficulty in accurate quantification of 'scholastic backwardness' are some of these. A prospective study including a control group is being initiated to overcome some of these and develop a higher level of evidence for the efficacy of Pranic Healing in this disorder.

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.Clinical Neuroscience Laboratory, University of New Mexico, USA.

Assessed survivors of childhood lymphoblastic leukemia (ALL) treated with intrathecal chemotherapy, using the Wide Range Assessment of Memory and Learning

(WRAML), compared to controls without cancer, matched as closely as possible in

age, SES, and gender. Mild, but consistent, deficits were found in both visual-spatial and verbal single-trial memory tasks. In multitrial learning, only visual-spatial tasks resulted in deficient scores, while verbal learning

was within the normal range. IQ results indicated scores 10-20 points lower in the ALL group. Memory results are related to deficits in strategic planning and attentional distractiveness. The WRAML may be a useful clinical tool to evaluate differential memory deficits in children with ALL.

1: Burns GL, Patterson DR Factor structure of the Eyberg Child Behavior Inventory: a parent rating scale of Oppositional Defiant Behavior Toward Adults, Inattentive Behavior, and Conduct Problem Behavior J Clin Child Psychol 2000 Dec;29(4):569-77

Used the Eyberg Child Behavior Inventory (ECBI) to measure disruptive behavior problems in children and adolescents. A controversy exists, however, on the dimensional structure of the ECBI. To evaluate this issue, an exploratory factor analysis was first Burns GL, Patterson performed on a sample of 1,263 children and adolescents. This analysis identified 3 meaningful factors (i.e., Oppositional Defiant Behavior Toward Adults, Inattentive Behavior and Conduct Problem Behavior) and a fourth, poorly defined factor. A confirmatory factor analysis (CFA) evaluated the fit of the 3 meaningful factors in a second sample of 1,264 children and adolescents.

The 3-factor model with 2 correlated errors provided a excellent fit. This 3-factor model also provided a significantly better fit than 2- and 1-factor models. Multiple group CFA indicated that the factor pattern, item-factor loadings, factor correlations, and correlated errors were equivalent across the samples. The CFA on sex yielded similar results. Initial normative information is presented for boys (n = 1,322) and girls (n = 1,205) within 4 age ranges (i.e., 2-5, 6-9, 10-13, 14-17) for the 3 factors. The use of these 3 factors, especially Oppositional Defiant Behavior and Conduct Problem Behavior, should make the ECBI more useful as a screening and outcome measure.

[Digit series and Knox cubes as concentration tests for elderly subjects].
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[Article in Dutch]
We studied psychometric properties of the Digit Span test and its nonverbal counterpart, the Knox Cube test, with reference to their utility in the clinical assessment of the elderly. Subjects were 100 residents of residential homes and semi-independent housing projects, aged 68 to 94. An administration of Digit Span with three trials per sequence length provides high reliability and minimizes floor effects, allowing separate interpretation of the Forward and Backward conditions. Due to its low internal consistency, the Knox Cube test cannot reliably distinguish differences among normal subjects, but may still beuseful to detect impairment. Using regression equations, the Forward Digit Span score can be corrected for education level and both Digit Backward and Knox Cubes can be compared with Digit Span Forward.
Bornstein RA Construct validity of the Knox Cube Test as a neuropsychological measure.
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Focal brain lesions and intelligence: a study with a new version of Raven's Colored Matrices.Gainotti G, D'Erme P, Villa G, Caltagirone C

Contrasting results have been obtained in previous investigations, which have used the standard version of Raven's Colored Progressive Matrices for studying the effects of localized brain lesion on visual-spatial intelligence. Some of these discrepancies might be due to the fact that specific factors, such as unilateral spatial neglect, could contribute to decreased performance obtained on Raven's test by patients with focal brain lesions. A new set of Colored Matrices, devised to minimize the influence of unilateral spatial neglect without changing the essential features of the original task, was therefore constructed. The test was administered to 76 normal controls, 74 right brain-damaged patients, 87 aphasics, and 61 nonaphasic left brain-damaged patients, in order to study the effect of laterality of lesions and of language impairment on Raven's scores. The results show that, if the influence of unilateral spatial neglect is minimized and Raven's scores are corrected in reference to age, educational level, and lesion size, then: no

significant differences are observed between right and left brain-damaged patients; aphasics score worse than nonaphasic left brain-damaged patients; impairment is greater in patients with Wernicke's and Global aphasia (i.e., in patients with severe language comprehension disorders) than in patients classified as Broca's, Anomic, or Conduction aphasia; impairment is greater in patients with semantic-lexical discrimination errors than in patients free from semantic-lexical comprehension disorders.

Chaudhari Developmental assessment tests: scope and limitations.
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Kumar R, Iyengar SD, Bhasin S, Gupta I, Kumar V A normative study of child development using a culture-appropriate test battery in rural Haryana, India J Trop Pediatr 1995 Feb;41(1):38-42
Department of Community Medicine, Post-Graduate Institute of Medical Education and Research, Chandigarh, India.

A culture-appropriate and simple test battery consisting of 67 test items was developed and field tested in Haryana, India, in 1987-89. Trained field workers administered the tests to 3731 preschool children in 47 randomly selected villages of a district, irrespective of their physical/mental status. Centile age values were constructed for various developmental milestones included in the cultural-appropriate test battery. The locally relevant, simple,

and low cost developmental tests and reference values will be used for early detection of developmental disabilities at primary care level.

Mallhi P, Singhi P Screening young children for delayed development. Indian Pediatr 1999 Jun;36(6):569-77

Department of Pediatrics, Post Graduate Institute for Medical Education and Research, Chandigarh 160 012, India.

Chopra G, Verma IC, Seetharaman P Development and assessment of a screening test for detecting childhood disabilities. Indian J Pediatr 1999 May-Jun;66(3):331-5

Institute of Home Economics, University of Delhi.

The paper outlines the development and assessment of a screening test for broad-based identification of major disabilities in children under 6 years of age. The Disability Screening Schedule (DSS) has been developed which should act as a one time screen for all major disabilities viz. physical, motor, sensory and mental retardation. The DSS was developed after reviewing a number of existing screening instruments. It was pilot tested in 3 phases and suitably modified. Nineteen AWW received a short training and used the DSS to screen children with disabilities in their respective areas. It was field tested by administering it on 3560 children (0-6 years) drawn from nine urban slums of South Delhi. The workers used the DSS and identified 245 children as having an impairment/at risk conditions and 3315 children were reported as normal. The investigator cross checked 219 'impaired' and 536 'normal' children. On the basis of the review exercise, the DSS was validated and was found to have a sensitivity of 0.89 and a specificity of 0.98. The DSS is a short questionnaire, and the administration time is about 5 minutes.

Cunningham RD Parents' concerns about children's development: prescreening techniques or screening test? Pediatrics 1997 Nov;100(5):901-2

Einfeld SL Clinical assessment of 4500 developmentally delayed individuals. J Ment Defic Res 1984 Jun;28 (Pt 2):129-42

Data collected on 4500 developmentally delayed clients and classified according to a modification of Heber's criteria are presented. Statistically significant associations between variables are described. Although such associations are not necessarily biologically meaningful on this evidence alone, they are presented for comparison with other data collections and to suggest areas of further investigation. An examination is made of data relating to mental retardation of unknown cause compared with mental retardation of known causes. The unknown group most resembles those with metabolic disease and least resembles those with chromosome aneuploidy. The data also suggest that mental retardation secondary to brain injury is uncommonly associated with evidence of genetic predisposition.

Oberklaid F Is developmental assessment worthwhile? *Aust Fam Physician* 2000 Aug;29(8):731-4

Centre for Community Child Health, University of Melbourne, Victoria. frankob@cryptic.rch.unimelb.edu.au

BACKGROUND: There is increasing research evidence that early intervention in a range of children's problems can have a positive effect on both children and families. There are a number of widely used screening tests available for the early detection of children's developmental problems, including the Denver II test; however, the routine uptake of these tests has been disappointing. They are time consuming; in some instances they require special training, and the general practitioner needs to purchase kits containing the required testing items. OBJECTIVE: This article looks at how developmental and behavioural disorders can be

detected early on in the child's development by applying a new screening method which is useful in a general practice setting. DISCUSSION: As the focus of clinical practice moves more to prevention and early intervention, GPs are likely to become more involved with the early detection of developmental problems. Recently a new test--the Parents' Evaluation of Developmental Status (PEDS) has been developed. It requires parents to complete a 10 item questionnaire which the GP can then score and interpret according to a predetermined algorithm. The PEDS is simple and quick, and is thus ideal for the busy GP and has similar psychometric properties to other developmental screening tests. It also has the distinct advantage of actively involving parents in the process.

Kumar R, Aggarwal AK, Kaur M, Iyengar SD Factors influencing psychosocial development of preschool children in a rural area of Haryana, India. *J Trop Pediatr* 1997 Dec;43(6):324-9

Department of Community Medicine, Postgraduate Institute of Medical Education and Research, Chandigarh, India.

In a cross-sectional survey, 3746 children aged less than 6 years residing in 47 randomly selected villages of district Ambala (India), were studied to find out the environmental risk factors influencing psychosocial development. A culture appropriate test battery comprising 67 test items was administered, and psychosocial development score of each child was computed by scoring each test item passed as 1 and failed as 0. At each age level children having score in lower quartile were categorised as having slow psychosocial development and those in upper quartile were labelled as having accelerated development. Logistic regression revealed that per capita income, education of mother, nutritional status of the child, number of rooms and environmental hygiene in the house, presence of a high school within easy travel distance, availability of a caretaker when mother is busy, child attending a nursery (anganwadi), households having access to newspaper, child having toys or toy substitutes, TV, books, story telling by the mother were found to have a significant association with psychosocial development of preschool children. The risk factors identified in this survey can be used for screening families at risk in rural communities and for selection of interventions for promotion of

psychosocial development of children.

Related Articles, Books, LinkOut

Phatak AT, Khurana B Baroda development screening test for infants. : *Indian Pediatr* 1991 Jan;28(1):31-7

Department of Child Development, MS University of Baroda.

A screening test for the assessment of the motor-mental development of infants was developed by selecting items from the Bayley Scales of Infant Development (BSID). Baroda norms as a simple and quick test for use in the door to door survey by health workers. The reason for choosing BSID and the criteria for the selection of items are described. The method of using the screening test in community surveys (by health workers) and in office practice is discussed. Some aspects of the development of our screening test and the Denver Development Screening Test (DDST) are compared. A routine use of our test is recommended for following the development of normal children as well as for screening from the community children with possibility of development delay. The latter must be referred for detailed testing on the full scales.

Jellinek M Pediatric psychosocial screening: of sufficient benefit to encourage.

: *J Dev Behav Pediatr* 1998 Oct;19(5):353-4

Massachusetts General Hospital, Boston 02114, USA.

Vazir S, Naidu AN, Vidyasagar P, Lansdown RG, Reddy V Screening test battery for assessment of psychosocial development. *Indian Pediatr*

1994 Dec;31(12):1465-75

National Institute of Nutrition, Indian Council of Medical Research, Hyderabad.

A multicentric cross-sectional collaborative study was undertaken in 3 centres in India with the main aim of developing simple and reliable indicators for the early detection of developmental disabilities in children under 6 years of age and to compare the age of attainment of developmental milestones in children in the three regions. The study provided a simple low-cost and culture-appropriate psychosocial developmental screening test battery which can be used with ease by trained public health grass-roots functionaries. This instrument was standardized on a large rural, tribal and urban sample comprising more than 13,000 children from 3 regions in India. The procedure for sampling, selection of items and methodology for standardization of the instrument in the Hyderabad region detailed in this paper were replicated in other centres as well. Quality control of data was ensured through inter-rater and test-retest measures of reliability. During pre-testing, 66 culture-appropriate milestones were selected finally from a larger item pool. The 50th centile age reference values of the Hyderabad study children and those obtained by other 2 centres were comparable.

Lynn R, Owen K Spearman's hypothesis and test score differences between whites, Indians, and blacks in South Africa. *J Gen Psychol* 1994 Jan;121(1):27-36

Psychology Department, University of Ulster, Coleraine County Londonberry BT52 1SA, Northern Ireland.

Numerous studies in the United States have shown that mean test scores between Blacks and Whites differ by about one standard deviation. It has further been noted that the magnitudes of these differences vary on different tests. This variation can be explained by Spearman's hypothesis, which states that Black-White differences on a set of cognitive tests are

positively associated with the tests' g loadings (the general intellectual ability). The present study, conducted among Black, Indian, and White secondary students in South Africa, showed mean Black-White differences of two standard deviations, indicating that the American results of one standard deviation are not universally correct. With regard to Spearman's hypothesis, it was found that, although the mean White-Indian differences were about one standard deviation, these differences did not support the hypothesis. Results pertaining to the Black-White differences were ambiguous; the correlation of .62 ($p < .05$) between the Black g and the Black-White differences strongly supported the hypothesis. A nonsignificant correlation of .23 was obtained between the White g and the Black-White differences. Possible reasons for this finding are discussed.

Badaruddoza, Afzal M Inbreeding depression and intelligence quotient among north Indian children.

Department of Zoology, Aligarh Muslim University, India.

This study presents the assessment of inbreeding depression on the intelligence quotient among north Indian Muslim Children of school age. The Wechsler Intelligence Scale for Children (WISC-R)-74 was given to the children in both groups (50 each non-inbred and inbred of the first-cousin status), aged 6 to 11 years and from the same socio-economic status. The change of the mean follows genetic theory; however, the nature of the change in variance seems to be somewhat different.

Agarwal KN, Agarwal DK, Upadhyay SK Impact of chronic undernutrition on higher mental functions in Indian boys aged 10-12 years.

Department of Paediatrics, Banaras Hindu University, Varanasi, India.

Undernourished rural children 10-12 years of age demonstrated the following, when compared to normal nourished children: (i) a relative deficit of memory quotients assessed by the Wechsler memory scale; (ii) lower scores for abilities related to personal and current information, orientation, mental control, logical memory, digit span, visual reproduction and associative learning; (iii) impaired set formation and flexibility in attention as assessed by the card sorting test; and (iv) impairment in conditional learning on maze and conditional associative learning tests. The performance on the finger dexterity test for fine motor coordination was not affected in undernourished children.

Cooper S *J Clin Psychol* 1982 Apr;38(2):380-7 **The Post-Wechsler Memory scale.**

Reitan RM An impairment index of brain functions in children. *Percept Mot Skills* 1984 Jun;58(3):875-81

An impairment index of brain functions in children, based on the 1979 Rules System by Selz and Reitan, was developed to summarize the performance on the Halstead-Reitan Neuropsychological Test Battery for older children comparing groups of 25 normal, learning-disabled, and brain-damaged children aged 9 through 14 yr. Analysis of variance indicated a significant difference between all pairs of groups. A cut-off Impairment Index between .17 and .18 correctly differentiated 78% of the brain-damaged and control subjects. The findings suggested that the Impairment Index for Children may be a valid and objective indicator of brain functions in older children, although cross-validation is necessary.
J Learn Disabil 1997 Mar-Apr;30(2):228-37

Neurodevelopmental precursors to learning disabilities: a preliminary report from a parent survey.

Blumsack J, Lewandowski L, Waterman B

Department of Psychology, Syracuse University, NY 13244-2340, USA.

This study documented the number and type of neurodevelopmental problems reported by parents of children with and without learning disabilities (LD), and examined whether a pattern of problems could be identified. One hundred parents, 50 for each group, responded to a retrospective developmental survey. Their children were between 9 and 13 years of age and had a history of either typical academic achievement or classification of a learning disability. Results indicated that the children with learning disabilities were reported to have significantly more neurodevelopmental problems or delays across domains (e.g., language, motor, attention, social behavior) than normal achievers. The study showed that a sizeable portion, although not all, of the children with LD had a history of neurodevelopmental problems. Despite findings that suggest that some difficulties more commonly co-occurred than others, a pattern of neurodevelopmental difficulties was not observed in these

children. However, some specific difficulties, such as with following multistep directions, printing letters of the alphabet, and understanding directions (e.g., up, down, right, left), seemed to most typify the students with learning disabilities.

PMID: 9066284

9339330 **5**: *Cortex* 1997 Sep;33(3):483-98 Related Articles, Books, LinkOut

A deficit for arithmetical procedures: lack of knowledge or lack of monitoring?

Semenza C, Miceli L, Girelli L

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A patient is described with a specific deficit for arithmetical procedures. Unlike in previously described cases, where the observed problems could be attributed to the systematic application of disturbed algorithms, this patient's difficulty seems to stem from an inability to monitor the sequence of operations that calculation procedures specify. Criteria are provided for distinguishing impairments in written calculation due to the application of defective knowledge of the procedures from those determined by lack of monitoring. The role of monitoring and control processes in different calculation components is also discussed.

Tsushima WT, Towne WS ITPA performances for young children with and without questionable brain disorders. *J Learn Disabil* 1980 Nov;13(9):477-9

O'Donnell JP, Macgregor LA, Dabrowski JJ, Oestreicher JM, Romero JJ Construct validity of neuropsychological tests of conceptual and attentional abilities. *J Clin Psychol* 1994 Jul;50(4):596-600

Department of Psychology, Southern Illinois University at Carbondale 62901.

In a mixed sample of community-living adults, this study examined the construct validity of five neuropsychological tests: Category Test (CAT), Wisconsin Card Sorting Test (WCST), Paced Auditory Serial Addition Task (PASAT), Visual Search and Attention Test (VSAT) and Trail Making Test: Part B (TMT-B). Principal components analyses showed that PASAT, VSAT, and TMT-B defined an attention factor and that CAT and WCST defined a conceptual factor. The results were discussed in terms of common interpretations of these procedures as well as in terms of Mirsky's (1989) components of attention.

Bryant ET, Scott ML, Golden CJ, Tori CD Neuropsychological deficits, learning disability, and violent behavior. *J Consult Clin Psychol* 1984 Apr;52(2):323-4

Byrne LM, Bucks RS, Cuerden JM Validation of a new scoring system for the Weigl Color Form Sorting Test in a memory disorders clinic sample. : *J Clin Exp Neuropsychol* 1998 Apr;20(2):286-92

Department of Care of the Elderly, University of Bristol, UK.

The Bristol Memory Disorders Clinic uses the Weigl Color Form Sorting Test (CFST) to appraise abstraction and the ability to shift set. The original scoring system for the CFST (Grewal & Haward, 1984), developed on the premise that sorting to form is more difficult than sorting to color, had no score for an individual able to sort to form and subsequently unable to shift to color with a cue. Clinical experience suggested that the performance of some individuals required such a score. A new scoring system was

developed and validated in a memory-disorders-clinic sample. The validation showed the new score to be necessary and gave support to the original premise that people with organic brain damage show a preference for sorting to color.

Frisk M Mental and somatic health and social adjustment in ordinary school children during childhood and adolescence related to central nervous functions as expressed by a complex reaction time. *Eur Child Adolesc Psychiatry* 1995 Jul;4(3):197-208

Department of Child and Adolescent Psychiatry, University Hospital, Uppsala, Sweden.

A cohort of ordinary Swedish children were followed up from school entry through childhood and adolescence and checked retrospectively from birth to the age of 6 years regarding psychiatric and physical health and contact with the social welfare authorities. The children were allocated to different risk groups at age 7 on the basis of their psycho-physical development expressed as complex reaction time (CRT). It was previously shown that many of the slow CRT children have problems in psychomotor and language development at school, and that many leave compulsory school with poor achievements in Swedish and gymnastics as continuing signs of their developmental delay. This study shows that slow CRT children have an increased prevalence of child psychiatric problems. At an early age there were symptoms of aggression, hyperactivity and withdrawal in conjunction with developmental delay. During adolescence, depression, maladjustment and psycho-somatic disorders were prominent features, often in association with developmental delay, dyslexia and poor motoric skill. These children could have a disadvantage at school and in society and they felt themselves "handicapped" and were stressed by feelings of limited future possibilities. In adolescence, many of them were in need of help, especially financial aid from the social welfare services. The findings stress that a slow cognitive processing ability seen as a slow CRT must be considered a handicap of importance and a risk-factor in the society of today, with primary or secondary psychic and social manifestations often in a multifactorial setting of biological co-morbidity and family problems. In contrast, an advanced CNS development with a

fast CRT may be seen as a protective factor.

McFall SA, Deitz JC, Crowe TK Test-retest reliability of the test of visual perceptual skills with children with learning disabilities. 23: *Am J Occup Ther* 1993 Sep;47(9):819-24

Department of Rehabilitation Medicine, University of Washington, Seattle.

This study examined the test-retest reliability of the Test of Visual Perceptual Skills (nonmotor) (TVPS). The sample consisted of 30 first- and second-grade children (aged 6 years through 8 years) with identified learning disabilities. The TVPS was administered on two separate occasions that were 1 to 2 weeks apart. The intraclass correlation coefficient for the total test standard scores was .81. The intraclass correlation coefficients for the subtests ranged from .33 (Sequential Memory) to .78 (Form Constancy). The primary finding from this study is that TVPS scores on the total test show adequate test-retest reliability for use in clinical settings. The scores on the subtests, however, should be used with extreme caution, as the test-retest reliability estimates were low.

Brewer VR, Moore BD, Hiscock M Learning disability subtypes in children with neurofibromatosis. *J Learn Disabil* 1997 Sep-Oct;30(5):521-33

University of Houston, TX, USA.

A high incidence of learning disabilities (LD) has been reported in children with neurofibromatosis Type 1 (NF-1), and many children affected with this disease are thought to have a form of LD that is characterized by selective visuospatial and motor deficits. However, the evidence is subject to sampling biases and is limited by the clinical-inferential methods used to classify children into LD subtypes. In the present study, objective statistical methods were used to categorize LD in 105 children with NF-1 between the ages of 6 and 18 years. A cluster analysis of achievement test scores yielded 10 groups; 6 of which met our criterion for academic deficiency. An analysis of neuropsychological data for 72 children with academic deficiencies with complete neuropsychological data yielded three groups: a neuropsychologically normal group (n = 28), a group with

general academic deficiencies (n = 34), and a group with visuospatial-construction deficiencies (n = 10). The low incidence of visuospatial-constructional deficits and the absence of cases involving pure linguistic deficits is notable.

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Ouvrier RA, Goldsmith RF, Ouvrier S, Williams IC The value of the Mini-Mental State Examination in childhood: a preliminary study. *J Child Neurol* 1993 Apr;8(2):145-8

Department of Neurology, Children's Hospital, Camperdown, Australia.

The Mini-Mental State Examination (MMSE), a screening test of higher mental function, has been modified slightly for use in a pediatric outpatient setting. The test, which takes 5 to 10 minutes to administer, covers a range of cognitive functions including orientation, attention-concentration, memory, language, and constructional ability. In a preliminary study, we have found that the test can be applied from the age of 4 years. Highly significant correlations were found between the MMSE score and chronologic age ($r = .57$; $P < .001$), reading age ($r = .79$; $P < .001$), and mental age ($r = .83$; $P < .001$). MMSE scores reach a plateau at a mental age of approximately 10 years. The MMSE is a suitable instrument for screening higher mental function in children at the age of 4 years and above and can be readily incorporated into the routine neurologic examination of children.

Putzke JD, Williams MA, Adams W, Boll TJ Does memory test performance in children become more consistent with age? Cross-sectional comparisons using the WRAML. Wide Range Assessment of Memory and Learning. : *J Clin Exp Neuropsychol* 1998 Dec;20(6):835-45

University of Alabama at Birmingham, 35294-4551, USA.

This study examined intertask consistency on the Wide Range Assessment of Memory and Learning (WRAML), using two age cohorts of children. Eighty-one neurologically impaired children and 76 matched (i.e., age, gender, race) controls were separated into two age groups, 5- to 9- and 10- to 14-year-olds. Performance on four subtests from the WRAML Memory Screening Index were examined. For the older neurologic sample, all six intertask correlations were significant (mean r = .58) while only three of the six correlation coefficients were significant among the younger neurologic group (mean r = .26). In contrast, only three of the six intertask coefficients were statistically significant in both the younger and older controls. A possible explanation for these divergent findings and clinical implications of intertask variability on memory measures are discussed.

Putzke JD, Williams MA, Adams W, Boll TJ Does memory test performance in children become more consistent with age? Cross-sectional comparisons using the WRAML. Wide Range Assessment of Memory and Learning. : *J Clin Exp Neuropsychol* 1998 Dec;20(6):835-45

University of Alabama at Birmingham, 35294-4551, USA.

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Humphries T, Krekewich K, Snider L Evidence of nonverbal learning disability among learning disabled boys with sensory integrative dysfunction.

: *Percept Mot Skills* 1996 Jun;82(3 Pt 1):979-87

Hospital for Sick Children, Ontario Institute for Studies in Education, University of Toronto, Ontario, Canada.

The presumed sensorimotor basis of the nonverbal learning disability syndrome was investigated among 90 learning disabled boys (M age = 6 yr., 8 mo., SD = 12.2 mo.) with sensory integrative dysfunction. The majority of the boys were Caucasian, lower to middle socioeconomic status, and from urban, English-speaking families. 14% (n = 13) of the boys satisfied core discrepancy criteria for nonverbal learning disability, including both a significantly higher Wechsler Verbal than Performance IQ and a higher standard score in Reading than Arithmetic on the Wide Range Achievement Test. Compared with a control group of 19 boys from the same sample who had no significant discrepancies, boys with nonverbal learning disability had significantly greater weaknesses in space visualization and visuomotor coordination. As predicted, rote verbal memory and syntactical strengths were also exhibited by boys with nonverbal learning disability, but the two groups did not differ significantly.

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Woodard RJ, Surburg PR Fundamental gross motor skill performance by girls and boys with learning disabilities. *Percept Mot Skills* 1997 Jun;84(3 Pt 1):867-70

Department of Health, Recreation, and Physical Education, Southern Illinois University at Edwardsville 62026-1126, USA.

The purpose of this study was to compare the performance of fundamental gross motor skills by 10 girls and 10 boys, 7 yr. old, with

learning disabilities. Their skills were assessed on the Test of Gross Motor Development. The boys achieved significantly higher mean scores than the girls on the subtests of Locomotor Skills and Object Control Skills, and on the Gross Motor Development Quotient.

Disorders of cognition, attention and learning.

Pratt HD, O'Donnell D, Orfuss MF Michigan State University, Kalamazoo Centre for Medical Studies, USA. *Indian J Pediatr* 1999 May-Jun;66(3):401-14

The inability to successfully navigate the educational system can cause serious problems for children, their parents, the Indian society, and the world at large. When children are required to engage in academic exercises which require attention, specific cognitive abilities and processes, and demonstrations of learning, a subset of these children are unable to perform due to some type of intellectual, emotional, behavioural, physical, or environmental deficit. Any combination of these factors can result in school failure. Although, resources for remedial or special education services in Southeast Asia and India are particularly meager, efforts must be directed towards the retention and achievement of those children who do enroll in primary and secondary schools. Learning disability represents a major form of impairment in society, and much more needs to be done to bring about a general awareness of its consequences. An urgent priority is the education of physicians and teachers about disorders of cognition, learning, and attention.

Publication Types:

- Review
- Review, tutorial

: *Am Indian Alsk Native Ment Health Res* 1994;5(3):45-51
Differences between American Indian and non-Indian children referred for psychological services.

Wright L, Mercer S, Mullin S, Thurston K, Harned AJ

University of Oklahoma, Department of Psychology, Norman 73019-0535.

The physical and social characteristics of 60 American Indian children referred for psychological services were compared to those of 60 matched, non-Indian controls. Data were obtained from detailed records available in a multidisciplinary, medical school-related child study clinic. Indian children exhibited more health and social risk factors, but were superior to non-Indians on a variety of motor variables. Interpretations are offered concerning better psychological services for American Indian children based on better understanding of their possible exposure to physical health and social risks which may be related to psychological development.

Agarwal KN, Agarwal DK, Upadhyay SK, Singh M
Learning disability in rural primary school children. 3: *Indian J Med Res* 1991 Apr;94:89-95
Department of Paediatrics, Banaras Hindu University, Varanasi.
In rural primary school children observed for two years, 12.97 per cent of those having IQ greater than or equal to 90 were found to have poor achievement in arithmetic test and teacher's assessment. These learning disabled children had impaired perceptual maturity and conceptual grasp as observed on MISIC (Indian modification of WISC), Bender Gestalt test and Piaget's test. On WISC Bannatyne categories learning disabled children scored highest in verbal conceptualization (similarities, vocabulary, comprehension), followed by spatial (picture completion, object assembly, block design) and sequencing (arithmetic, digit span, coding) abilities. These children on Bender Gestalt test made more errors particularly distortions (distortion of parts, incorrect number of dots, shape of design lost etc). They also showed delayed development on Piagetian tasks class inclusion, conservation (for length, substance, liquid and number) ordinal relation and one to one correspondence. These observations indicate impaired perceptual maturity, conception and information processing deficit.

J Pediatr Psychol 1981 Mar;6(1):43-60Teacher and parent checklist ratings with learning-disabled, hyperactive, and emotionally disturbed children.

Hicks MR, Johansson CB, Heinze AM, Halscott JF
Dykman RA, Ackerman PT, Holcomb PJ, Boudreau AY: Physiological manifestations of learning disability.
J Learn Disabil 1983 Jan;16(1):46-53
J Clin Psychol 1974 Jan;30(1):69-72
Comparison of normal and minimally brain dysfunctioned childrens on the McCarthy Scales of Children's Abilities.

Kaufman NL, Kaufman A

Umbreit A Therapeutic touch: energy-based healing. Creat Nurs 1997;3(3):6-7