Indian Journal of Clinical Psychology

Volume 36, Number 1
March 2009
ISSN 0300-2582

Editor
S. P. K. Jena, Ph. D

Indian Association of Clinical Psychologists
www.iscp.in

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Therapy


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**Form IV**

**INDIAN JOURNAL OF CLINICAL PSYCHOLOGY, 2009, Vol. 36, No. 1**

Statement about the ownership and other particulars about Indian Journal of Clinical Psychology:

1. Place of Publication : New Delhi
2. Periodicity of Publication : Half-Yearly
4. Editor’s and Publisher’s Name : Dr. S. P. K. Jena
5. Nationality : Indian
6. Address : Department of Applied Psychology University of Delhi, South Campus, Benito Juarez Road, New Delhi PIN-110 021 e-mail: editorijcp208@rediffmail.com Ph. 91-011-24111993 (R), 9818290430 (M)

7. Name and address of individuals & who own the newspaper & partners of share holders holding more than one percent of the total capital: Indian Association of Clinical Psychologists

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This section should emphasize the new and important aspects of the study and the conclusions that follow from them. For experimental studies it is useful to begin the discussion by summarizing briefly the main findings, then explore possible mechanisms or explanations for these findings. Compare and contrast the results with other relevant studies, state the limitations of the study, and explore the implications of the findings for future research and clinical practice.

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**Table 1.** Reaction time (in seconds) of schizophrenics and normal subjects for different types of sensory stimulation.

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p < .01*,  p < .001**

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Book Review

Reading Difficulties and Dyslexia: An Interpretation for Teachers
Author: J. P. Das, 2009 Sage, New Delhi, India, 198 pages

This book is written for teachers in an authoritative but comprehensible manner, explaining the most intricate things about reading difficulties and dyslexia. Das is well known for his contribution to information processing theory of human intelligence, particularly for his PASS model that involves Planning-Attention-Simultaneous-Successive.

Apart from presenting the theoretical issues concerning this model, in this book the author attempts to explain its practical implications in teaching children with dyslexia, hence, a valuable companion for teachers, parents and professionals working in this field of reading disability. The book is divided into three sections: Understanding Reading difficulties, Remediation of Reading and Learning Difficulties and Next Step. Part I of the book focuses on the nature of reading difficulties and dyslexia, whereas Part II and III deal with this condition using information-processing approach. In the Epilogue: New Horizons of Understanding Reading the author provides a brief and kaleidoscopic view of the current scenario of research in reading disabilities.

In Preface of the book, the author uses PASS theory of cognitive processing to explain many unexplained aspects of reading difficulties. The book has gone a step further in offering remediation programs derived from the theoretical framework of PASS. It reintroduces the Das-Naglieri Cognitive Assessment System (CAS), that has been used in several countries for diagnosis and understanding of the underlying cognitive deficits in readers.

The author explains dyslexia as a disability associated with inability to translate written language to speech. Diagnosing dyslexia, in terms of cognitive processing is the main theme of this chapter. Explaining the ‘garden variety’ of dyslexia, the author also cautions about the possibility of overinclusion of children with cultural disadvantage, emotional disturbance as well as sensory deficits in this group. This group may have intellectual or cognitive processing problems in many areas, and not only in putting things in sequence. He explains that good readers read by sight and sound — the familiar words by sight and unfamiliar ones by sounds. Whereas, the most common difficulty that is found in dyslexics is inability to sequence sounds and words in order. Therefore, he emphasizes on the role of early auditory discrimination in phonological coding of words as a basic skill for reading. He shares the belief that phonological awareness through identification, phoneme manipulation and sound blending can predict reading skills. In formative years of life, the nursery rhymes can play a vital role in developing these skills. He also suggests that tasks such as rhyme production (nursery rhymes), oddity, sound blending, syllable splitting, phoneme manipulation and phoneme segmentation are useful in assessing phonological awareness of children.

Highlighting Uta Firth’s (1986) work, the author explains the symbolic, pictorial, alphabetic and orthographic stages of reading development and goes on to explain the relationship between reading, speech and the brain activity. The neuro-imaging data generated by Posner and Raichle (1994) have been corroborated to explain differential activity in the brain while viewing words, engaging in speech, listening to speech and generating verbs.

A key chapter of the book is, ‘Explaining Reading by Intelligence’. It explains the PASS theory of intelligence not only as an alternative to the traditional theory of measuring intelligence but also as a method of understanding reading
difficulties. The model is based on Luria’s analysis of brain structures in terms of functional units (Luria, 1966, 1973). The focus of this chapter is on cognitive process instead of IQ.

Remedial programme based on PASS model, called PREP (PASS Reading Enhancement Program) has been introduced as a systematic remedial approach to reading difficulty. In this context Vygotsky’s (1978) work on guided discovery of learning is highlighted in remedial programming. The socio-cultural act involved in learning process that facilitates ZPD (Zone of Proximal Development) occupies a central theme in this program. Remedial programme is seen as a reflection of the world of cultural transmission in a microcosm. The micro-genetic, socio-cultural and rehabilitation aspects forms the basis of this remedial intervention. Reorganization and substitution were considered as the two core processes involved in this remedial programming. Finally the author introduces COGENT (Cognitive Enhancement Training) Program has been illustrated through several modules and case histories. Its effectiveness have been illustrated by citation of evidence from the recent work conducted on disadvantaged children (e.g. Das, Hayward, Samantray and Panda, 2006; Hayward, Das and Janzen, 2007). In the concluding chapter ‘The Way Forward’ the author attempts to ponder, if this model would work with mathematical and writing disabilities and other varieties of reading difficulties as well. Finally he looks for an integration of this approach with other contemporary views of reading.

The simplistic and conversational style of presentation make reading of this book a pleasurable experience. Although written primarily for the teachers, the book attracts a wide readership. The sytematic and nvel approach of this book puts it in one of the must read clas of books on remediation of dyslexia. It leaves the feeling of a work by a master craftsman, who has combined story telling with empiricism and nursery ryhmes with hard facts of science.

References


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Quite some back, I came across a Hindu woman in her forties brought to a mental hospital for treatment for vermillion phobia. Although married, she was unwilling to put sindoor (vermillion) on her forehead. Her fear was over generalized to such an extent that even she was avoiding red clothes. It caused significant distress to her family. A series of careful interviews revealed that she was being frequently tortured by her architect husband. Many a times she used to be tortured in lonely places, after being taken there for a change. The lady bore the marks of cigarette burns on her body. She was unable to relate her fear of red things to any precipitating incident directly, hence, the phobia was looking dramatic and out of place. Later, she could only remember distinctly, view of the animal being killed or her husband threatening to throw her from a moving train. These traumatic memory could have either triggered the psychopathology or even exacerbated her symptoms. Later, I met her husband. He was deceptively so gentle, friendly and articulate in speaking that even with the best stretch imagination one cannot think that she was describing about this man. There can be wild and varied interpretations of her psychopathology. However, what was most distressing for me was her silent tolerance for torture to the extent of a psychological breakdown.

In another place, I saw and adolescent girl, who was abandoned and languishing in a mental hospital, being labelled as mentally retarded. That time public facilities and awareness about this condition was poor. She was near-mute. However, what was most striking to note was that, she was attacking at the eyes of the treating clinicians, particularly those wearing spectacles. Both of her parents were in respectable professions, who had stopped visiting the hospital. I had no way to establish the reason. Whether any of the parents were wearing spectacles or she had an unfortunate experience with such a person during her hospitalization. She was almost mute, and had only monosyllabic speech to communicate. The parents had perhaps forgotten her, and it was difficult to find out their whereabouts.

Yet another case was a 14 year old Muslim boy, slapping on his face so badly that I could hear the sound from a distance and see his face turning blue with the impact. In order to refrain him from slapping, the family members used to tie both of his hands with a pair of bricks and guarding him through out. While opening, I could see the permanent marks of the strings tied on to his wrist. It appeared inhuman. But interesting when I asked the caretaker to open the string to remove the bricks, the boy was desperately asking me to tie them up again so that he cannot slap his face again.

Face-slapping appeared for the first time, when he was being verbally abused and slapped by a class-teacher in front of his classmates, for some obscure reasons. Operant conditioning techniques brought promising improvement in the behaviour. However, when I returned after a break he was already being discharged. Later, I came to know that he was no more. The reason of death, I could not know, but the guilt still remains in me. Clinical psychologists come across many such cases even more striking ones than the ones that I described. Under traumatic stress—they break down. Some plunge into the unfathomable depths of insanity from which there is no return, no mater how you treat, interpret or label their psychopathology.

Outside the walls of mental hospitals too we come across a large number of people who are displaced from their homes, states or countries due to terrorism-- some are even state sponsored. Some are victims of racial and communal violence, that reveal the darkest sides of human nature. The psychic wounds inflicted by perhaps all...
forms of aggression, violence and neglect are the breeding ground for psychopathology, wherein learned helplessness uncontrollable rage, and/or feeling of overwhelming powerlessness and despair abound in the psyches of the victim (Hooks, 1996). This observation is equally applicable to the victims of all interpersonal stress causing trauma.

The common thread that runs through the lives of all these people is experience of discrimination, torture, or abandonment. Many of them are hounded and driven to the state of insanity— to a point of no return, leading a stuporous and vegetative life in some mental health institution or in the dark world of the prisons for rest of their lives. Many such real stories, and experiences of these victims remain untold— go unreported even while conducting in depth clinical interviews. The victims do not reveal them due to fear of retaliation. Some prefer to remain silent, while others take up arms fighting against the aggressor till end of their lives. In many of these case there is no eyewitness to testify the crime and such cases do not attract clinical attention as long as the victim breaks down and brought to the hospital for treatment, or desperately appeals to the law enforcing agencies for justice.

Torture is a human behavioral phenomenon that is critically understudied. While reliable estimates of the worldwide prevalence of torture are difficult to obtain, Human rights groups such as Amnesty International suggest that instances of torture are reaching near epidemic levels and that it affects the future generations (Campbell, 2007). Such interpersonal abuses are in fact assaults on the self-concept, identity, cognitions, and affects. Sue (2003) viewed them as the “toxic force”. Those who are “wounded” in this manner require to be attended to in ways that will empower them and promote their holistic state of well-being (Clark, Anderson, Clark & Williams, 1999). The psychologically wounded and perturbed behaviour requires immediate intervention not only to relieve the psychological distress of the victims’ but also from his/her tendency to retaliate and project the counter aggression onto others. Both of which have far-reaching personal consequences. Several laws have been enacted to protect human rights in all countries of the world, but interpersonal violence continues to have its tolls. Millions of people are victimized for their colour, creed, caste, gender, race, physical or psychological infirmities.

One of our previous editorials was devoted to the intricacies of the memory systems in post-traumatic stress disorder (PTSD) that mediates the symptoms and its treatment implications. The story would remain incomplete if it remains confined to PTSD Type-I alone, in which the negative health consequences following a specific trauma is perceptible. But there is a second type of trauma which could be of low intensity but spread over considerable period of one’s life i.e PTSD Type-II. A large number of people in this world suffer from this kind of chronic trauma due to discrimination and victimization, economic inequality, racial prejudice, regionalism, or religious fundamentalism but suffer silently experiencing low level of trauma throughout their lives.

One may well imagine the plight of a child subjected to physical and mental abuse by her own parents, an employee harassed by his powerful boss, or an innocent detainee who is tortured for years or people living under constant state of terror due cross-border violence and terrorism. We do not have an exact figure as most of such incidents go unnoticed until it manifests either in full blown psychopathology, suicide, homicide or collective retaliation by the victims. The state pays a heavy price for it.

Suffering citizens are like weak building blocks in the mega structure of a civil society that may weaken or even dismantle entire structure. Hence, it is necessary to develop institutions and systems for care for them. In this context the feelings, cognitions, and behaviours for the victim needs due consideration.

Individual psychotherapy and group techniques should focus on the issues of denial and trust, loss, survivor guilt, and reparation. Future research needs include the
conceptualization of the trauma of torture and its sequelae in broader terms, the application of standardized measurements to facilitate international comparisons, and the testing of various approaches to intervention by using different experimental designs (Allodi, 1991).

Interestingly, many forms of such atrocious behaviours are committed even unknowingly, as it becomes a negatively reinforced habit, driven by relief from the idea of being prosecuted or punished by law. The action becomes resistant to change as the extra-punitive impulse insulates the predator from ‘reality testing’. Some of these acts are organized and executed for collective benefit for a defined group. There are visible as well as invisible dynamics of racism and violence. Although we cannot expect a panacea or a cure for such social pathologies but can certainly hope for providing expeditious psychological services to such people. The incidence of such interpersonal crimes is alarmingly high. In spite of stringent criminal laws, constitutional provisions, their fundamental rights are infringed. Today much activism is required on the part of mental health professionals to safeguard the right of their client. Restoration of their rights to lead a respectable life itself ensures restoration of their mental health. Psychological therapies are only some means to these ends. Supportive psychotherapies particularly in cases of interpersonal trauma, help in restoring the confidence on humanity. The therapist is in a unique situation to act as a role model to develop understanding and trust on people. It needs not only scientific attention but also a therapist’s healing touch.

References


S. P. K. Jena, Editor
Honorable Friends, Colleagues, Ladies and Gentlemen!

I rise with a heavy heart to present before you what I would like to call this interim performance report on my achievements and letdowns over the last two decades. This time and occasion is fortuitous. I do not know whether it is an accident or some mysterious mystical design; let me confess, friends, it was exactly in this same premises I began my life mission for the cause of disability twenty years ago. My clinical instruction at NIMHANS was over. I was just equipped with an extremely theoretical, bookish and western flavored training in a helping profession. Like all neophytes from pioneering institutions, I was also riding the skies. The world was at my feet. Or I thought so, at that time. I can do just about anything or everything for the cause of disabled. Such was my over confidence. With fiery dreams, armed with several academic, pedantic and abstract ideas, I first entered the portals of this very institute (then called the 'Hyderabad Special School') seeking a job placement. I even volunteered a three month honorary service to the then 'in-charge' in anticipation of my final results that was due from my alma mater. I received the first practical lesson of my professional life when the gentleman asked few questions on children with disabilities and summarily dismissed all my credentials by curtly telling me to get back after my results are out!

The incident made me seriously think over the contents of the highly valued training which I had just completed. My training in the field of mental retardation had included twice opted postings at a ‘MR Clinic’. It was coupled with a year long dissertation on the same subject. All this was naught to even face the arrows of a few basic questions on the practical battleground. Having been trained under the medical model and the tutelage like Dr. HS Narayanana—a veritable mobile dictionary of medical syndromes; in the field of mental retardation, I knew the names of several syndromes. I could spot diagnose rare conditions, or refer such cases for a causal verification to biochemical or radiological investigations. At that time, I had the knack even to say which recent journal on what page contained a related research article on the topic!

Alas! I realized how much less I knew on actual classroom arrangements, special curriculum or management of children with mental retardation, grouping kids with special needs, handling cases with multiple handicaps, working with families, community or extended members, etc. It was professionally a difficult transition in those early 1990’s from the ‘medical model’ during training to the ‘rehabilitation model’ in actual practice. The situation appears to be much the same even today. As a profession, I can still see clinical psychology in India reluctant to leave the bedside and institution based medical approaches. There is still lot of hand holding by other dominant co-professionals from other fields before the clinical psychologist gains an independent identity. It appears that we are still caught between playing second fiddle to other dominating professions and venturing out into fresh or more challenging pastures in the field of contemporary mental health and disability management.

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Manpower Development

All this raises the perennial issue of manpower development in the field of clinical psychology. For long, we have comfortably encased and ensconced ourselves in the pseudo pride of one or two national level institutions churning out specialists for foreign consumption rather than domestic or national utilization. We have been reluctant to let go ourselves in terms of expanding on quantity for presumed fears of diluting on quality or ‘minimum acceptable standards’ in personnel training. The country continues to invest heavily on super specialty manpower training in the field with dismally low return on investments. We all owe a moral responsibility and answer to the several millions of waiting, illiterate, unattended and untouched countrymen with mental health problems or disability issues.

Even as a proportion of our high end quality conscious, expensive and individual intensive long term human resource development programs are encouraged or continued at national level institutions or with private-public partnerships for the convent educated, elite and privileged few; we need to simultaneously evolve, encourage or work on lower end, open distance learning, and out reaching courses for the consumers of our services. This was the philosophy and intention behind my recent journeys to collaborate with open universities or allied institutions to start such programs on ‘Parenting Infants and Toddlers’, ‘Managing Problem Behaviors in Children’, ‘Home Based Disability Management’, ‘Certificate Course for Caregivers of Children with Developmental Disabilities’, ‘Life Skills Education’, ‘Adolescent Mental Health’, ‘Basic Counseling’, etc. All this does not mean that the high end professionals in the field of clinical psychology will go out of job. Nor does it necessarily ring the death knell for a lofty profession. Rather, I look upon this as an excellent opportunity for social engineering and action in sectors hitherto unexplored or unattended by all of us. By doing so, the profession can establish its public relevance ands credibility. It can help gain a rationale to evolve related state level or national level programs. Probably, in this regard, we need to take cue from recent developments in the fields of speech and hearing!

The profession of clinical psychology has been continually weighed down with a confusion to join hands with the Rehabilitation Council of India or to stake claim for an independently recognized council. Unless this identity crisis is resolved, it would be difficult to think of long term augmentation schemes for increasing the quality and quantity of specialist human resource in this discipline. There is a possibility for floating or establishing an ‘Institute of Chartered Disability and Rehabilitation Professionals in India’ (ICDRPI) in the manner of ‘The Institute of Costs and Works Accountants of India’ (ICWAI), ‘The Institute of Chartered Financial Analysts of India’ (ICFAI), ‘The Institute of Chartered Accountants of India’ (ICAI), the ‘Diplomas of the National Board’ (DNB) or similar others. These bodies offer certification and license professionals at foundation, intermediate and final levels in their respective fields after evaluating the theoretical and practical professional competencies. A short term compulsory internship or article ship with a recognized fellow may be mandated as minimum adjunct to taking these competency based open examinations. These measures are likely to bring greater professionalism into the disability sector that is otherwise dyed by pretentious philanthropy, sop sentiment and close fisted charities (Venkatesan, 2002).

Research

Owing to the predominantly strong curriculum base on statistics and applied research both at post graduate and pre-doctoral levels, any typical student of clinical psychology has considerable edge over allied professionals. Hence, it is small wonder that clinical psychologists are often the first considered choice as faculty for the teaching these subjects at many undergraduate or post-graduate levels.
Venkaesan/ A pilgrim’s progress..

in related professional courses like speech and hearing, special education, physiotherapy, occupational therapy, social work, human development, food and nutrition, etc. This being so, it is naturally expected that the quality and quantity of research in the field of clinical psychology is on an average superior to others. After all, the field also carries the prestige value and insignia of having founders of several statistical techniques and research designs.

However, unfortunately, a review of contributions from the field of clinical psychology particularly in disability sector is dismal. Take the example of an extensive bibliographical survey of research in the field of mental retardation undertaken by Indian investigators on populations within the country and published in over 100 national journals spanning sixty years (Venkatesan and Vepuri, 1995). It was found that in the surveyed period, there were no more than 1095 (68.91 %) research articles on mental retardation, 15 (0.94 %) papers on autism, and only 4 papers (0.24 %) on learning disabilities. Based on area-wise distributional analysis of the bibliography on mental retardation, it was reported that there were 194 papers (17.72 %) covering psychological aspects only after 439 articles (40.09 %) on medical aspects of mental retardation. Most of the topics addressed in research by psychologists related to diagnostic assessment (N: 53; 27.32 %), nature and characteristics (N: 28; 14.43 %), behavior modification (N: 21; 10.83 %), cognitive aspects (N: 20; 10.31 %), counseling and psychotherapy (N: 16; 8.25 %), and so on.

Apart from several other grim details and without commenting on the quality or repetitiveness of studied areas in the undertaken research, this study concluded that disability and impairments is the most neglected area of study by all professionals (including psychologists). There were hardly papers on topics related to early intervention services, prevention, inclusive education, consumer behaviors, professional conduct, changing perspectives or definitions of disability, mainstreaming, community based initiatives, access audit, empowerment issues, community impact evaluations, historical analysis, cost-benefit studies, etc.

Going by the preceding analysis, at an individual level, it prompted the following personal agenda for my research in the area of disabilities and impairments over the last two decades.

(a) Individual Papers

For the convenience of easy understanding, most of my individual papers maybe classified as falling under different categories of disabilities. They can also be classified in terms of their content areas: prevalence, diagnostic assessment, play behaviors, consumer demand, professional help seeking behaviors of parents, problem behaviors in children, home training, effective use of behavioral techniques, self or other perceptions, parent or caregiver stress, public attitudes, employment opportunities, exposure to regular school settings, reported etiology, knowledge or awareness on available benefits and concessions for the disabled, etc.

Another significant line of my research has gone into the much needed periodic revalidation of antique tests used for assessment of children in our country. Our is probably the only country where practicing psychologists continue to use a six-seven decade old version of intelligence tests or adaptive behavior scales. We make standard comparisons of kids belonging to the present ‘super computer and information age’ with norms and manuals prepared in the west or those that were prepared in ‘before-man-in-the-moon’ era of our country. In most instances, there are no adaptable or adjustable norms for children with special needs, minority groups, kids from rural areas, the under privileged, neglected, discriminated and marginalized. In as much one may fault normative approaches and attempted comparisons between kids, at least for purpose of certification and tentative impressions on diagnostic deviations, periodic up grading of such norms is indispensable. In view of this, most of my individual papers were addressed to reporting revalidated norms for popular tests, such as, Bender Gestalt Visuo Motor Test (1991), Binet

Diagnostic assessment and statement of deviations or delay in a given child with disabilities from the so called ‘normal’ children alone does not complete the job of a clinical psychologist. In fact, this is just the beginning of identification probably for certification. However, the real work would be to plan a program for intervention, remediation or correction. There was a time in early 1990s when there was hardly any sensible curriculum on ‘what to train (or teach)’ for children with mental retardation. Special schools were wont to pile up a group of such children (as is done in most regular schools even today), use ‘chalk and talk’ methods to rote recite multiplication tables, ‘facts’ from a primary school text book on science or history, even while the same child could not probably wash his hands or even wipe his leaky nose!

At that time, there was a need for structured, systematic and standardized curriculum for children with mental retardation. Such a curriculum had to be flexible, easily age graded, developmentally viable, functional, objective, observable and measurable—all and at the same time Indian at heart. An attempted answer for this problem was the development and standardization of ‘Behavior Assessment Scales for Children with Mental Retardation (BASIC-MR)(1992), the Activity Checklist for Preschool Children with Developmental Disabilities (ACPC-DD)(2004) now the ‘Assessment of Kids with Special Handicaps in Arithmetic and Reading-Writing Activities’ (AKSHARA)(2008). More such intervention based ready-made and easy-to-use Indian scales are required to meet the exclusive needs of kids with multiple handicaps, severe-profound handicaps, etc. But, once again, giving such recipe based checklists on ‘what to teach’ alone will not satisfy the requirements of parents, teachers or end users. They also need to be accompanied by ‘manuals’ or ‘do-it yourself kits’ on ‘how to teach’ the kids with disabilities. And, what’s more! This entire package must come in regional languages. This is the understanding and logic behind the now popular ‘Toy Kit for Kids with Developmental Disabilities’ (2004) made available in English and Kannada.

Things must have definitely improved today. But, it is not the same for all kids with special needs. Take the instance of children with learning disabilities (a terrible term word for kids with average intelligence and a cruel curriculum imposed on them). Every school kid is expected to go through the same grind: history, geography, environmental science, computer science, physics, chemistry, mathematic, algebra, trigonometry, calculus, banking and accountancy, statistics, and so on. They have to learn all of them irrespective of whether one will use them in later life or not. Clinical psychologists have a far greater role and responsibility towards several thousands of such children out there in every school–more than simply issuing a certificate or report of learning disability!

Papers were early worked out to discover that the most sought after issue related to consumer demand for services in the area of mental retardation is corrections for speech and management of problem behaviors in home settings (1988). It was also found that there are differential perceptions on problem behaviors and their management in the service seekers between parents, teachers, grandparents, and others (1989).

(b) Technical Projects

We have entered an era of information age. It is time that contemporary professionals in the field of clinical psychology re-adapt to the call or need of the hour. We have to shed ancient attitudes and ways of working. There is a need to combine clinical psychology to the gadgetry of modern information technology. A sample of this kind was worked out in the development and standardization of a computer based software program for faculty evaluation which is being successfully and currently used at AIISH. This is apart from the work in progress to develop expert systems for enabling diagnoses and
computer based intervention planning and programming for individual children with developmental disabilities.

Online assessments, chat rooms, e-based discussions, consultations and therapeutic self help groups are becoming increasingly popular even in our country. A recent paper on content analysis of transcripts derived from data mining of 3436 email exchanges in a organized internet group on of netizens revealed that many parents are lost in the quagmire of information overload as they discuss/seek more than 238 types of treatment for children on the autism spectrum (Venkatesan and Purusotham, 2008). Unless the contemporary practitioners in the field become computer savvy there is likelihood of their being left behind in the ongoing race between man and machine. Further, the calamitous outcome of over involvement of contemporary human living with machines in preference for human interactions have also resulted in loss of social niceties, emotive skills, person to person exchange competencies, and the like-all of which is an important material for investigation in the field of positive mental health. This has been demonstrated in another paper on the 24-hour activity log of typical kids on the autism spectrum and those with developmental disabilities which reported the amount of time spent per day on needed constructive activities like ‘home teaching’ (4.32%) or ‘playing with peers’ (4.12 %) are meager (Venkatesan, 2004).

(c) Mass Contact Programs

It is one thing to innovate, create, design or develop models or services for special populations of individuals in the country. It is quite another thing to disseminate, distribute and dispense them for the ultimate benefit of end users. The profession needs to go out and create that unique selling proposition to be able to reach the consumers and needy masses. The target group that needs to be addressed is vast and wide. But, time is short and fleeting. A relevant example for making public contact as proposed agenda for clinical psychology is the ongoing state level project at AIISH, Mysore, on ‘Sensitizing Teachers on Academic Problems in School Children Enrolled under SSA in Karnataka’. The ongoing project entails training about 700 resource personnel from all over Karnataka in batches of 40 each per month by organizing inputs on teacher education, identification and classroom management of children with academic problems.

Further, there is a host of agenda for research waiting on interdisciplinary or trans-disciplinary, policy based, problem focused and collaborative studies in the field of disability rehabilitation. It maybe worthwhile even to consider a Research Advisory Body within the precincts of this august association which will serve as thinktank, watchdog, mentor, monitor and give direction for research in the so far neglected area. It will minimize the unnecessary replication, repetition, and reinventing of the wheel that has become the bane of research in disability sectors in our country.

References


Working Memory Functioning in Intellectually Superior Children with Variations in Nature of Distractors and Trait Anxiety Levels

1Amrita Panda and 2Sonali De

Research with Baddeley’s Working Memory Model has identified a host of task-related and emotional factors that interfere with executive functioning of working memory. Substantial research evidences have established that poor working memory skills impair children’s abilities to learn during the school years. The present study investigated the effect of nature of distractors on the executive functioning of intellectually superior children with different trait anxiety levels. Eighty intellectually superior children between 7 to 10 years of age were divided in high and low trait anxiety groups. Subjects performed a working memory task: Counting Recall, where the nature of distractors was varied, using software program in a dual task-paradigm. The results confirmed that there is a significant inhibitory effect of distractors on executive functioning of children. The high trait anxious children took longer information processing time, but finally attained similar task-accuracy as low trait-anxious children. The findings of the present study can be utilized to facilitate memorization of children by manipulating the distractors in the environment and to prevent academic failures in arena.

Keywords: working memory, trait anxiety, distractor, dual-task

Working memory is the theoretical construct used in cognitive psychology to refer to the system of mechanisms underlying the maintenance of task relevant information during the performance of a cognitive task (Baddeley & Hitch, 1974; Daneman & Carpenter, 1980). In recent years, the term Working Memory has been developed to emphasize the functional role of STM as a part of an integrated system for holding and manipulating information during the performance of cognitive tasks (Baddeley, 1986, 1992; Baddeley & Hitch, 1974).

The original Baddeley and Hitch model (1974), assumed that a central executive controls working memory. As for dual-task performance, since the onset of the resource theories of attention during late 1970s and the early 1980s (Navon & Gopher, 1979; Norman & Bobrow, 1975; Wickens, 1984), not much theoretical advancement is achieved to characterize dual-task performance and explain how people manage to coordinate between multiple tasks simultaneously. Dual task paradigm is defined as a phenomenon where a secondary task is performed along with the target cognitive task, where both the tasks are considered to tap primarily the same subcomponent(s) of working memory. Studies reflect that interference effects arise mainly because of representational similarity. In dual-task situations where the two tasks require processing of similarly represented items, interference effects can substantially impair performance (Baddeley & Lieberman, 1980; Logie, 1986; Shah & Miyake, 1996; Yoon et. al., 2005).
The influence that anxiety exerts on motor performance has received much empirical attention in the domain of cognitive psychology (Cerin et al., 2000; Eubank et al., 2000). Cognitive Interference Theory (Sarason, 1988) argued that the negative performance effects of anxiety are largely due to the manner in which worry and other forms of cognitive interference (such as self-preoccupation) causes diversion of attention from task-relevant cues. Quite similarly, Processing Efficiency Theory (Eysenck & Calvo, 1992) predicts that cognitive anxiety in the form of worry subverts the processing and storage capacity of working memory, thereby reducing the resources available for the task at hand. However, processing efficiency theory further predicts that as well as occupying working memory capacity, worry may also stimulate increases in on-task effort, which may partially or totally compensate for reduced performance effectiveness, thereby, conforming the contention of processing efficiency theory that there is a control or self-regulatory system (Hockey, 1986) involved in mediating the effects of anxiety on processing and performance (Eysenck & Calvo, 1992) by adaptive coping, that is again a characteristic of high trait anxious as opposed to low trait anxious individuals.

Several researchers reported non-significant differences between high- and low-anxiety subjects pointing out that there were no significant relationship between trait anxiety and performance (Rogers & Battig, 1972; Muller, 1976a; Spielberger et al., 1972). Though other studies (Standish & Champion, 1960; Elliman et al., 1997) found significant differences in response speed among high-, medium-, and low-anxiety subjects. Saltz (1970), Phan et al. (1998) suggested that high-anxiety subjects are sensitive to failure and anticipation of failure (i.e., ego threat), whereas low-anxiety subjects are sensitive to stress induced by pain.

Keeping in view the apparent contradictions of findings in the interaction of working memory functioning with distractors and variant anxiety levels of the samples in the long course of research attempts, the present study aimed at finding a more comprehensive picture of the effect of distractors on working memory functioning, in intellectually superior subjects, varying in their trait anxiety levels.

**Method**

To study working memory functioning in intellectually superior children with variations in nature of distractors and trait anxiety levels, a quasi-experimental design was set up. The stimulus was presented using a software program, designed to maintain greater control over the experimental conditions. The central executive functioning of working memory was explored using Counting Recall task. The effect of distractors was observed using three variant conditions: Control Condition (CC), Experimental Condition 1 (EP1) and Experimental Condition 2 (EP2). In CC of counting recall task no distractor was presented. EP1 consisted of a target task-irrelevant distractor (semantic distractor, color stroop task) and in EP2 a task-relevant distractor (numeric distractor, number stroop task) was presented along with the target working memory tasks, in a dual-task paradigm.

The Color and Number Stroop Test was designed by the authors for this particular study. The concept was taken from the study by Kim et al. (2005). In the Color Stroop test a pair of color patch and color naming word was displayed simultaneously on the screen. The color patch and color word combinations i.e., the color stroop task came as a dual task with the original working memory task (i.e., counting recall). The color patch and the meaning of the color word were similar at times and at times they were different as well. The font color of the color-words was at times same as the color patch and the meaning of the color word and at times they were different. Subjects were instructed to press the right handed arrow key only when the color patch, meaning of the color word and the font color of the color word, all indicate the same color.
In the number stroop task number words (two, four, six) appeared on screen in different frequencies along with the original working memory task. That is, number word TWO at times appeared twice (i.e., TWO, TWO) and at times appeared more or less than twice. The subjects were asked to press the right-handed arrow key, only when the meaning of the number word and their frequency of occurrence were same (i.e., when the number word TWO appeared twice, not when the number word TWO appeared thrice, or once, or four times).

Purpose of this study was to find the effect of nature of distractors on the executive functioning of the subjects and to find the effect of levels of trait anxiety on the central executive functioning of the subjects.

Sample

80 children, 40 Boys (Mean Age 8.85 Yrs, SD1.23 Yrs) and 40 Girls (Mean Age 8.58 Yrs, SD1.26 Yrs) from age group of 7-10yrs were taken for the study. Subjects belonging to age group 7 to 10 years were only included in the study. Children whose Abstract Intelligence scores, as measured by Colored Progressive Matrices were found to lie between 30-36 were only included in the study. Subjects familiar with basic computer skills were only included in the sample of the study. Subjects who belong to middle to upper socio-economic classes were only included in the study. Those who do not have a negative attitude towards numeric problems were only included in the study.

Tools

1. Working Memory Software:

A software program developed by the authors was used to assess the working memory functioning of the children. The target task was counting recall, where, number arrays were displayed on the screen. Each number array consisted of single number digits, i.e., digits ranging from 0 to 9. The total number of digits in each array was 3, and it was possible that the same number of digits can repeat itself in a single array. The arrays were displayed for a constant duration (8000ms) and the inter array interval was maintained at 6000ms in every trial. Three consecutive array displays were defined as a trial. After completion of each trial a ‘Memory Test’ took place.

2. State Trait Anxiety Inventory for Children (STAI-C):

Only the T-Anxiety Scale, C 2 was used to measure trait anxiety levels of children. The test-retest reliability coefficients for the STAI-C separately calculated for Trait Anxiety for boys and girls in Bradenton normative sample were .65 and .71, respectively. This moderate, correlation coefficients probably reflect both a limitation in the psychometric properties of the scale and the instability of personality structure in children of this age. It may be noted, however, that the stability coefficients for the T Anxiety scale were considerably higher than those for the S Anxiety scale (0.31 and 0.47, respectively).

The alpha reliability of the STAIC S Anxiety scale, computed for the Leon County sample by Kuder Richardson formula (as modified by Cronbach, 1950: alpha co-efficients), for the T Anxiety scale, the were .78 and .81 for males for females, respectively.

3. Raven’s Colored Progressive Matrices (RCPM):

RCPM was used to assess general intellectual capacity of children. In an earlier normative Indian study, Rao and Reddy (1968), reported a product-moment correlation of .86. Hence, it is considered as a reliable measure of general intelligence for Indian children.

Procedure
School children, both boys and girls, belonging to the age range 7-10 years were given The Raven’s Colored Progressive Matrices (RCPM) and the State Trait Anxiety Inventory for Children (STAIC) to assess the general intellectual capacity and to find a measure of trait anxiety respectively. Children of both sexes belonging to the “intellectually superior” group as determined by their RCPM score (at or above the 95th percentile for their age group) were included in the sample for the final study. Subsequently subjects were assigned to high and low trait anxiety group, where subjects whose score in STAIC fell above or equal to the median score of the group were considered as the high anxiety group and those with scores lower than the median value belonged to the low anxiety group. Again, according to their scores on STAIC, subjects were assigned to the high and low trait anxiety group according to the median score of the sample group. Overall, the final sample consisted of 40 boys and 40 girls. All the samples were again assigned to the high trait anxiety (HTA) and low trait anxiety (LTA) groups, to explain a total sample size of 80 children, where each gender-anxiety group contained 20 children each.

In the Experimental Conditions along with original working memory task (i.e., counting recall), a stroop task appeared as a dual task. In EP1 it was color stroop task and in EP2 it was a number stroop task, to find out if the nature of distractors also have an effect on executive functioning of the subjects. The responses of the working memory task were measured in terms of accuracy and response time. Along with that, the accuracy and reaction time of the distractor processing were also recorded. Finally, scores of memory tests were also taken into account in terms of accuracy and total response time.

Results

To test the above hypotheses, a 3x2x2 repeated measure ANOVA was computed with the response time of counting recall task to find out the effect of distractor, levels of trait anxiety and gender variation, if any, of the subjects. The same statistical method was used to compute the accuracy of counting recall task to find out the effect of nature of distractor, levels of trait anxiety, and if any, gender variation of the subjects. A paired t-test was computed to explore if there is a significant difference in the effect of nature of distractors on the response time of counting recall task, taking two conditions at a time. The same procedure was used to explore if there is a significant difference in the effect of nature of distractors on the accuracy of counting recall task, taking two conditions at a time. The entire statistical analysis of the obtained scores was conducted using STATISTICA. The results are provided in Tables 1-6.

Table 1. Mean and Standard Deviations of the Response Time of Counting Recall Task for Control Condition and Experimental Condition 1 & 2

<table>
<thead>
<tr>
<th>Gender</th>
<th>Anxiety</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>High</td>
<td>13.30</td>
<td>3.02</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>10.88</td>
<td>3.38</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>12.09</td>
<td>3.39</td>
<td>40</td>
</tr>
<tr>
<td>Female</td>
<td>High</td>
<td>19.34</td>
<td>4.63</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>13.88</td>
<td>3.65</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16.61</td>
<td>4.96</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>High</td>
<td>15.11</td>
<td>5.86</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>13.59</td>
<td>3.32</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>14.35</td>
<td>4.79</td>
<td>80</td>
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Experimental 1

<table>
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<th>Anxiety</th>
<th>Mean</th>
<th>SD</th>
<th>N</th>
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</thead>
<tbody>
<tr>
<td>Male</td>
<td>High</td>
<td>27.74</td>
<td>4.05</td>
<td>20</td>
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<tr>
<td></td>
<td>Low</td>
<td>24.00</td>
<td>4.91</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>26.12</td>
<td>4.74</td>
<td>40</td>
</tr>
<tr>
<td>Female</td>
<td>High</td>
<td>30.80</td>
<td>5.18</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>27.96</td>
<td>5.55</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>29.38</td>
<td>5.49</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>High</td>
<td>27.85</td>
<td>4.80</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td>27.65</td>
<td>5.92</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>27.75</td>
<td>5.35</td>
<td>80</td>
</tr>
</tbody>
</table>

Contd..
Table 2. The Sources of Variance, the F-values of the Response Time of Counting Recall Task

<table>
<thead>
<tr>
<th>Sources of Variance</th>
<th>df</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distractor</td>
<td>2</td>
<td>355.644*</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1</td>
<td>16.959*</td>
</tr>
<tr>
<td>Gender</td>
<td>1</td>
<td>20.996*</td>
</tr>
<tr>
<td>Distractor x Anxiety</td>
<td>2</td>
<td>6.749*</td>
</tr>
<tr>
<td>Gender x Anxiety</td>
<td>1</td>
<td>9.426*</td>
</tr>
<tr>
<td>Distractor x Gender</td>
<td>2</td>
<td>1.028</td>
</tr>
<tr>
<td>Distractor x Gender x</td>
<td>2</td>
<td>3.651**</td>
</tr>
<tr>
<td>Anxiety</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.01, **p < 0.05

Table 3. The pair-wise mean, standard deviation and t-values of the Response time of Counting Recall Task of Control condition and Experimental condition 1 & 2 taken two conditions at a time

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>14.35</td>
<td>4.79</td>
<td>79</td>
<td>t_{CE1} = 26.41*</td>
</tr>
<tr>
<td>Exptl. 1</td>
<td>27.75</td>
<td>5.35</td>
<td>79</td>
<td>t_{CE2} = 14.63*</td>
</tr>
<tr>
<td>Exptl. 2</td>
<td>22.75</td>
<td>5.89</td>
<td>79</td>
<td>t_{E1E2} = 9.80*</td>
</tr>
</tbody>
</table>

*p < 0.01,  p < 0.05

The computed values as given in the result tables indicate that there is a significant inhibitory effect of distractor on the response time (Table 2 & 3) and accuracy (Table 5 & 6) of central executive
functioning. The target-task-irrelevant distractor had a more inhibitory effect than task-relevant distractor. (Table 1, 3, 4 & 6). There is a significant effect of trait anxiety on the response time of executive functioning (Table 2), where high trait anxiety group have a greater mean response time than that of the low trait anxiety group (Table 1). But there was no significant difference in the accuracy level of executive functioning (Table 5). The findings also suggest that there is a significant effect of gender on the response time (Table 2), as well as accuracy (Table 5) of executive functioning, where high trait anxiety group have a greater mean response time (Table 1) and accuracy (Table 4) than that of the low trait anxiety group. There is a significant effect of distractor anxiety interaction on the response time of counting recall task (Table 2), where the high trait anxiety group in task-irrelevant distractor condition required highest information processing time and the low trait anxiety group in task-relevant distractor required least response processing time (Table 1). However, no significant interaction effect is found in the accuracy measures (Table 5). There is a significant interaction effect of anxiety-gender on both response time (Table 2) and accuracy (Table 5) of executive functioning.

Table 5. Sources of Variance, F-values of the Accuracy of Counting Recall Task

<table>
<thead>
<tr>
<th>Sources of Variance</th>
<th>df</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distractor</td>
<td>2</td>
<td>161.408*</td>
</tr>
<tr>
<td>Anxiety</td>
<td>1</td>
<td>0.975</td>
</tr>
<tr>
<td>Gender</td>
<td>1</td>
<td>24.381*</td>
</tr>
<tr>
<td>Distractor x Anxiety</td>
<td>2</td>
<td>0.974</td>
</tr>
<tr>
<td>Distractor x Anxiety</td>
<td>1</td>
<td>9.426*</td>
</tr>
<tr>
<td>Distractor x Gender</td>
<td>2</td>
<td>22.041*</td>
</tr>
<tr>
<td>Distractor x Gender</td>
<td>2</td>
<td>5.167*</td>
</tr>
<tr>
<td>x Anxiety</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* P<0.01, ** P<0.05

Table 6. Pair-wise Mean, Standard Deviation and t-values of the Accuracy of Counting Recall Task of Control Condition and Experimental Condition 1 & 2 Taken Two Conditions at a Time

<table>
<thead>
<tr>
<th>Conditions</th>
<th>Mean</th>
<th>SD</th>
<th>df</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>2.83</td>
<td>0.19</td>
<td>79</td>
<td>t_{CE1}= 13.96*</td>
</tr>
<tr>
<td>Exptl. 1</td>
<td>2.20</td>
<td>0.46</td>
<td>79</td>
<td>t_{CE2}= 6.03*</td>
</tr>
<tr>
<td>Exptl. 2</td>
<td>2.62</td>
<td>0.33</td>
<td>79</td>
<td>t_{E1E2}= 9.08*</td>
</tr>
</tbody>
</table>

* P<0.01, ** P<0.05

High trait anxiety girls required highest information processing time resulting in lowest accuracy and the low trait anxiety boys’ group demonstrated least processing time and finally the high trait anxious boys attained highest accuracy level, though they took longer response time than low trait anxious boys (Table 1 & 4). It was also noted that there is a significant interaction effect of distractor-gender on the accuracy (Table 5) of counting recall task, but no statistically significant difference is found in the response time measures (Table 2), where boys in the task-relevant distractor attained highest accuracy and girls in task-irrelevant distractor showed lowest accuracy level (Table 4). A statistically significant difference is found in the distractor-anxiety-gender interaction, in both response time and accuracy measures.

Discussion

Cognitive distractions are strongly related to the nature of distractors (Baddeley et. al., 1975). Generally, it is assumed that when the nature of distractor differs from the primary task in a dual task paradigm, performance in both the tasks requires different resources to successfully accomplish both the task at the same time (Jack et. al., 1980). In the present study it was found that distractors had an overall inhibitory effect on working memory capacity. The presence of
distractor increased the information processing time, at the same time reduced the accuracy of responses in working memory task. In a dual-task situation, according to Baddeley & Hitch (1974), if the secondary task disrupts the performance of the primary cognitive task, when compared to the control condition, then it is usually inferred that the subcomponent tapped by the secondary task is involved in the performance of the primary cognitive task. Thus, in the context of the present study it can be assumed that the primary and secondary tasks used the same subcomponent of working memory in each of the dual task conditions. The traditional explanation (Kahneman, 1973) suggests that a fixed amount of flexibly deployable “attentional resources” must be divided between the two different tasks, supporting the simultaneous execution of both. A more recent explanation argues that one can pay attention only to one task at a time and, hence, the dual-task performance essentially involves the rapid switching back and forth of attention between the two tasks (Pashler, 1992), thus producing an inhibitory effect on the primary working memory task.

Results of the present study further suggest that presence of a target task-irrelevant distractor actually had a more inhibitory effect on working memory capacity than that of task-relevant distractor. Traditional researches reflected that interference effect arise mainly because of representational similarity. In dual-task situations where the two tasks require processing of similarly represented items, interference effects can substantially impair performance (Baddeley & Lieberman, 1980; Logie, 1986; Shah & Miyake, 1996; Yoon et al., 2005). On the other hand, it is assumed while task-irrelevant distractors focus the subject’s attention on a stimulus wholly unrelated to the primary task, the rapid switching back and forth of attention between the two tasks (Pashler, 1992) produce greater inhibition. Confronted with the dissonant situation, the subject focuses his attention more on resolving the dissonance. So, when a task-irrelevant distractor occurs along with the working memory task, the dissonance becomes more pronounced than that of a task-relevant distractor, resulting in a more inhibitory effect on task performance and thereby reducing the accuracy and lengthening response time of the working memory tasks.

The influence that anxiety exerts on motor performance has received much empirical attention in the cognitive domain (Cerin et al., 2000; Eubank et al., 2000). Eysenck & Calvo’s (1992) Processing Efficiency Theory (PET) predicts that cognitive anxiety in the form of worry subverts the processing and storage capacity of working memory, thereby reducing the resources available for the task at hand. However, processing efficiency theory further assumes that as well as occupying working memory capacity, worry may also stimulate increase in on-task effort, which may partially or totally compensate for reduced performance effectiveness. The present study revealed a significant effect of trait anxiety on the information processing time of counting recall task, where high trait anxiety children required more time to process information in executive functioning, thereby conforming the previous research findings that have shown a relationship between high trait anxiety and reduced working memory capacity (Dobson & Markham, 1992; Eysenck & Calvo, 1992; Markham & Darke, 1991; Sorg & Whitney, 1992). But, both the anxiety groups finally reached almost identical accuracy level. Therefore, no significant effect of trait anxiety is found on the accuracy of the working memory task performance, as predicted in the processing efficiency theory that the adverse effects of anxiety on performance effectiveness are often less than those on processing efficiency (Eysenck & Calvo, 1992).

A further contention of processing efficiency theory is that there is a control or self-regulatory system (Hockey, 1986) that is involved in mediating the effects of anxiety on processing and performance (Eysenck & Calvo, 1992). The self-regulatory system performs the task of
coordinating resource allocation based on outcome probabilities and relies on negative feedback resulting from the detrimental effects of anxiety on performance as a trigger for its activation. It is therefore possible to reduce or eliminate the negative effects of worry on performance by applying additional resources (e.g. effort or time) or activities (e.g. more efficacious strategies, seeking external assistance) to the task. Eysenck and Calvo (1992) argue that such adaptive coping is characteristic of high trait anxious as opposed to low trait anxious individuals. To explain the findings of the present study it can be assumed that high trait anxious children devoted more processing resources, that resulted in higher processing time but finally attained similar task-accuracy thereby refuting the prediction of Ramond (1953), Spence et. al. (1956a), Standish & Champion (1960) that as learning progresses and the correct responses become stronger than the incorrect responses and high-anxiety subjects should surpass low-anxiety subjects. Research evidence supports this prediction and indicates that there are fundamental differences between such individuals (Kverno, 2000). The high trait anxious individuals tend to devote more of their processing resources to worry, therefore increasing the probability of detecting a mismatch between expected and actual performance (Eysenck & Calvo, 1992).

Researches in test situations (Jerusalem, 1990; Smith et. al., 2001) has demonstrated that compared with low trait anxious individuals, high trait anxious individuals are also more sensitive to failure feedback (Eysenck & Calvo, 1992; Phillips et. al., 1980). This means that they are more vigilant to and more likely to detect a mismatch between performances and are also more motivated than low anxious individuals to allocate additional effort to task performance, thereby increasing the information processing time than that of low trait anxious children. From the behavioral observations of high trait anxious children in the present study, it was confirmed that their motivation as well as apprehension of failure was much higher than that of low trait anxious children, that could probably have accounted for the reduced processing efficiency of the high trait anxious individual, but, use of the self-regulatory systems, as proposed by Hockey (1986) mediated the effects of anxiety on performance effectiveness, i.e., the accuracy of the working memory tasks, that remained similar for both the anxiety groups.

The present study reflects a significant gender variation in working memory capacity. In central executive functioning boys depicted a faster as well as more accurate processing compared to the girls. Previous researches reflect contradictory findings regarding effect of gender variations on working memory capacity. In reference to Baddeley’s (1986) model, the study by Robert and Savoie (2006), Lambourne (2006) reflected no significant differences in working memory capacity as a function of gender. Whereas, studies by Geiger and Litwiller (2005) found gender differences in working memory capacity, where boys outperformed girls over working memory functioning. But the contradictions remain, and most importantly where a significant gender variation is found, it was evident that in most of the findings males outperformed females on working memory functioning, which was not sufficiently explained by cognitive psychology framework from the perspective of cognitive structural differentiations till date.

To account for the probable contexts of gender variation found in working memory capacity, the International Student Assessment Program (2003) highlighted that in some countries male dominated working memory performance was evident, at the same time, there were many countries where no such differences were found. So, the study reflected that the differences found in working memory capacity are culture specific. It assumed science to be stereotypical as a male activity, where girls have lower expectation of success (Eccles, 1987; Shinar, 1975). Thus the differences in executive functioning found in the present study can be explained from the social
perspective of gender typical behavior, as advancements in cognitive science couldn’t explain the phenomenon with convincing scientific evidences. The superior accuracy in the numeric task can be attributed to the social stereotypical perspective of male domination in numerical abilities. Moreover, to account for the gender differences obtained in the present study, the behavioral observations reflected girls to be a bit apprehensive regarding numeric problems as compared to the boys.

Again, as the stimulus used to measure working memory capacity was a software program, it was observed that though both the gender groups had similar exposure to computers in their school curriculum, the girls were initially apprehensive about responding to the stimulus through computer presentation. Abouerise’s (1992) study of students’ attitudes toward using computer-assisted learning (CAL) reflected that male subjects preferred CAL more than females did. It can thus be assumed that the differences found between the genders could probably be a reflection of the computer based learning procedure used to measure the working memory capacity, suggesting again the gender stereotypes of males.

The present study also reflected a significant interaction effect of distractor and trait anxiety levels of the children. It is found that the high trait anxiety group in task-irrelevant distractor condition required highest information processing time and the low trait anxiety group in task-relevant distractor required least response processing time. But no significant interaction effect is found in the accuracy measures. It reflects that each anxiety group has an independent information processing pattern with changes in the nature of distractors. Again, there is a significant interaction effect of trait anxiety and gender on both response time and accuracy of executive functioning, that reflects a distinct pattern of working memory performance of each gender group corresponding to each anxiety level. Where high trait anxiety girls required highest information processing time resulting in lowest accuracy and the low trait anxiety boys demonstrated least processing time and finally the high trait anxious boys attained highest accuracy level, though they took longer response time than low trait anxious boys. The findings indicate that initially worry increased the on-task effort for the high anxiety group, where it affected the high-anxious girls most, resulting in lowest accuracy for them on working memory task. But high-anxious boys reached highest accuracy, indicating increased on task effort that finally resulted in enhanced performance effectiveness for boys, as was predicted in the processing efficiency theory (Eysenck & Calvo, 1992). Further a significant interaction effect of distractor-gender on the accuracy measures are found, but no statistically significant difference is found in the response time measures, indicating that the variant nature of distractor inhibited working memory performance of both the gender groups in different manners. Where boys in the task-relevant distractor attained highest accuracy and girls in task-irrelevant distractor showed lowest accuracy level. An overall statistically significant difference is found in the distractor-anxiety-gender interaction, in both response time and accuracy measures, suggesting of an independent response pattern of each gender group, corresponding to each anxiety level and each levels of distractors in working memory functioning.

Overall, in the light of the present study, it can be concluded that working memory capacity of intellectually superior children varies as the function of nature of distractors by primarily inhibiting central executive functioning, with a more inhibitory effect of target-task-incongruent distractor. Again, the trait anxiety levels of children also have a pronounced effect on the information processing time of executive functioning, where high trait anxious children require more processing time than their counterparts. An enhanced executive functioning was also evident in the male children as compared to the female group.
Reference


Panda et al. Working memory in intellectually superior


Child-rearing Attitude of Foster and Biological Mothers: A Comparative Study

Sahana Mitra and Nandita Babu

Sixty mothers (30 foster and 30 biological mothers) having children in two age groups, that is 0-3 and 3-6 years were assessed on 8 child-rearing attitudes namely, acceptance-rejection (AR), dominance-submission (DS), encouragement-discouragement (ED), love-hate (LH), democracy-authoritarianism (DA), trust-distrust (TD), reward-punishment (RP) and tolerance-hostility (TH) taken from the Parent Child Relationship (PCR) test. The two-way analysis of variance showed a significant difference between the foster and biological mothers on the acceptance-rejection (AR) and love-hate (LH) dimension with no significant impact of the two age groups of children whereas no significant difference was obtained for the dimension of dominance-submission (DS); encouragement-discouragement (ED); reward-punishment (RP); trust-distrust (TD) and tolerance-hostility (TH). Furthermore, for the dimension of democratic-authoritarianism (DA), the results showed a significant impact of the two age groups of children on the attitude of both the foster and biological mothers. The theoretical and practical implications of the study are discussed.

Keywords: child rearing attitude, foster mother, biological mother, scripts, attachment, parental acceptance-rejection theory.

‘Mother’ has always been a generic term synonymous with love, devotion, and sacrifice (Bombeck, 1983). In The American Heritage College Dictionary (3rd Ed., 1993), the term mother is defined as “a woman who conceives, gives birth to, or raises and nurtures a child”. However, being a mother, then, is not only bearing a child - it is being a person who socializes and nurtures. It is being a primary parent or caretaker (Chodorow, 1978). Similar was construed in PAR Theory (Rohner, 2004). Smith, Surrey, and Watkins (1998) indicate that adoptive mothers are able to develop attachment relationships with the child just as the biological mothers (Terry, Elizabeth, Felicia & Jerison, 2003). Therefore, the term “to parent” refers “to raise and nurture” as specified in American Heritage College Dictionary (3rd Ed., 1993). The parent may be a significant other with whom a child has a relatively long lasting emotional tie, who is uniquely important to the individual and who is interchangeable with no one else and most studies indicate it’s the mother who is the prime attachment figure. As emphasized by one birth mother, “What we have to realize is that children are not possessions. Children are their own beings, adopted or not. At best, we can guide them. The birth parents have guided them into the world; the adoptive ones guide them through childhood.” Similar view was forwarded by Jones (1993). In a longitudinal study, Stams, Juffer and van IJzendoorn (2002) found that infants, who were placed before 6 months of age, had high quality of mother-child relationships in terms of attachment and maternal sensitivity. But the child development remains sensitive to environmental changes and stressful life events (Waters, Hamilton & Weinfield, 2000). It is important to note that there are no “scripts” on which foster mother or father work. The discrepancy may arise which is visible in biological parenting too (Schuengel & Bakermans, 1999).
The mother-child bond in early years of life

Attachment, according to Bowlby (1969), is the propensity to form strong emotional bonds with particular individuals; it has a survival value by bringing nurturance, protection and security to the infant. In addition, Tiffany Field’s model of psychological attunement (1996), considers attachment as a life span phenomenon. According to the model, one needs to accommodate multiple attachments to a variety of figures at different stages of life. While the sensitivity of the caretaker may play a large role in the development of attachment during 1st year, parenting becomes more complex during 2nd and 3rd years of life. Parenting changed during this 6 month period from one of mostly positive support to attempts to direct and teach the child, just as suggested by Waters et al (1991). A child for any mother holds different meaning; the meaning, which varies from a child who is seen as an extension of the self; having a child is seen as a way for the parents to celebrate their love, and raising children is seen as one of life’s major challenges (Chen & Wang, 2000). Even the normal maturation of the child represents, in every phase, is a new adaptive task to the parents, which involves the psychological resources of the parent; the quality of internal representations of relationships and their developmental history (Belsky, 1984). Mothering itself shows to be a ‘caring compartment’ of devoted holding shared by hearkening, harboring and preserving. Recent studies points to the role of mother’s state of mind. Dozier, Stovall and Albus (2001) examined 50 foster mothers-infant dyads where babies had been placed into the care of foster mothers between birth and 20 months of age. A high correspondence was seen between maternal state of mind and infant attachment quality, similar to the level seen in biologically intact mother-infant dyads. 22% were classified with dismissing state of mind, 54% with autonomous state and 24% with preoccupied state. These classifications are stable over periods ranging from 1 to 15 months (Sagi et al., 1994). The findings suggest that it is maternal characteristics, rather than shared temperament or other genetically linked characteristics that determine children’s attachment strategies. Similar was observed by Palacious (1990) when the results of Parents’ Ideas Questionaire were taken into account that parents bring to interaction not only a ‘definition’ or representation of the situation but also the ‘definition’ or representation of what a child is, how he/she develops and in which way he/she can reach development.

The childrearing attitude of the mothers

The observations of classic models of Schaefer (1959) and Symonds (1939) of child rearing attitude organized around two bipolar dimensions, autonomy-control and hostility-love assumes child to be passive entity were reported true by Barber and Harmon (2001) in several different cultures. Two different parental strategies have been examined in such child rearing attitude that is the use of regulative messages and comforting messages (Applegate, 1990) which are both directive in its nature helping in the child’s development. Recently, the literature presents the significant role of the parental acceptance-rejection theory (PAR Theory) that takes into account the individuals feelings when they were rejected by their attachment figures and the resultant outcome on the children. The theory suggests that the likelihood of parents displaying any given form of behavior (e.g., acceptance-rejection) is shaped in important ways by the maintenance systems of that society including such social institutions as family structure, household organization, economic organization and other institutions that bear directly on the survival of a culturally organized population within its natural environment. In the midst of varied child rearing practices as proposed by Baumrind (1991), the two dimensions often part of these styles are autonomy-granting, (Ryan, Deci & Grolnick, 1995) “the extent to which parents employ non-coercive, democratic discipline and encourage
the adolescent to express individuality within the family (Steinberg et al., 1991; Stewart & Bond, 2002) and psychological control, the extent to which parents place restrictions or limits on children’s behavior, and the extent to which restrictions are enforced (Rohner et al., 2000) through use of parenting practices such as guilt induction, withdrawal of love, or shaming. One key difference between authoritarian and authoritative parenting is in the dimension of psychological control. Both authoritarian and authoritative parents place high demands on their children and expect the parental rules. Thus, although authoritative and authoritarian parents are equally high in behavioral control, authoritative parents tend to be low in psychological control, while authoritarian parents tend to be high (Kochanska & Kuczynski, 1999).

The foster care in the Indian context

In traditional Hindu society there are two available options for a childless couple - one is remarriage and the other is adoption of a male child, preferably from within the family or from a distant relative. Adoption can be a most beautiful solution not only for childless couples and single people but also for homeless children. It is a social and legal process that enables a parent-child relationship to be established between persons not biologically related. It is defined as a process by which people take a child not born to them and raise it as a member of their family. By this one means that a child born to one set of parents becomes, legally and socially, the child of other parents and a member of another family and assumes the same rights and duties as those that are obtained between children and their biological parents. In this light, one can define foster care as a period prior to adoption of the child. This period ranges from 6 months to 2 years. It can be defined as the temporary arrangement where full time care of the child, 24 hours a day, outside the child’s own home or the institution. When the parents complete the foster period successfully, the child is finally given for adoption (Children Act, 1960). The prevalence of parents who want to have a child are largely opting for the girl child, (study by Central Voluntary Adoption and Resource Agency, CEVARA, 2004). Even official figures too point to the fact: In 2003 out of 285 babies given for adoption, 161 were females and 124 males. In 2002-2003 of the 550 cases that were scrutinized by CEVARA and given the green signal to, approximately 300 were female babies.

The post adoption experience of 159 parents after 18-24 months of the child’s adoption were examined (McDonald, Jennifer, Murphy and Kimberlee, 2001) and most parents reported adoption experience to be ‘as one has expected’ and rated that child rearing as more smooth than stressful. Adoptive parents saw how the child has contributed positively to their lives. Similar was reported for 42 adoptive as well biological families (Golombok, Murray, Jadva & Lycett, 2004). It was observed in one of the study (Stams, Juffer & Van Ijzendoorn, 2001) that if intervention programs are provided in adopted families it helps to sensitize the caregiver to the infant’s signals, which has been the important determinant of a secure child-caregiver attachment relationship (De Wolff & van Ijzendoorn, 1997). In India, the foster families have no contact with biological family as the adoption procedures are followed when there is the surety that biological family will not be known to the child, as well as, to the foster parents.

Telling the child about adoption

When a newborn is adopted, “telling” the child becomes an emotional event in the lives of the parents. By starting to give the 3-to-6-year old the information he/she seeks at various times about physical origin, the trauma of a belated revelation is avoided. But of all the material collected on adoption, there is a small, tangential, and tentative remarks made about telling the adoptee about his background received the response, which was both positive and highly emotional. In most of the circumstances, the telling
about adoption is not particularly an option the adoptive parents have. However, it has often been said that whenever or whatever is told to the child, it is the parental reaction that tends to determine the meaning of the communication.

In summary, the present study with the aim to recognize the attitudes prevalent in biological and foster mothers having children across two age groups (i.e., 0-3 and 3-6 yrs) hypothesizes that there will be a difference in the child-rearing attitude for both the foster and biological mothers on the dimension of acceptance-rejection (AR); dominance-submission (DS); encouragement-discouragement (ED); love-hate (LH); democratic-authoritarian (DA); reward-punishment (RP); trust-distrust (TD) and tolerance-hostility (TH). The study is a small effort to voice the anxieties of the adoptive parents; make society more aware and acceptable to the idea of coming forward to adopt a child. Though various theories are present on maternal sensitivity, attachment with the model of Symonds, Schaefer, Field and Rohner, which add considerable knowledge to the parental attitudes, there was scarcity of studies available that exclusively studied the foster and biological mothers’ attitudes. The present study is an effort to add to the literature, the issues pertaining to the foster care; the parental anxieties; preference of child during adoption and telling the child about the adoptive status. In order to build a theory on the present study, further longitudinal research needs to be done.

**Method**

**Participants**

60 working mothers (30 foster mothers and 30 biological mothers) between 25-45 years having children in the age group of 0-3 years and 3-6 years were studied. The sample constituted of all Hindu mothers as according to the Hindu Adoption and Maintenance Act (1956), which provides, the right to Hindu families to adopt the child and be called as the adoptive parents of the child. Only those foster mothers were taken, were the child was placed for more than 1 ½ years. This condition was same for both the age group of children belonging to 0-3 years and 3-6 years of age.

**Measures**

The Parent Child Relationship (PCR) test developed by Govind Tiwari was used to measure quantitatively the attitude of the parents towards their children on 8 dimensions. The present test can be administered on both fathers and mothers separately and simultaneously. The items are to be responded on the 11 point rating scale, so the maximum and minimum scores are 11 and 1 respectively for each item. The instructions are printed on the response sheet for the convenience of the subject.

**Procedure**

The data from foster mothers as well as from biological mothers was collected with the help of follow up visits to the agencies and home visits respectively. Prior to the administration of the PCR test, the semi structured interview schedule was followed that comprised of the situational statements prepared on the basis of 8 child-rearing attitudes of the test. Pilot study of the situational statements was done before final administration to the foster and biological mothers. This kind of schedule gave a chance to break the ice with the participants as well as to generate free flow of the responses. The situational statements were included to observe whether there will be a discrepancy between the scores obtained through PCR test from the foster and biological mothers’ child-rearing attitude and the verbal responses provided during the interview. In addition, the semi structured interview schedule was also prepared to observe the foster mothers responses on the themes like the support of their family members provided towards the idea of adoption; preference for a male or a female child; there willingness to tell the child about his/her adoptive status.

**Results**
Table 1 provides comparison of the means by the two-way analysis of variance, which was carried out for all the eight dimensions of child-rearing attitudes.

Table 1. Obtained F value and AB interaction scores obtained with the Help of two way analysis of variance

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Age groups (A)</th>
<th>Foster vs. biological mothers (B)</th>
<th>A × B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptance-Rejection (AR)</td>
<td>0.144</td>
<td>5.766*</td>
<td>0.402</td>
</tr>
<tr>
<td>Dominance-Submission (DS)</td>
<td>0.006</td>
<td>0.006</td>
<td>0.765</td>
</tr>
<tr>
<td>Encouragement-Discouragement (ED)</td>
<td>0.236</td>
<td>0.059</td>
<td>0.235</td>
</tr>
<tr>
<td>Love-Hate (LH)</td>
<td>0.213</td>
<td>7.162**</td>
<td>0.075</td>
</tr>
<tr>
<td>Democratic-Authoritarian (DA)</td>
<td>4.386</td>
<td>2.653</td>
<td>12.454**</td>
</tr>
<tr>
<td>Reward-Punishment (RP)</td>
<td>0.531</td>
<td>0.033</td>
<td>0.0009</td>
</tr>
<tr>
<td>Trust-Distrust (TD)</td>
<td>1.657</td>
<td>2.255</td>
<td>0.413</td>
</tr>
<tr>
<td>Tolerance-Hostility (TH)</td>
<td>1.494</td>
<td>0.640</td>
<td>3.188</td>
</tr>
</tbody>
</table>

**F.99 (1, 56) = 7.12 [p < .01]  
*F.95 (1, 56) = 4.02 [p < .05]

The analysis of the dimensions is as follows:

Acceptance-Rejection (AR) dimension shows a significant difference in the child-rearing attitude between the foster and biological mothers with F= 5.766, (df = 1, 56), p < .05. During the interview, it was observed that the foster mothers had more extreme views towards positive side i.e., acceptance. They tended to express greater amount of acceptance of child’s decision with a flexible view on controlling the child’s decision-making ability. The foster mothers feared that their too much of interference may make their relationship distant from the child. The fear of loosing their child with over interference or suggestions, made them accept child’s decisions more readily. In contrast to biological mothers, who presented more rational and practical view regarding acceptance of child’s decision. Both the views of mothers reflect a significant aspect about how the acceptance-rejection differs in foster and biological mother’s state of mind.

Dominance-Submission (DS) dimension shows an insignificant difference between the foster and biological mothers with F= 0.006, (df = 1, 56), p > .01. Both tend to regard the child’s interest is supreme but need to reflect at the present context and financial condition before submitting to the child’s wish. Both the mothers expect the child to understand the parent’s viewpoint if they’re willing to fulfill the child’s wish. The foster and biological mothers expressed a similar viewpoint of the child’s safety before submitting to any of the child’s wish.

Encouragement-Discouragement (ED) dimension shows an insignificant difference between the foster and biological mothers with F= 0.059, (df = 1, 56), p > .01. It was observed that both the foster and biological mothers were positively oriented towards encouraging the child for things which interest the child, are according to his/her capability and age and in conflicting situations, reasoning for there disagreement will be conveyed in contrast to scolding.

Love-Hate (LH) dimension shows a significant difference between the foster and biological mothers with F= 7.162, (df = 1, 56), p < .01. When the responses of foster mothers were analyzed, it was observed that the fulfillment of the child’s need was the primary concern with the greater orientation towards the acceptance of their child’s behaviors, demands and actions. In contrast, the biological mothers also accepted
their child’s views but were more oriented towards the practical aspect of childrearing involving time and economic factors.

Democratic-Authoritarian (DA) dimension shows an insignificant difference between the foster and biological mothers with $F=2.653$, $(df=1, 56), p > .01$. It was observed for foster mothers that their responses fluctuated between being flexible for following a rule and at the same time wanting the child to respect the rules of the house. They were more concerned to avoid their child’s involvement in any negative elements and hence adopted an authoritative attitude of being open and flexible to the child’s needs and explanations with the vigilance over the child’s activities. The same was observed for the biological mothers too. The outcome of both the responses was observed that the mothers tend to be more democratic with the increasing age of the child.

Reward-Punishment (RP) dimension shows an insignificant difference between the foster and biological mothers with $F=0.033$, $(df=1, 56), p > .01$. The responses obtained for this dimension from both the foster and biological mothers through a semi-structured interview indicated that the recognition of child’s achievement doesn’t mean materialistic reward. Instead, both the mothers focused on praise, hug, patting the child and being present at the time of the child’s achievement more essential indicators of acceptance of child’s strength. Both the groups of mothers believed that accepting the child with limitations is more important at the time when the child may not be doing well either in academics or other activities. The reward dimension focused on rewarding the child within the parental financial limits whereas for the punishment dimension focused on scolding the child verbally or explaining the negative consequences of an act.

Trust-Distrust (TD) dimension shows an insignificant difference between the foster and biological mothers with $F=2.255$, $(df=1, 56), p > .01$. The responses were more oriented towards the trust dimension for both the foster and biological mothers. The mothers view trust in terms of the reciprocal relation i.e., if the parents place trust on the child, the child in turn will trust the parents and discuss his/her problems more freely. This reflects the capacity of the mother to view the relation from all the perspectives pertaining to the child’s development.

Tolerance-Hostility (TH) dimension shows an insignificant difference between the foster and biological mothers with $F=0.640$, $(df=1, 56), p > .01$. The responses of both the foster and biological mothers reflect a greater tolerant attitude of the mothers towards the child’s demand. The importance in giving in to the child’s demand depends on the factors like utility of the task, the time constraints, the prior permission or promise made for the activity. The mothers are willing to submit to child’s demands if it is purposeful for the child in terms of time & economic factors. The responses were similar for both the biological & foster mothers across the two age groups (0-3 and 3-6 yrs) of children.

Discussion

The present study aimed to study two main issues. First, to compare the child-rearing attitudes of foster and biological mothers on the eight dimensions of Parent Child Relationship (PCR) test and second, to compare the foster and biological mothers child-rearing attitude across the two age group of children belonging to 0-3 and 3-6 years of age on the same eight dimensions. The hypothesis, which states that there will be a significant difference between the child-rearing attitude of foster and biological mothers on the acceptance-rejection (AR) and love-hate (LH) dimension. Whereas no significant difference between the child-rearing attitude of foster and biological mothers on dominance-submission (DS), encouragement-discouragement (ED), reward-punishment (RP), trust-distrust (TD) and tolerance-hostility (TH) dimensions with no impact of the two age groups of children.
belonging to 0-3 and 3-6 years of age. For the dimension of democratic-authoritarianism (DA), the impact of two age groups was evident for both the foster and biological mothers. The results indicated small difference for the two age groups of children.

A mother holds a significant position in the life of a child. A mother provides a holding environment to the child. Though in the process of childrearing, the attitudes of both the groups may differ but the underlying principle for both the mothers is the same, that is, to work towards a sense of belongingness to the child (Waterman & Barbara, 2001). The results indicate a significant difference in the child-rearing attitude of the foster and biological mothers on the acceptance-rejection (AR) and love-hate (LH) dimensions. According to Symonds model (1939), the two dimensions of the present study i.e., AR and LH dimensions represent the same psychological dimension at home. The significant difference observed in the attitude of both the mothers was more oriented towards the acceptance (love) dimension than for rejection (hate) dimension. The acceptance of the child reflects that mothers are devoted to the rearing of the child, they’re demonstrative in affection, they look upon him as an individual than a child, let the child participate in the activities or the hobbies of interest and they do not expect too much from the child, for example, one of the foster mother during the semi structured interview reported, “we’ll let him participate in all the activities in which he is interested, though, will alert him for his wrong decisions too. We as a parent will put our views forward but our suggestions are not binding on him”. This reflects the parental warmth, concern, support & nurturance or simply love for the child (Rohner, 2004). Thus, together parental acceptance and rejection form the warmth dimension of parenting (Kagitcibasi, 1999). The warmth dimension has to do with the quality of affectional bond between the mother and the child, and the motor and verbal behavior, parents use to express these feelings. The view goes in line with the Baumrind’s parental responsiveness (1991) element, where parents intentionally foster individuality and are supportive to child’s decisions and the needs. The warmth that mothers convey in their interaction to the child, go a long way to establish the relationship of love and trust in the dyad (Barber & Harmon, 2001). Further, on AR dimension, it was observed that the foster mothers mean ratings were more, that is 2.73 (0-3 years) and 3 (3-6 years) as compared to the mean ratings of biological mothers, that is 2.26 (0-3 years) and 2.2 (3-6 years). The biological mothers in contrast to foster mothers were more willing to accept that the scolding will be given to the child if he doesn’t follow the parental decisions, which the mothers regarded as more beneficial for the child. The reports of foster and biological mothers point to the fact that their acceptance of the child’s decision whether relating to the friends or academics depends on the situation (Baumrind, 1994).

The insignificant difference found on dominance-submission (DS) dimension, where there was least difference between the means scores obtained for foster and biological mothers, that is, for 0-3 years, the mean obtained was 2.2 for foster mothers and 2.6 for biological mothers. The responses obtained through semi structured interview also point towards the lack of discrepancy between the mothers attitude, for example, the foster mother reported, “If my child is interested in an activity and I know that he can do well, I’ll send him to the competition, even if the exams are approaching”. Thus, both the foster and biological mothers were found high on submissive attitude. Parental warmth and understanding encourages attachment in the dyad and in turn children tend to be more likely to help other person (Barber & Harmon, 2001). Thus, the foster and biological mothers share a coherent bond in infancy and toddler hood (Block, 1993), which indicates the mother’s ability to cope and grow with the developmental issues of the child (Darling & Steinberg, 1993). The coherent relationship contributes to the maternal sensitivity in order to serve as a positive role
model to the child (protocols of foster and biological mothers from the interview- “once we believe in the child, he believes in us and tends to respect our decisions”, “the acceptance of the child depends on the trust you have on the child). Hence, positive views were expressed relating to child’s participation in the activity.

In these dimensions (i.e., ED, TD, RP), where no significant difference was observed, both the foster and biological mothers were effective in giving comforting messages (Applegate, 1990), when the child felt low; the parents extended their empathic responding. For example, one of the foster mother in a semi structured interview reported, “no matter if my child comes 3rd, we’ll still appreciate his effort to participate in the competition. We’ll make him understand that there is always a next time to any situation in order to improve”. Thus, the statements like these indicate that a parent is more ‘in tune’ with the child, and facilitate the environment, which closely match a child’s developmental abilities (Bourchard, 1994).

The results further indicated an impact of both the age groups of children on democratic-authoritarian (DA) childrearing attitude of foster and biological mothers. This indicates that the responses, which were more oriented towards the democratic attitude, are determined by the age of the child. Both the foster and biological mothers agreed to maintain certain limits when giving child the freedom to pursue the activities. The mothers thought of making the child realize of his/her mistakes, not with the punishment but with the help of reasoning (example from protocols- “reasoning is important in order for the rules to be effective. A deep enquiry would be made about the whereabouts”). Further, the mothers added that one can punish the child not by scolding but through avoidance or canceling the activities of the child in order to make the child realize his/her mistakes. It was believed that an affectionate hug or a reprimand not only influences what the child is doing at the moment but adds a small change to his/her expectations of what will happen in the future. In all the instances, it was clear that the mother made the child clear whether her intention was to control the child’s behavior or modify it completely (example from the interview— “freedom will be given but within certain limits, otherwise he’ll not value freedom”; “effective parenting comes when one is more like the friend to the child. As a mother, I’ll try to have regular conversations with my daughter but the vigilance is also important”). They like to monitor and impart clear standards for their children’s conduct by being both assertive and supportive in their disciplinary methods. This discussion takes us forward to another related dimension of democratic attitude, that is, the use of regulative message (Applegate, 1990). Such message gives legitimate power to the parents to control or modify children’s thinking or behavior. This view captured in the study was in line with the Nucci and Smetana’s (1996) study of maternal belief towards discipline. Mothers undertook the age of the child as an important factor to determine the nature of disciplinary technique used (Dix & Grusec, 1995). Mothers preferred stern delivery than the calm one, when the children acted badly. The issues, that require mothers to set limits were centered on the safety of the child (e.g., “she is a girl and I can’t send her out for late nights, you know how Indian setting reacts to all this”); family conventions (e.g., “the child has to follow some norms of the house too. Today, children parents are both flexible at following the rules of the house but certain discipline in the life of the child is must”); and to make decisions about the activities (e.g., “his all the decisions are welcomed but if he takes any decision, our consent is also necessary. We can guide him better”). Each mother who was the part of the study stated that it was important to them that their child develops as an individual (Nucci & Weber, 1995). These responses are indicative of the authoritative attitude of the mothers to enhance the individuality, responsibility and self-esteem of the child. The responses of the mothers whose children belonged to the age group of 0-3 years were more oriented towards being dominant
whereas the mother of children belonging to 3-6 years of age focused more towards teaching the norms of the house and the society, making them realize to understand parental views.

The results obtained on tolerance-hostility (TH) dimension showed an insignificant difference between the foster and biological mothers. This dimension can be understood with the help of Schaefer’s (1959) hypothetical circumplex model. The maternal behavior for tolerance-hostility dimension, lie somewhere between the control-love and autonomy-hostility axis. This can be said on the ground that the tolerant attitude found for both the mothers involves both the positive involvement but possessive maternal behavior. With the mothers being high on the dimension of tolerance, they also saw the need to permit children in the areas of personal choice and discretion and are willing to compromise when the conflicts arise between themselves and their children (example from the interview— “one needs to be tolerant when children are rigid. The possible way to set aside the conflict and their rigidity is to provide them with alternatives”). It can be seen that parenting becomes more complex in 2nd and 3rd year of life for both the foster and biological mothers (Fagot & Kavanagh, 1993). Often the mothers of children in the age group of 3-6 years of age were observed reporting that with the growing age of the child, one tends to become anxious and overprotective towards their children (e.g., “as the child grows, one has to be vigilant of their activities, it’s for their benefit”). Whether any kind of attitude be analyzed ranging from overindulgence, overprotective or perfectionist, each of these variations serves the same goal, that is, to undo the harm.

The present study seeks to explore the various issues related to present and post adoptive experiences of the mothers. For this purpose four main issues were taken up during a semi structured interview with the foster mothers:

The thought of adopting a child and support of husband in the decision

In the Hindu society, there are two options available for the childless couple. One is the remarriage and other is adoption. The study brings forth the other reasons for adopting a child other than infertility. These reasons ranged from the death of the child due to the genetic defect; creating the memories of the dead son alive after he committed suicide; death of both husband and son in an accident to the husband being mentally retarded. The reasons created a sense of loss in the living the life alone. With these reflections, the mothers collected the strength to come forward and adopt the child, who they can call their own (e.g., “my child is my sole purpose for living”). In other cases, where both couples decided for adopting a child, it was reported by the foster mother that their decision was the collective one. This gives the impression that the need to nurture and rear the child is strong in both the foster mother and foster father that majority of them need just the support and understanding of each other to come forward and realize their dream.

The reaction of family members towards the idea of adoption

The responses of the foster mothers lie on a continuum. Majority of foster mothers were satisfied with the understanding behavior of their relatives, some of them even reported, “It was our relatives who counseled us for adoption, they gave us the strength to come forward and accept the child as our own”. While there were some cases, that reflect the disgust at the attitude of the family members towards the idea of adoption. Here, the foster mother reported, “some of the family members have cut off the relations with us, when we adopted a girl but me and my husband are support of each other. We don’t care for those relations who don’t understand us”. The third angle of response was more oriented towards attaining the consent of family members first before going for adoption (e.g., “we convinced our family members for a year, we never wanted to take any decision that hurt them”). This reflects the thinking and the attitude
of some foster parents is highly influenced by the way the society wants them to react and follow the norms of adoption and also that their need for social belongingness is strong coupled with the fear of rejection by their family members if the decision is not accepted by them. Thus, in order to avoid such situations, the foster parents tend to give in for adoption and many a times for the preference of the child based on the collective decision the family takes.

Preference for a girl or a boy child
The sample of foster mothers collected, the majority had the girl child. The reasons the mothers gave for the preference for the girl child ranged from that the girl relates more positively to the feelings of the parents, are tenderer and caring to when the girl gets married, she brings the husband into the family. This was in contrast to foster mothers who adopted a male child for support in old age, persuasion of family members. And in other cases, the parents rarely give up the hope of adopting a male child despite a long waiting period that may range from 5 to 7 years altogether.

Telling the child about adoption
Telling the child is an emotional event in the life of the adoptive parents. The present study tries to capture the willingness of the foster parents whether they would like to tell their child about his/her adoptive status. Most of the foster mothers gave a positive but a highly emotional response. Though they were willing to tell the child about the adoptive status, when the child grows up and in the childhood preparing him through stories and the films reflecting a positive relation between the adoptive parents and their child (examples from the semi structured interview—“I repeatedly give the example of Lord Krishna and read him stories so that it forms the base somewhere in the childhood”) but also feared the question of what will be there answer, when the child ask the question about why his real parents left him. In another interview, I found a positive response to this fear of the parents, when one of the foster mother reflected, “I’ll pose the question to my child if he raises this question. I’ll ask him whether at any point of life, he felt that we are not his biological parents. The answer to my question will certainly help me child to deal with the anxiety more positively”. In contrast, in some instances, telling about the adoption was not particularly the option of the adoptive parents. The foster parents feared of the society’s acceptance of their adoptive child, the adoptive child’s behavior to them. Whether the parents wanted to disclose the fact or keep it under covers, it is the parental reaction that tends to determine the meaning of the communication (Khokkar & Thakur, 1995).

In summary, reflecting on the attitudes of both the foster and biological mothers and capturing the issues pertaining to adoption, the study brings forth certain kinds of implications. The present study tries to diminish the boundaries between the attitude of foster and biological mothers with an effort to develop strength among the adoptive parents to come forward and share their experiences; to be open about their experiences about their adoptive child rearing, which is still under cover. The core of parenting whether foster or biological, has remained the same over generations, that is, to work towards the welfare of the child and make them the contributing member of the society. Thus, one can say looking at the sensitive responses of the foster mothers that the need for nurturance and rearing the adopted child has always dominated the hollow issues of remarriage or other ways of treatment. The study was an effort to spread awareness about the usefulness of adoption and how a child contributes positively to the world of the parents. Coming of the child in either the biological or the foster families changes the dynamics of the family in a nurturing, supportive and an insightful way.

References


Mitra et al. / Child rearing attitude of foster and biological mothers


Positive psychology is a relatively new and emerging field, launched by Martin P. Seligman in 1998. Seligman and Csikszentmihalyi (2000) define positive psychology as a science of positive subjective experience, positive traits, and positive institutions and that it encompasses societal interactions. They define it at different levels. At the subjective level it is about valued subjective experiences: well-being, contentment, and satisfaction (in the past); hope and optimism (for the future); and flow and happiness (in the present). At the individual level, it is about positive individual traits: the capacity for love and vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality, future mindedness, spirituality, high talent, and wisdom. At the group level, it is about the civic virtues and institutions that move individuals toward better citizenship: responsibility, nurturance, altruism, civility, moderation, tolerance, and work ethic.

Peterson & Seligman (2004) identified 6 virtues having 24 character strengths of human beings namely wisdom, courage, justice, humanity, temperance and transcendence. The five-factor model of personality studies individual differences through five relatively independent dimensions: extraversion (E), neuroticism (N), conscientiousness (C), agreeableness (A), and openness to experience (O). Using a sample of 251 undergraduate students, this study explored the relationship between the five-factor model of personality and character strengths. Results showed significant positive correlation between extraversion and five virtues. Agreeableness, conscientiousness and openness showed a significant positive correlation with all six virtues while neuroticism showed a significant negative correlation with all of them. Further, Regression analyses revealed that (O, C and A explained 34% of the variance in wisdom, C N and A accounted for 13% of the variance in courage, A, E and O explained 19% of the variance in humanity, A, E and N explained 17% of the variance in justice. Moreover, four factors (C, N, A and O) explained 16% of the variance in temperance and further four (O, C, A, and E) explained 26% of the variance in transcendence.

**Keywords**: positive psychology, character strengths, big five factors, personality, Virtues

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mindedness or thinking things through and examining them from all sides; love of learning or mastering new skills, topics, and bodies of knowledge; and perspective or being able to provide wise counsel to others.

2. Courage or emotional strengths that involve the exercise of will to accomplish goals in the face of opposition, external or internal. This virtue includes strengths of authenticity or speaking the truth and presenting oneself in a genuine way; bravery or not shrinking from threat, challenge, difficulty, or pain; persistence or finishing what one starts; and zest or approaching life with excitement and energy.

3. The virtue of humanity includes interpersonal strengths that involve tending and befriending others. The strengths that are included under this are kindness or doing favors and good deeds for others; love or valuing close relations with others; and social intelligence or being aware of the motives and feelings of self and others.

4. Justice as a virtue includes civic strengths that underlie healthy community life. It includes fairness or treating all people the same according to notions of fairness and justice; leadership or organizing group activities and seeing that they happen; and teamwork or working well as member of a group or team.

5. Temperance is the virtue that involves strengths that protect against excess. It includes forgiveness or forgiving those who have done wrong; modesty or letting one’s accomplishments speak for themselves; prudence or being careful about one’s choices, not saying or doing things that might later be regretted; and self-regulation or regulating what one feels and does.

6. The virtue of transcendence has strengths that forge connections to the larger universe and provide meaning. It includes appreciation of beauty and excellence: noticing and appreciating beauty, excellence, or skilled performance in all domains of life; gratitude or being aware of and thankful for the good things that happen; hope or expecting the best and working to achieve it; humor or liking to laugh and tease, bringing smiles to other people; and spirituality or having coherent beliefs about the higher purpose and meaning of life.

It has been seen that with rare exceptions (Bertocci & Millard, 1963) virtues have been largely ignored in modern personality theory. An examination of recent texts in personality psychology (Burger, 1993; Engler, 1991; Liebert & Spiegler, 1990; McAdams, 1990) revealed that none of the texts included the term ‘virtue’ in their index. It has been observed that research in this field has made a shift away from the normative concept of character towards a more morally neutral concept of personality (Allport, 1937; Conley, 1985). However, while the term ‘virtue’ may not appear in personality texts, personality trait models such as the five factor model (Costa & McCrae, 1992), includes trait terms (e.g., agreeable, conscientious, honest, modest) which could be understood as virtues or being evaluative in nature (Cawley et al., 2000).

To assess the correlation of character strengths and virtues with personality, we used John and Srivastava’s (1999) classification of the big five personality factors. Their classification describes the five traits as follows: extraversion implies an energetic approach toward the social and material world and includes traits such as sociability, activity, assertiveness, and positive emotionality. Agreeableness contrasts a pro-social and communal orientation towards others with antagonism and includes traits such as altruism, tender-mindedness, trust, and modesty. Conscientiousness describes socially prescribed impulse control that facilitates task- and goal-directed behavior, such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing, and prioritizing tasks. Neuroticism contrasts emotional stability and even-temperedness with negative emotionality, such as feeling anxious, nervous, sad, and tense. Finally, openness to experience (vs. closed-mindedness) describes the breadth, depth, originality, and complexity of an individual’s mental and experiential life.
The purpose of the present research study is to examine the correlations between the Big Five personality factors and character strengths. We hypothesized that the two scales would be significantly correlated. We also examined how much of the variance in character strengths was explained by the Big Five factors.

Method

Participants

Participants in this research were undergraduate students of technology. 266 students were asked to fill out the questionnaires; however after accounting for incomplete entries etc., our final sample consisted of 251 students. The sample consisted of 222 male and 29 female students. The range of age was 17-27 years; mean age & SD = 20.36 ± 1.61 years.

Measures

A booklet containing standardized instructions, questionnaires, a debriefing sheet and a demographic profile sheet was constructed. Psychological tests were as follows:

Values-in-action (VIA) inventory of strengths

The VIA inventory of strengths (VIA-IS) (Peterson & Seligman, 2004) is a measure of character strengths. Items are scored using a 5-point Likert scale ranging from very much unlike me to very much like me. Cronbach’s alpha for all scales are alpha > .70, with test–retest correlations over four months indicating good test–retest reliability, all rs > .70. (Park et al., 2004; Peterson et al., 2006). For the purpose of our study, we shortened the test to 60 items with 2-3 items for each of the 24 strengths.

Big five inventory (BFI)

The big five inventory (BFI; John et al., 1991; John & Srivastava, 1999) is a 44-item instrument that assesses the Big five personality factors. Items are scored using a 5-point, Likert scale that ranges from disagree strongly to agree strongly.

Table 1: Correlations between Big five factors and 6 virtues of VIA

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<th>Variables</th>
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N = 251, *p < 0.05, **p < 0.01, ***p < 0.001, (both 2-tailed).

BFI scales include 8-10 items each, and have demonstrated moderate to high internal consistency reliability (alpha range = .79 to .88; median = .82) as well as substantial convergent/discriminant relations with other big five instruments (John & Srivastava, 1999).

Result

Data collected through the questionnaires was analyzed. We used SPSS 15.0 to carry out
the analyses. Pearson’s product moment correlation and descriptive analysis was carried out. The results are as summarized in Table 1, 2 and 3.

The results as shown in Table 1 indicate statistically significant positive correlations between extraversion and all virtues except for temperance. However prudence under temperance showed (Table 2) a significant positive correlation with extraversion. Extraversion showed positive correlations with the following strengths for the remaining virtues: for the virtue of transcendence, with gratitude and humor; for strengths under wisdom, with love of learning, originality, curiosity and perspective; for the virtue of courage, with zest and integrity; with

<table>
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<th>Variables</th>
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N=251, ** p< 0.01, *p< 0.05 (both 2-tailed)
The strengths of kindness and capacity to love under humanity; and all strengths of justice namely citizenship, leadership and equity.

The positive correlation between agreeableness and all six virtues was significant (Table 1). A detailed strength wise analysis of the correlations between virtues with personality traits (Table 2) showed the significant positive correlations between agreeableness and the following character strengths: for the virtue of wisdom, with curiosity, judgment, originality and perspective; for courage, with valor, industry and integrity; for the virtue of humanity, with kindness, capacity to love and with social intelligence; for the virtue of justice, with citizenship, equity and leadership; with self regulation, prudence and forgiveness under the virtue of temperance; under transcendence, with appreciation of beauty, gratitude, hope and spirituality.

Conscientiousness showed a significant correlation with all six virtues (Table 1). Analyzing the results by virtue (Table 2), we saw statistically significant positive correlations between conscientiousness and the following character strengths listed virtue wise: with all five strengths under transcendence namely, appreciation of beauty, gratitude, hope, spirituality and humor; for temperance, with self regulation, prudence, and forgiveness; with all five strengths of wisdom, namely curiosity, love of learning, judgment, originality and perspective; under courage with zest, valor, and integrity; for humanity, with social intelligence and kindness; and with equity and leadership for the virtue of justice.

Neuroticism showed a significant negative correlation with all six virtues (Table 1). Studying the results strength wise in Table 2, neuroticism showed negative correlations with the following character strengths listed by virtue: for the virtue of wisdom, with originality; for courage, with all four strengths namely industry, integrity, zest and valor; with social intelligence under the virtue of humanity; under justice, with equity, citizenship and leadership; for temperance with all strengths namely self regulation, prudence, modesty and forgiveness; and with humor under the virtue of transcendence.

The correlation between openness and all six virtues was significant (Table 1). A detailed analysis (Table 2) showed that openness displayed positive correlations with the following strengths given virtue wise: with all five strengths of transcendence namely appreciation of beauty, gratitude, hope, spirituality, and humor and the openness; for the virtue of temperance, with prudence and forgiveness; with all five strengths of wisdom namely curiosity, love of learning, judgment, originality and perspective; under courage with zest, valor, and integrity; for humanity, with social intelligence and kindness; with equity and leadership for the virtue of justice.

(1) The correlations between the five personality factors are given in Table 1. Extraversion showed a significantly positive correlation with conscientiousness and a significantly negative correlation with neuroticism. Agreeableness had a significantly positive correlation with both conscientiousness and openness and a significantly negative correlation with neuroticism. The correlation between conscientiousness and openness was significantly positive and the correlation of conscientiousness and neuroticism was significantly negative. (2) The correlations between the six virtues (Table 1) were all significantly positive.

(3) To test the influence of personality on VIA virtues a series of hierarchical regression analyses were performed (see Table 3). Wisdom, courage, justice, humanity, temperance and transcendence were the predicted variables and the five personality dimensions were the predictors. From Table 3, it is evident that openness, conscientiousness and agreeableness were significant predictors of wisdom and together accounted for 34% of the variance. Courage was predicted by conscientiousness (13% of the variance), neuroticism (4% of the variance), and agreeableness (2% of the variance). Agreeableness, extraversion and openness
Singh et al. / Values in action and personality characteristics

Table 3. Regression analysis of personality factors onto VIA strengths

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Note: O= Openness; C= Conscientiousness E= Extraversion A=Agreeableness, N= Neuroticism.
*p<0.05. **p<0.01. ***p<0.001.

together accounted for 17% of the variance for the virtue of humanity. Justice was predicted by agreeableness, extraversion and neuroticism, which together accounted for 19% of the variance, the major contribution being from agreeableness (12% of the variance). For temperance, conscientiousness, neuroticism, agreeableness and openness accounted for 16% of the variance. Openness, conscientiousness, agreeableness and extraversion together accounted for 26% of the variance for the virtue of transcendence. These findings were in correspondence with the correlation results.

Discussion

The preliminary findings of this research study support the hypothesis proposed in the paper. The big five personality factors were found to be closely related with the virtues and strengths described by Peterson and Seligman (2004). It was seen that personality theory as we know it and positive psychology do have a close bearing and these findings have significance in the study and application of positive psychology. Similar findings were obtained by Cawley et al. (2000) who found meaningful, replicated correlations between the virtue subscales and personality scales which according to the researchers indicates that virtue is a function of personality. They found that the personality factors most closely related to virtue are conscientiousness, agreeableness, and, to a lesser degree, the inverse of neuroticism. Since both the virtues and personality approaches are concerned with enduring human dispositions, there are some moderate correlations between these constructs. However, they made clear that the virtues scale factors are not merely personality factors or facets.
In our study, extraversion had significantly high correlation with the virtue of justice, with the strengths that fall under justice namely equity, leadership and citizenship. Extraversion also had a significant correlation with transcendence and a particularly high correlation with the strength of humor. This indicates that these domains are related, however the absolute values of the correlations imply that a distinction can be made between the strengths and personality factors and that the former are not merely personality facets. Also, extraversion showed a significant correlation with the strengths of originality, and love of learning. Extraversion refers to activity level (active, energetic) and expressiveness (adventurous, outspoken, noisy, show-off) (John & Srivastava, 1999) and this is reflected in its correlation with these strengths.

Costa and McCrae (1992) note that “conscientiousness is an aspect of what was once called character; high C scorers are scrupulous, punctual, and reliable” (p. 16). Persons with high scores on the conscientiousness facet scales tend to keep things in their proper places, to adhere to their ethical principles, to fulfill their moral obligations, to carry tasks through to completion, and to think carefully before acting (Costa & McCrae, 1992). John & Srivastava (1999) define conscientiousness as socially prescribed impulse control that facilitates task and goal-directed behavior, such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing, and prioritizing tasks. In our research we found that conscientiousness had a significant correlation with all six virtues representative of a fit with the definition of conscientiousness, which clearly indicates character. Also, conscientiousness had a positive correlation with the character strengths of industry, originality, prudence and also with equity. McCrae and John (1992) also acknowledge that there are two components of conscientiousness: an inhibitive view and a proactive view. They note that conscientiousness combines both aspects, because it can mean either governed by conscience or diligent and thorough. It may be that the strength prudence represents the inhibitive, non-impulsive aspect of conscientiousness as a virtue, and the strength industry represents the proactive, diligent aspect of conscientiousness as a virtue (Johnson & Ostendorf, 1993). Consist to these findings, conscientiousness predicted with substantial variance in wisdom, courage, temperance and transcendence.

Agreeableness contrasts a pro-social and communal orientation towards others with antagonism, and includes traits such as altruism, tender-mindedness, trust, and modesty. (John & Srivastava, 1999) In our study, all the six virtues were significantly correlated with agreeableness. Again, this reflects the evaluative nature of agreeableness. McCrae and John (1992) acknowledge the evaluative nature of agreeableness and conscientiousness, by noting that they describe good versus evil and strong-willed versus weak-willed individuals. Among the character strengths, agreeableness was significantly correlated with equity, gratitude, capacity to love, and perspective.

As expected, all six virtues showed a significant negative correlation with neuroticism. Neuroticism contrasts emotional stability and even-temperedness with negative emotionality, such as feeling anxious, nervous, sad, and tense (John & Srivastava, 1999). It had the relatively highest negative correlation with courage, justice and temperance. Among the strengths, it had the relatively highest negative correlation with humor, valor and self-regulation.

Openness to experience (vs. closed-mindedness) describes the breadth, depth, originality, and complexity of an individual’s mental and experiential life (John & Srivastava, 1999). In this research we found that the relatively highest correlation of openness was with wisdom and also a relatively high correlation with transcendence. Among character strengths, originality, love of learning, curiosity, appreciation of beauty and perspective were significantly correlated with openness.
The present research finds support in a study by Park and Peterson (2006) who studied correlations between the big five and the value in action (VIA). They found that neuroticism was significantly negatively correlated with hope, zest, and self-regulation; significantly associated with extraversion were humor and leadership; significantly associated with openness to experience were creativity, love of learning, open-mindedness, and curiosity; significantly associated with conscientiousness were perseverance, prudence, authenticity, gratitude, and fairness; and most associated with agreeableness were kindness, love, social intelligence, teamwork, and perspective. They found that the structure of the VIA subscales was compatible with the big five scheme of basic personality traits. Correlational analyses provided estimates of shared variance between VIA traits and measures of personality. (Steger et al., 2007)

We found results alike to the above-mentioned studies in our research. The limitations of our study include the usage of the short form (60 items) of the VIA that is still to undergo statistical validation. In conclusion, this research has found significant correlations between the big five personality factors and character strengths. Although the correlations are statistically significant, the absolute values of the correlations imply that even though the two concepts are related, one cannot claim causal relationship. Going further, we would like to conduct a factor analytic study to see how character strengths can be classified in an Indian setting and to see which strengths are most relevant. The present study has significance in the field of positive psychology by helping establish the relevance of character strengths in the study of behavior.

References


Hope is a positive motivational state. Hope significantly predicts better physical health-related outcomes, psychological adjustment and superior psychotherapy outcomes (Snyder, Cheavens, & Michael, 1999; Snyder et al., 2000). In dealing with stressful situations, people with high-hope tend to use adaptive coping strategies to attain their goals. Their lower hope counterparts typically use disengagement and avoidant coping (Snyder & Pulvers, 2001). Such avoidance leads to depression and negative self-evaluations (Coats et al., 1996).

People with high-hope make use of positive illusions that influence their views of reality, but they do not engage in obvious reality distortion (Snyder, 1989). Hopeful thought involves recognizing that not all of one’s goals are attainable. Indeed, hope gives them motivation to overcome blocks in goal attainment (Snyder, 1998). The proponents of the adaptiveness of positive illusions have argued that the illusions are adaptive when they are in the slight to moderate range, but they decrease in adaptiveness as they move into the extreme range. Baumeister refers to this as the “optimal margin of illusion.” (Baumeister, 1989; Snyder, 1989).

False hope is said to occur when (a) expectations and response strategies are based on illusions rather than reality (Callan, 1989), (b) inappropriate goals are pursued (e.g., Murrell & Norris, 1983) and (c) poor methods or strategies are used to achieve desired goals (Kwon, 2002). Beyond hope for the impossible, medical professionals readily admit that every once in a while a miracle occurs. Patients with dire prognosis sometimes turn around and fully recover (Siegal, 1986). Furthermore, many physicians argue that when clients have a more realistic prognosis for the course of their illness, they tend to give up trying. This leads to
deterioration in functioning and greater suffering earlier in the course of the illness.

Unrealistic hope has both adaptive and maladaptive implications in neuro-rehabilitation. Unrealistic hope of both the patient and family should be dealt with as and when it poses a threat to the rehabilitation plan. At the same time, this should not make the person feel hopeless about the recovery. This study analyzes the difficulties encountered by the therapist when trying to achieve the therapeutic goal of changing unrealistic hope to a more reality oriented one.

Method

Sample

This study was carried out on a sample of 26 in-patients (15 males & 11 females) with severe neurological disorders in the age group of 18 – 60 years. With regard to the diagnosis, they were a heterogeneous group. More than half had spinal cord injuries (N = 15, 58%), while the remaining comprised of cerebrovascular accidents (N=5, 19%), traumatic brain injury (N= 3, 11 %), Guillain-Barré Syndrome (N=2, 8 %) and multiple sclerosis (N= 1, 4 %). Majority of them had multiple deficits in terms of paraplegia (N=15, 58%), hemiplegia (N=7, 27%) or quadriplegia (N=4, 15%) along with loss of bowel or bladder control which resulted in their being dependent on others for their activities of daily living.

Setting

The patients were accessed from Neuro Rehabilitation Ward, Department of Psychiatric and Neurological Rehabilitation, National Institute of Mental Health & Neurosciences (NIMHANS), Bangalore. Majority of the cases were referred from the Department of Neurology, NIMHANS and some from outside NIMHANS. Neurological rehabilitation wing consists of an inter-disciplinary team including Physiatrist, Psychiatrist, Clinical psychologist, Psychiatric social worker, Physiotherapist, Occupational therapist and Nurse. The department functions in liaison with other departments in the Institute as well as with nearby General hospitals and Non-governmental organizations. The department runs an out-patient service on all working days and patients who require admission are admitted in the Neuro rehabilitation ward. The ward is a General ward with 22 beds for males and 20 beds for women and children.

Procedure

In the six months period from June to November 2008, sixty adult patients were admitted in the Neuro-rehabilitation ward. As part of the routine procedure for admission, medical doctors do a detailed intake and comprehensive evaluation of medical and psychological status of patient. Based on the assessment, patients are informed about the nature of disorder, treatment plan and treatment team’s expectations. They are then referred for a variety of specialized treatments depending on the individual need. These usually comprise of training for adaptive daily living, physiotherapy, occupational therapy, supportive psychotherapy and family education. Of the 60 patients admitted, about half (N=31, 52%) responded to supportive therapy and were compliant with the treatment and showed realistic hope about recovery. A small section of patients (N=3, 5%) were clinically depressed and reported hopelessness and doubts about recovery. For these patients, a combination of supportive and cognitive behaviour therapy was offered to reduce depression, foster hope and motivate them to participate in interventions. The remaining patients (N=26, 43%) were found to be poorly compliant with the treatment regime due to their unrealistic hope. These were dealt with using a supportive approach embedded within a cognitive appraisal-coping skills framework. Some of the major themes and process issues that emerged in the therapy work with the last group of patients/family members are presented here. The sessions were usually of one hour duration. The number of sessions ranged from 3 to 14 depending on the individual client.
Result

The sample comprised of fifteen male and eleven female patients in the age range of 18 – 60 years. Most of the participants hailed from rural areas of Karnataka, had 12 years or below of schooling (N = 17) (i.e. 65%) and were labourers belonging to lower socio economic status (N = 10) (i.e. 39 %). Of the 26 patients, one belonged to Muslim religion and others were Hindu in their religious orientation. Duration of stay in hospital was one to three months.

Sessions were content analysed to look for emergent themes about recovery. Regarding expectation about recovery, more than half of the patients (N=14, 54%) expected 100 % recovery. Others were expecting functional recovery which was beyond the level expected by the treatment team. Gender differences in role expectations influenced expectation about recovery. While majority of men expected complete recovery to go back to outside employment, women expected functional recovery to fulfill at least domestic role obligations. Main reasons for unrealistic hope were false reassurances given by professionals or significant others and also coming to know about the full recovery of other patients in the ward. Absolute faith in God, belief in miracles and the supremacy of Divine power over medical science were important factors in keeping this hope alive in the midst of difficulties. Main benefit of unrealistic hope was that patients were motivated for treatment which, in turn, made their significant others optimistic about recovery and enabled them to find meaning in the care they were providing. Some maladaptive coping behaviours were observed in patients and family members who had unrealistic hope. Some of the patients had spent a lot of money to undergo surgery of doubtful value, which was not cost effective considering their socioeconomic status. In addition, some had, and were still, spending a lot on religious offerings. These issues further aggravated their financial burden and many of them were unable to afford further treatment and prolonged stay at NIMHANS. Some patients became over enthusiastic about treatment. For e.g. they repeated the exercises more than the required number of times, or tried to stand with or without support, though not medically recommended at that point of time. Others reported lack of satisfaction with treatment and considered that the treatment they were getting was insufficient and that was the reason for not getting a speedy recovery. For e.g., a patient who was diagnosed to have cervical vertebral fracture with Quadra paresis planned to undergo vigorous physiotherapy elsewhere as he considered the present therapy insufficient. Another patient achieved near normal level of functioning after treatment. However, he could not acknowledge this improvement and focussed on the residual symptoms and stated that he was not ready to accept anything less than a 100% recovery. Majority of these patients showed resistance to buying ambulatory equipments such as, wheel chair and tricycle, and making environment modifications at home. They were found to delay plans of improving functionality till full recovery. They were not ready to explore alternative employment opportunities since they expected that they could go back to their previous occupations after getting full recovery.

Family members’ unrealistic hope aggravated patient’s maladaptive coping behaviour. In addition, it resulted in expressed emotions shown towards the patient. They became critical and hostile towards the patient because they attributed poor recovery to patient’s non-cooperativeness to treatment. They would often pressurise the patient to do physiotherapy for a longer duration than recommended and not pay attention to the patient’s genuine complaints of fatigue and pain. One patient’s family showed an inconsistent pattern of communicating with the patient - sometimes being critical and sometimes being overprotective. Over protectiveness was found to be a compensation for the critical and hostile comments that they had made earlier to the patient. All these issues affected the process of rehabilitation.
**Discussion**

The paper highlights the dilemmas and challenges that the therapist faced in the process of carrying out therapy in neuro-rehabilitation. The main challenge was to keep hope alive in patients with severe neurological disorders, while trying to reduce their unrealistic hope. In addition, the therapist had to be extremely sensitive while dealing with emotionally charged and socio-culturally embedded beliefs.

The therapeutic goal of initial sessions was to establish rapport and validate the patient and family member’s concerns and expectations. The unrealistic expectations about recovery were reframed as ‘wishes’ of every patient. Purpose of the same was to normalize expectations and at the same time indirectly differentiate wishes from unrealistic expectation.

In the second phase of the sessions, the therapist explored patient’s and family member’s understanding of the disorder and reasons for their unrealistic expectations. Assessment and dealing with the negative consequences of the patient’s unrealistic hope was given prime importance during the middle phase. Positive aspects of the hope were appreciated first to keep their hope alive. Those who were planning to spend a lot on indigenous treatments were advised to postpone their decision in order to avail the best possible treatment at NIMHANS.

Motivation for complying with the treatment was appreciated in patients who were participating in physiotherapy and other interventions in excess of what had been recommended. Patients were informed about the need to comply with treatment plans based on scientific assessments and how too much could also be detrimental at times. The need to focus on short term goals and appreciate micro gains was emphasized to the family members of patients who were not satisfied with the treatment. Resistance to buy ambulatory equipments and also make environment modifications at home were mainly because they considered it to be a waste of money since they were expecting full recovery within a short span of time. To encourage them to use ambulatory equipments, they were given an option of selling it back to other needy patients after they achieved recovery. Another issue related to using ambulatory equipments was their unwillingness to expose themselves as disabled and the feeling that others would continue to view them as disabled even after their full recovery. Validating their concerns and motivating them to be functional was used in such cases. Those who were not ready to work on their functionality until full recovery were encouraged to do as much as possible with the present strength. Expressed emotions of family members were handled by discussing the negative consequences of their behaviours and the need to be more empathic and consistent towards patients.

Cognitions underlying the unrealistic hope were targeted simultaneously, though prime importance was given in improving activity level. In some cases, blanket reassurance given by the other professionals/ significant others acted as a maintaining factor for unrealistic hope. Patients were encouraged to think about the authenticity of that information and how it was different from information that they had got from the experts. Liaison with other professionals within NIMHANS was done to ensure consistency in the information communicated about prognosis to the patient. Another difficulty encountered in educating these patients was to make them understand that different conditions had different prognosis. Patient’s duration of stay in the ward was from 1 to 3 months. As it was a common ward, patients started forming close contacts with each other. During this period, they would see or hear about good recovery of some patients who had similar presenting complaints like them. In such cases, an example of various types of fever with similar symptoms, but of different aetiology and outcome was used to educate them. Many of them considered NIMHANS as the last resort from which they ‘must’ get improvement. It was reframed as the possibility of getting best possible treatment. Religious faith and belief in
miracles was another area which therapist found difficult to intervene, though it was interfering in the acceptance of prognosis. This was not challenged; instead they were motivated to work on short term goals to achieve good results.

With these efforts, majority of the patients (N= 20, 77%) demonstrated a more realistic expectation and complied with treatment. However, a few patients (N= 2, 7%) were not able to change their attitude and decided to meet another doctor after discharge. The remaining (N= 4, 16%) were ready to accept some of the suggestions given by the therapist and partially complied with the treatment regime.

Reflections of the therapist

This was the therapist’s first experience in neuro-rehabilitation. Therapist had apprehensions that the clients may lose hope altogether in the process of making their hope more reality oriented. At the same time, therapist had difficulty relating to patient’s beliefs in miracles, which she personally considered as irrational beliefs. In addition, therapist’s therapeutic inclination for using a cognitive behavioural approach made her want to challenge the patient’s belief system. But therapist had to keep her personal beliefs and values aside, while dealing with beliefs which were strongly rooted in patient’s sociocultural context. Therapist had to use an approach of not challenging their beliefs, at the same time reducing its negative consequences. This experience helped the therapist to be more flexible and sensitive while dealing with other’s belief systems. In addition, it also challenged therapist’s unrealistic hope of speedy achievement of therapeutic goals. Many times, therapist had to do briefer sessions which were spread over many weeks. Therapist also had to tolerate the disappointment when some of them showed resistance to intervention.

This paper presents an experiential account of a young therapist’s experience in neuro-rehabilitation. A more systematic exploration into this area is warranted. Structured assessment using standardized tools to measure religious beliefs, coping behaviour, optimism and functional level would help to get a better understanding of the process issues and outcome. While the sample is clinically representative of severe neurological disorders, it consisted of a heterogeneous group with varying duration of illness and level of disability. Initial phase of the treatment is marked by rapid physiological and psychological changes. These factors would influence patient’s hope about recovery. It would be interesting to compare level of hope at different stages of the illness and its relation with depression, anxiety, religious beliefs and coping strategies.

This study shed light on the difficulties of keeping the hope of patient and family members alive while attempting to make their hope more reality oriented. High hope has both positive and negative implications in the long-term treatment and recovery of persons with severe neurological disorders. So, therapist’s goal should be to maintain a balance between hope and hopelessness i.e. to remain hopeful in the midst of adverse facts and uncertain prognosis.

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Snyder, C. R., & Pulvers, K. (2001). Dr. Seuss, the coping machine, and “Oh, the places you will go.” In C.R. Snyder (Ed.), *Coping with stress: Effective people and processes* (pp. 3–29). New York: Oxford University Press.
Social Support and Mental Health in Police Personnel

Sweta Singh and P. C. Mishra

The present investigation studies levels of social support and the relationship between social support and mental health in 100 inspectors, 100 constables and 100 officers from Uttar Pradesh (U.P.) police department. The Social Support Scale (Cohen, Mermelstein, Kamarch et. al., 1985) and Mental Health Inventory (Jagdish & Srivastava, 1983) were administered to police personnel at various grades. The means and ANOVA of the above measures demonstrate that officers enjoy significantly higher level of overall social support in comparison to inspectors and constables. In addition, Pearson’s product moment correlations show positive relationship between overall social support as well as its dimensions (such as tangible support, appraisal support and belonging support). It is also positively correlated with mental health. A similar trend was observed in constables.

Keywords: Social support, mental health, tangible support, appraisal support, belonging support

Strengthening interpersonal relationship by connecting with family members, friends and co-workers is one of the healthy ways of promoting mental health. Conversely, those who suffer from psychological disorders such as clinical depression often report lower levels of social support. Thus, it is presumed that social support and feelings of loneliness play important role in mental health. Extensive body of literature also confirms the pivotal role of social support in mental health (Shen, McCreary and Myers, 2004; Measelle, Stice and Springer; 2006). Singh (1989) for instance examined the relationship between occupational stress and social support and found significant negative correlation between social support and stress. Gaillard and Wientjes (1994) commented that working conditions with little social support are associated with reduced well being and increased health risks. The key models which are offered to explain the relationship explicate that social support as one of the most compelling variables in terms of its outcome on mental health. The main effect model, for example, proposes that social resources have a ‘beneficial effect’ on the health of the individual (Caplan, 1974). The stress buffer theory explains that it has a positive effect on mental health by ‘protecting’ or ‘buffering’ the individual against the stressful events, thus helps in better adaptation to the changes of life.

Cohen et. al. (1985) classified social support in terms of tangible support, appraisal support and belonging support. The tangible support refers to perceived availability of material aid; the appraisal support refers to perceived availability of a confident and trusted advisor and the belonging support refers to perceived availability of some one with whom the respondent could socialize or relax. The present study focuses on social support of the police personnel.

Ample of psychological studies substantiate police work as one of the most stressful occupation (Brown, Cooper & Kirkcaldy, 1996; Bhasker, 1990; Ahmad, 2000). Several psychological studies conducted in various parts of the world reveal many mental and physical ailments in the police personnel such as anxiety, depression, aggression, substance abuse, suicidal ideation, suicidal attempts, and higher incidence of suicidal rates due to stress (Colwell, 1998; Hem, Berg, & Ekeberg, 2005; Violanti, 1996; Pienaar et. al., 2007).

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The Indian police personnel can be broadly categorized into constables, inspectors and officers at the district level. The constables belong to the lowest strata and they are supposed to follow the instructions of inspectors. The inspectors are placed at the intermediate level and they are responsible for the law and order situation in their area of jurisdiction and the supervision of work at the police station. The officers for example, Circle Officers (COs), Superintendent of Police (SP), Assistant SP (ASP), and Senior SP (SSP) enjoy higher levels of administrative control. Based on the differences in the hierarchical arrangement of various police echelons, it can be expected that the level and nature of social support they receive will differ accordingly. In this study, an attempt has been made to examine the levels of social support and their relationship with mental health in police personnel.

**Method**

**Participants**

The study involved 300 male police personnel i.e. 100 inspectors, 100 constables and 100 officers as participants. They were selected incidentally, from the Department of Police from 6 districts of Uttar Pradesh, namely Lucknow, Varanasi, Meerut, Raibareilly, Ghazipur and Noida. The category of officers included COs, SPs, ASPs and SSPs. The category of inspectors included sub inspectors as well. The age of respondents ranged from 35 to 45 years (M 40.8 years, SD 8.10). Their academic qualification was between intermediate to post graduation and their length of service was ranged between 10 to 20 years (M 16.2 years, SD 7.50).

**Measures**

The extent of social support enjoyed by the police personnel and their mental health status was assessed by using the following two standardized instruments. The psychometric properties of which have been detailed below:

**Social Support Scale (SSS):** In order to measure the level of social support in police personnel, Social Support Scale developed by Cohen et. al. (1985) was used. There are three areas/subscales in this scale i.e. tangible support, appraisal support and belonging support. The scale has fifteen items, five in each area. There are nine positive items and six negative items. The response alternatives are: completely true, somewhat true, somewhat false and completely false and the possible score for each item ranged from 1 to 4 (completely false to completely true). Internal and test-retest reliabilities of the three subscales range from 0.77 to 0.92 and from 0.70 to 0.90 respectively. The three subscales of this scale are reasonably independent of one another as indicated by their moderate inter-correlations which are in the range of 0.30 - 0.50.

**Mental Health Inventory (MHI):** The MHI developed and standardized by Jagdish and Srivastava (1983) and was used to assess the level of mental health of the police personnel. This inventory consists of 56 statements with four alternative responses, namely always, mostly, seldom and never. Out of total 56 items, 24 items were ‘true keyed’ and the remaining 32 items were ‘false keyed’. The possible score for each item ranged from one to four. The reliability of MHI determined by computing split half method was found to be 0.73 as a whole. Construct validity determined by computing the co-efficient of correlation between Mental Health inventory and personal adjustment (Pestonjee, 1973) was 0.57.

**Procedure**

In the city of Lucknow a brief pilot study was conducted to determine the characteristics of the sample i.e. age range, the categories based on job hierarchy, income range, and years of service. In the main study respondents were
incidentally selected from the identified areas. They were contacted at their workplace and were informed about the purpose of study. After receiving their consent for participation in the study the above psychological instruments were administered.

Results and Discussions

To find out the difference in the levels of social support of inspectors, constables and officers

Table 1: Means of social support (overall and dimensions) in police personnel

<table>
<thead>
<tr>
<th>Participants</th>
<th>Tangible Support</th>
<th>Appraisal Support</th>
<th>Belonging Support</th>
<th>Social Support (overall)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constables</td>
<td>14.08</td>
<td>14.35</td>
<td>12.56</td>
<td>40.99</td>
</tr>
<tr>
<td>Inspectors</td>
<td>14.20</td>
<td>16.75</td>
<td>14.00</td>
<td>44.95</td>
</tr>
<tr>
<td>Officers</td>
<td>16.71</td>
<td>15.62</td>
<td>14.34</td>
<td>46.67</td>
</tr>
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</table>

Table 2: Analysis of variance (ANOVA) of social support in police personnel found to be statistically significant (p<0.05, Table 4).

<table>
<thead>
<tr>
<th>Social Support:</th>
<th>SS Effect</th>
<th>df Effect</th>
<th>MS Effect</th>
<th>SS Error</th>
<th>df Error</th>
<th>MS Error</th>
<th>F</th>
<th>P</th>
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</thead>
<tbody>
<tr>
<td>Tangible</td>
<td>441.05</td>
<td>2.00</td>
<td>220.52</td>
<td>3513.95</td>
<td>297.00</td>
<td>11.83</td>
<td>18.64</td>
<td>0.00*</td>
</tr>
<tr>
<td>Appraisal</td>
<td>288.33</td>
<td>2.00</td>
<td>144.16</td>
<td>5101.06</td>
<td>297.00</td>
<td>17.18</td>
<td>8.39</td>
<td>0.00*</td>
</tr>
<tr>
<td>Belonging</td>
<td>178.59</td>
<td>2.00</td>
<td>89.29</td>
<td>3339.08</td>
<td>297.00</td>
<td>11.24</td>
<td>7.94</td>
<td>0.00*</td>
</tr>
<tr>
<td>Social Support</td>
<td>1696.75</td>
<td>2.00</td>
<td>848.37</td>
<td>19919.85</td>
<td>297.00</td>
<td>67.07</td>
<td>12.65</td>
<td>0.00*</td>
</tr>
</tbody>
</table>

**p < .01

Table 3: Relationship of social support (over all and area wise) with the Mental Health of Constables (n=100)

<table>
<thead>
<tr>
<th>X_1</th>
<th>X_2</th>
<th>X_3</th>
<th>X_4</th>
<th>X_5</th>
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<tbody>
<tr>
<td>1.00</td>
<td>0.29**</td>
<td>0.45**</td>
<td>0.74**</td>
<td>0.29**</td>
</tr>
<tr>
<td>1.00</td>
<td>0.23</td>
<td>0.77**</td>
<td>0.57**</td>
<td></td>
</tr>
<tr>
<td>1.00</td>
<td>0.69**</td>
<td>0.21*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.00</td>
<td>0.52**</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>1.00</td>
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</tr>
</tbody>
</table>

X_1 = Tangible Support, X_2 = Appraisal Support, X_3 = Belonging Support, X_4 = Social Support overall, X_5 = Mental Health *p<0.05, **p<0.01

observed. Correlation of ‘belonging support’ is found to be statistically significant (p<0.05 see Table 4)

The finding that the overall social support is highest in officers could be explained by the fact that being highest in hierarchy they receive highest level of social recognition from all strata of the society. Because they are influential, they have large social network, and mostly people are willing to impart various forms of support and services to them. Compared to the officers and inspectors, constables have smaller social network due to their position in the hierarchy and (therefore) they have less number of people around them who are willing to support.
In terms of dimensions of social support, police officers receive highest level of tangible support and belonging support (Table 1). The Tangible Support refers to the material aid which includes ones requests for money, tools and assistance on task. Most of the officers believed that when they are sick or are out of town “someone is there for them to look after their house or to take them to doctor”, or when they have to stay somewhere in emergency “someone is there to help them out”. The officers also experience sense of contentment more than the inspectors and constables regarding having someone with whom they can socialize and relax, receive empathy, trust and concern and thus give them a feeling of “belongingness”. This feeling is also an essential source of emotional support.

On the social support scale they share that when they feel lonely “generally they can talk to friends and members of family and colleagues”. They also feel that they are “invited to work with others”.

The appraisal support refers to the presence of confident and trusted advisor. The person is given a positive evaluation by the verbal feedback approving the actions or recognizes them by appropriate means by which people can increase their self-esteem and self-worth. On the measure of this social support, inspectors and sub-inspectors felt that for them “there is at least one person whose advice they trust” about their personal as well as official problems. By and large the honest and hardworking inspectors get good appraisal support from their bosses too.

The results of correlational analysis imply that in general when the police personnel receive good social support their mental health is better (Table 3, 4 & 5). This finding has attained substantial theoretical as well as empirical support. As we already know, both the models of social support explain the positive association between social support and mental health. According to the ‘main effect model’ the regularized social interaction in the form of social network system are related to the health outcomes. This is possible through emotionally induced effect on the neuro-endocrine system or immune system (Caplan, 1974).

Similarly, ‘stress buffer model’ affirms that social support plays a “protecting” role at two occasions in the causal chain linking stress to illness. Initially stress intervenes between the stressful event and the reputation of that event leading to a stress approval response. Secondly, social support intervenes between the experience of stress and the pathological outcome by reducing the intensity of stress reaction or by directly influencing physiological process through tranquilizing the neuroendocrine system, while facilitating the healthy behaviors. Thus both, the main effect and the interactive effect have a positive impact on the mental health of human beings. It has been shown, for instance,

![Table-4 Relationship of Social Support (overall and area wise) with the Mental Health of Constables (n=100)](image)

![Table-5 Relationship of Social Support (overall and area wise) with the Mental Health of Police Officers (n=100)](image)
that there is an influence of support on the
neurotic symptoms during the adversity and crisis
situation (Dean & Ensel, 1982).

In addition to the social support theory, the
theories of stress also elucidate this association
decisively. The ‘social environmental model’ for
example pays special emphasis to the
interpersonal relations for the sake of mitigating
the impact of stress on the mental and physical
health of the individual. Further, the ‘state trait
model’ of stress elucidates that appraisal of a
stressor as threatening leads to negative
emotions related to the activation of autonomous
nervous system if the employees judge their work
scenario in terms of the social support provided
by supervisors and co-workers in addition to the
organizational features (Spielberger, Vagg, &
Wasala, 2002).

Many studies implicate the positive role of
social support in mental health. For instance,
Revicki & May (1985) found that family support
significantly reduces the effects of occupational
stress or depression, while locus of control
moderates the perception of stress. Singh (1989)
found significant negative correlation between
social support and stress. Gaillard & Wientjes
(1994) commented that working conditions with
little social support are associated with reduced
well being and little increased health risks. In
addition, Measelle, Stice and Springer (2006)
found that deficits in parental support predicted
future substance abuse onset in a multivariate
hazard model. Many more studies find
differences in terms of major physical and mental
health outcomes of persons who have good social
support in comparison to person with very less
social support contacts (Kawachi and Berkman,
2001; Shen, McCreary and Myers, 2004).

The present study sensitizes us not only
about the mental health needs of police
personnel but also about the fact that increased
social support could alleviate the stress that they
experience in their day-to-day life. The future
research should take into account various
personality variables such as personality traits,
emotional quotient, and intelligence quotient in
relation to the styles of coping. Moreover,
research the moderator variables of stress such as
family, situational and contextual may add new
dimension to our understanding of mental health
problems in police personnel.

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Development of Sexual Preference and Behaviour Scale

M. K. Mathew and Jain Joseph

The present study was aimed at the construction and standardization of a Sexual Preference and Behaviour Scale (SPBS). The preliminary form of the scale was consisted of 156 items belongs to 3 broad areas from 19 specific sub areas of human sexual Behaviour. The preliminary scale was administered to a sample of 405 subjects representing various categories of general population. Based on item analysis 119 items were selected for the final form of scale. Reliability and validity of the final form of the scale were tested on a separate sample of 100 and 32 subjects respectively. The overall reliability was found to be .79. The subscales were also found to have high reliability. It ranged from .65 to .83. The construct validity of the scale (N=32) was found to be .82.

Keywords: sex knowledge, sexual preference, sexual attitude and sexual behaviour.

In most subcultures of the East sex is considered as a forbidden topic for discussion and the words connected with sex are often regarded as obscene. It is worth to point out that many people are uninformed and uncertain about sexual matters, even many normal couples and highly educated persons lack proper sex knowledge and skills (Mace, 1971). As a result, misconceptions flourish and the society faces innumerable problems arising on the one hand from ignorance and superstition, and on the other from over stimulation by television, films, posters and magazines, which create sexual titillation, but offer hardly any guidance (Kothari, 1982). Masters and Johnson (1966) reported that 'it is ignorance more than anything else that causes sexual dysfunction'. Clinical experiences suggest that most patients suffering from sexual dysfunctions are woefully ignorant of both basic biology and effective sexual techniques. Sexual ignorance or more commonly misconceptions coupled with attitudinal problems play a significant role in the causation as well as perpetuation of the disorder (Kolodny, 1979, Beutler, 1980). Sometimes this ignorance can directly lead to the development of anxiety, which in turn produces sexual dysfunction (Lo Piccolo & Stock, 1986). Ignorance regarding sexual intercourse e.g.; faulty positions, and faulty movements, account for a large number of sexual problems, which in turn, disturb marital relationships.

There is a double standard in expectations regarding sexual conduct for men and women. Consequently, society is more permissive for men and restrictive for women (Masters & Johnson 1970, Hari, 2005). This double standard has prevented many women from allowing themselves to express their sexual feelings. Cases of many Indian women living with sexual denial have been well recorded (Kothari, 1982). At the same time the cultural concept that the male partner must accept full responsibility for establishing successful coital relation has placed upon every man the psychological burden for the coital process and has released every women from similar responsibility (Masters & Johnson, 1970). There are plethora of evidence that sexual
functions can be easily disrupted by anxiety, fear, guilt and anger (e.g. Masters and Johnson, 1976). Negative societal and parental attitudes toward sexual expression, past traumatic experiences and distress can make a person sexually dysfunctional (Lo Piccolo & Stock, 1986). Masters and Johnson (1970) claim that we can have rich and fulfilling sex life from maturation through old age. But in order to achieve this goal, a new process of sex education is required, which will do away with both ignorance and the double standard.

Sex knowledge can be defined as the general and specific information, acquaintance, and cognition about sex, particularly sexual relationships, whereas attitude towards sex refers to one's beliefs (knowledge), liking-disliking (affect), and action tendencies (behavior) (Avasthi et al., 1992). Thus, human sexual behaviour is a complex interplay of distinctive as well as learned phenomena and modulated by psychosocial factors.

The present investigation aims at developing a comprehensive instrument to measure attitude, knowledge, and sexual behaviour suitable to Indian culture. Although quite a few scales are available on sex, it is mainly from western culture, which is not suitable to Indian culture, as there is a wide gap between Indians and westerners in their cognition, attitude, beliefs, preferences and practices on sex. Research to date is limited in this area and is practically almost nil in India (Avasthi et al., 1992)

Method

Development of the Scale

Item Generation

First step in the development of sexual Preference Behaviour scale was to identify all possible areas of sexual preferences, attitudes and practices that are prevalent in Indian culture. The primary source of idea on the topic include (a) ancient descriptions on sexual practices (Kamasutra), (b) descriptions on religious rituals and classical literature (the popular practices of devotees of Kodugallor Devi on the day of Utsava of the temple, describing Devi from head to foot using sexual symbols), (c) books on human anatomy and human sexology (Marieb & Hoehn, 2006; Kinsey, 1948; Masters and Johnson, 1970), and (d) discussions with experts in the field of clinical practice, such as family therapists, marital therapists and sex therapists. After an extensive examination of the various sources, a pool of 471 items belonging to 3 general areas, namely attitude, knowledge and behaviour was prepared. The three areas were further expanded in to 26 specific areas. The items were prepared in affirmative statements. The items were then given to a group of 5 judges (all faculty members of clinical psychology and psychiatry) for their comments concerning the relevance of the items. Based on the evaluations of the judges 256 items were selected. The items were then given to a panel of two clinical psychologists and a psychiatrist for classification in to several sub areas of sexual knowledge, behavior and attitude. Based on their classification 156 items belonging to 19 sub areas were selected for the preliminary form of the Sexual Preference and Behaviour Scale (SPBS). The areas thus identified and included in the scale were Virginity, Premarital sex, Extramarital sex, First night sex, Sex organ female, Sex organ male, Orgasm, Masturbation, Homosexuality, Sex life, Sexual fantasies, Foreplay, Sexual intercourse, Oral-genital contact, Sexual satisfaction, Paraphilias, Pornography, Sexual problem-general, and Sexual problem-personal.

Item Selection

The preliminary scale containing 156 items was administered to a sample of 405 subjects within the age group of 20 to 50 yrs, hailing from four districts (Thrisur, Kottayam, Ernakulam and Idukki) of Kerala. Effort was made to draw representative sample from all religious and socio economic categories of the general population. A total of 205 male and 200 female subjects were included in the sample. Of the 405 subjects, 100 of them were having sexual dysfunctions and the remaining were normals.
**Procedure**

The subjects who took part in the study were approached individually. The answers to the items in the scale were marked in the presence of the investigator except in some cases who preferred to be alone while marking the responses. The subjects were instructed to select the most suitable answers to describe their attitude, preference or practice. The answers were marked on a 4-point scale ranging from Absolutely Wrong (1) to Absolutely Correct (4), with wrong (2) and correct (3) in between. The scale was scored in the positive direction. The total score in each area determined knowledge, attitude, and behaviour of the subject.

**Item analysis and Preparation of final scale**

In psychological research, various techniques are being used for analyzing test items, but which one can be most beneficially employed in a particular case typically depends upon the type of the test and the purpose of the testing (Garrett, 1961). In the present scale item analysis has been carried out on the responses of 405 subjects. The item discrimination power has been tested on the responses of upper 27% and lower 27% of the sample. Items having significant critical ratios (p < 0.05, one tailed test) were considered for the final form of the scale. Thus a total of 119 items belonging to 19 sub areas were retained for the final form of the scale.

**Results**

The mean and SD for the total sample (N= 405) were calculated and found to be 426.70 and 88.30, respectively.

**Item Difficulty Index**

The difficulty index for each of the 119 items were calculated. It was established based on percentage of pass on each items on the

<table>
<thead>
<tr>
<th>Item No.</th>
<th>IDI</th>
<th>Item No.</th>
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<th>Item No.</th>
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<td>1</td>
<td>.8</td>
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Mathew et al. / Sexual Preference and Behaviour Scale

Validity

The scale was reported to have face validity as the items were prepared based on extensive review of literature in this area. Only those items which showed 100 percent agreement among the judges regarding its relevance to the topic of study were selected for the preliminary form of the scale. Thus content validity of each item in the preliminary form was assured. Beyond face and content validity it is necessary to empirically establish validity of a new instrument. Therefore to test the construct validity of the scale the final form was validated against the Valois Sexual Attitude Scale (Valois, 1998).

Valois Sexual Attitude Scale reported test-retest reliability of .85, the internal consistency reliability (Cronbach’s alpha) for the subscales ranged from .66 to .92 (Valois and Ory, 1984). The validity of the scale was established through factorial analysis. The principal components analysis of the scale with orthogonal rotation indicated that, nine viable dimensions accounting for 58% of the variance for the scale (Valois and Ory, 1984). Both of the scales were administered to a representative sample of 32 subjects with an interval of 10-14 days in between. The coefficient of correlation between the scores of the two scales was found to be .82 which may be considered as an indication of high construct validity of the scale.

Table 2. Split-half reliability of 19 sub areas and overall SPBS (N=100).

<table>
<thead>
<tr>
<th>Split-Half reliability</th>
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<td>1. Virginity</td>
<td>.82</td>
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<td>2. Premarital sex</td>
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<td>3. Extramarital sex</td>
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<td>4. First night sex</td>
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<td>5. Sex organ male</td>
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<td>7. Sexual life</td>
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<td>9. Foreplay</td>
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<td>10. Oral-genital contact</td>
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<td>11. Sexual intercourse</td>
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<td>12. Orgasm</td>
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<td>13. Sexual satisfaction</td>
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<td>14. Paraphilias</td>
<td>.83</td>
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<td>15. Pornography</td>
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<td>16. Homosexuality</td>
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<td>17. Sexual problem general</td>
<td>.75</td>
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<td>18. Sexual problem personal</td>
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<td>19. Masturbation</td>
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<td>20. Overall scale</td>
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Discussion

The paper reports on the development of a scale on sex to measure attitude, knowledge and behaviour. Although quite a few scales are available on sex, they are not suitable to Indian culture as there is a wide gap between Indians and westerners in their cognition, attitude, beliefs, practices and behaviours on sex. Research to date is limited in this area and practically almost nil in India. The scale is good in providing an objective measurement of a client’s knowledge, attitude and functioning on sex and also affords understanding on varied dimension which are not measured by other scale on sexual behaviours.

SPBS is distinctive in measuring sexual inhibitions and misconceptions more specific to
Indian culture, which contribute to the maintenance of the sexual dysfunction. The scale is specially designed to assess the ignorance, myths, superstitions and religious taboos coupled with sex. It can be used for both genders. It measures sexual attitude, knowledge, and behaviour of individuals engaging in heterosexual relationship and provides data on 19 areas of human sexuality.

The SPBS appears to be a reliable, valid and easily administered instrument which can be used as a screening test for sexually dysfunctional people. The SPBS has considerable diagnostic utility as the response profile provides a graphic view of the nature of the individuals as well as couples sexual interaction. It thus becomes possible to quantify the sexual functioning of the non symptomatic partner as well as that of the one having sexual symptoms. In addition to its usefulness with couples with specific sexual complaints, SPBS may be appropriate for use with couples with general marital problems.

A word of caution is in order regarding generalizing about the sexual functioning of the non clinical sample. Volunteer bias may be a factor in that people willing to respond to items in the scale may be more open and sincere while describing their sexual preferences and behaviours compared to clinical population. Further research with clinical and non clinical samples would be useful to clarify these doubts. Although the scale contain 19 subscales it is not very clear whether these subscales are factorially pure ones.

References
Relaxation Techniques as Stress Management Intervention: A Review

Basavarajappa

Stress is a contributing factor for psycho physiological symptoms, disease, absenteeism, reduced productivity and vulnerability to injuries. In the work place stress can increase the symptoms of back pain, headache, blood pressure, anxiety, fatigue and so on. Behavioral, Multimodal, Organization focused, individual focused and organization and individual focused interventions. Generally most of the stress management programs include some or the other form of relaxation techniques like muscular relaxation, exercise, autogenic training, yoga, meditation, yoganidra, transcendental meditation, mindful meditation, bio-feedback, hypnosis, flotation restricted environmental stimulation, response one method and many other means as one of the major component. Studies have been shown that such techniques reduce physiological symptoms, calm the individual’s mind and reduce heightened sympathetic response. This article reviews the effectiveness of some of the popular relaxation techniques as stress management strategy and is discussed in the light of published research finding.

Keywords: JPMR, muscular exercise, autogenic training, yoga, meditation, biofeedback, flotation restricted environmental stimulation therapy, respiratory one method.

Stress management intervention (SMI) refers to techniques and programs that are designed to help to modify individual’s appraisal of stressful situations helping him/her to deal with stress more effectively (Murphy, 1996). Review of literature reveals that during the last 30 years there is a steady increase in stress intervention research studies and that interventions are effective in the management of stress (Lamontagne, Keegel, Louie, Ostry & Landsbergis, 2007; Murphy & Sauter, 2003; Van Der Klink, Blond, Schene & Van Dijk, 2001; Bunce, 1997; Murphy, 1999, 1996; Newman & Beehr, 1979, Lamontagne, Keegel, Louie, Ostry & Landsbergis, 2007; Shimazu, Umanado & Schaufeli, 2006; Murphy, 1996, 1984; Ivancevich, Matteson, Freedman & Phillips 1990; Mcleroy, Green, Mullen & Foshee, 1984). Relaxation is identified as physiological counterpart of stress (opposite to flight-or-fight response) (Esch, Fricchione & Stefano, 2003). Newman and Beehr (1979) and Murphy (1996) have classified SMI as ‘preventive’ and ‘remedial’.

In public health administration, interventions are commonly classified as primary (proactive), secondary (ameliorative), and tertiary (reactive) prevention. As applied to stress intervention studies, these are generally referred to as stress reduction (Parkes & Sparkes, 1998; Murphy, 1996; Landsbergis & Vivina-Vaughan, 1995; Jackson, 1983); stress management (Murphy & Sauter, 2003) and employee assistance or, counseling and rehabilitation programs respectively.

Lamontagne, Keegel, Louie, Ostry and Landsbergis (2007) argued that primary prevention was generally more effective than secondary prevention, and secondary prevention was more effective than tertiary. Dewey (1991)
examined the way in which individuals cognitively appraised and coped with stressful encounters and established that primary and secondary appraisal and coping played a significant role in stressful work encounters.

SMI may be used for individuals, work groups, or entire organization. Studies suggest that individual focused SMI are effective in stress reduction (Caulfield, Chang, Dollard, & Elshaug, 2004; Jordan et al, 2003; Harrell & Murphy, 1996).

Relaxation is one of the most often used and studied extensively. It helps in reducing the severity of stress before it becomes harmful (Murphy, 2002). An opinion survey of stress management experts conducted by Bellarosa and Chen, (1997) indicates that relaxation was the most often used, physical fitness was the second most utilized, followed by cognitive restructuring, meditation, assertiveness training and stress inoculation. In one of the quantitative meta analysis conducted on 18 cognitive behavioural intervention, 17 relaxation, 8 multimodal and 5 organization focused intervention studies. revealed that relaxation techniques tends to be more effective than the other techniques (Van der klink, Blonk, Schene and Van Dijk, 2001). Some of the popular relaxation techniques used in SMI are discussed below:

**Muscular Relaxation**

With the publication of Jacobson’s Progressive Muscular Relaxation (JPMR) in 1938, training in relaxation (the individual learns how to focus on tensing and relaxing muscle groups of the body through dynamic tension with little movement in the joints) was introduced as a potentially effective therapeutic procedure for management of tension, anxiety and stress. JPMR and cue-controlled relaxation (Paul & Shanon, 1966) are most often used in job-settings (cue-controlled relaxation trains subjects to elicit relaxation responses by repeating a cue word under stressful situations/conditions). Orpen (1984) used cue controlled relaxation technique and result showed improved job satisfaction, lowered psychological and physical strain (depression, headache and fatigue).Similar findings were also reported by Aderman and Teeklenburg (1983). Peters, Benson and Peters (1977) found that relaxation based stress management was most effective in enhancing psychological wellbeing, work performance and reduced blood pressure.

Charlsworth, Williams and Baer (1984) reported that relaxation practice and blood pressure reduction was significantly correlated. Similar findings were reported by Kellenke, Kullick and Heim (1982). However, Orphan (1984) study did not show decrease in heart rate, blood pressure, and respiratory rate or increase in job performance.

Barkovice and Sides (1979) reviewing the psycho-physiological effects of JPMR and Biofeedback training indicated improvement in muscle tension levels, locus of control as well as self-reported stress and concluded that therapist guided relaxation was superior to tape-recorded relaxation training. According to Peterson (1981), JPMR was more effective in reducing physiological arousal levels, improved skill and ability compared to a cognitive behavior skills training group or a control group.

Charlesworth, Murphy and Beutter (1981) evaluated the effectiveness of various relaxation techniques (Visual Imagery, JPMR, Autogenic training and modified systematic desensitization techniques). Results indicated reduction in state and trait anxiety and stress level over one month period.

Taylor (1995) included JPMR, bio-feedback, meditation and hypnosis with individuals who were HIV+ showed significant reduction in anxiety, increase in self esteem, improved T-cell count and positive mood. He concluded that a SMI program with meditation component was effective in the management of individuals with HIV+ infection.

McCubbin, Wilson, and Bruehl, (2006) examined the opioidergic basis of relaxation training on circulatory responses to stress in
subjects with mildly elevated blood pressure. They evaluated the effects of the opioids receptor blocker naltrexone on stress reactivity before and after relaxation training and found that endogenous opioid release during relaxation training has observable effects on physiological reactions to stress. They concluded that behavioral stress management may operate on both behavioral and physiological response systems.

Recently Basavarajappa (2008) evaluated the efficacy of supervised JPMR (20 sessions, six months follow up) on a group of working women, using 12 high stress subjects each in control and experimental group found significant (p<0.00) reduction in symptoms of stress manifested through muscular system, parasympathetic nervous system, sympathetic nervous system, cognitive system, endocrinal system, immune system, emotional, and endocrinal system.

Hoelscher (1987) suggested that continued practice of relaxation was an important factor in long term maintenance of the treatment effects. According to Sandlund and Norlander (2000) relaxation training offers a means to reduce physiological and psychological reactions to stress.

**Respiratory One Method (ROM)**

Benson (1975) developed relaxation response called ROM based on transcendental meditation (TM) which is practiced in India. It consists of four components i.e. Sitting upright assuming comfortable position and eyes closed, Quite place free from distraction, repeating a phrase, and focus on pleasant thoughts. Benson (a cardiologist) was interested in non-pharmacological treatments of hypertension and applied behavioral medicine approach that emphasizes the mind-body relationship. According to Benson (1975) different relaxation technique produce specific psychological and physiological changes called relaxation response. Relaxation response was conceptualized to be a generalized approach to stress management that reduces sympathetic arousal and decreases nor-epinephrine receptor activity. Carrington et al., (1980) in a comparative study of meditation, ROM, progressive relaxation and control conditions indicated improvements in self-reported somatization, anxiety, hostility and depression. However, they reported that meditation and ROM were more effective than progressive relaxation in reducing these symptoms.

**Flotation Restricted Environmental Stimulation Therapy (REST)**

A less familiar relaxation technique is Flotation REST introduced by Lilly (1977). The term Flotation REST is an alternative to the term sensory deprivation. Flotation REST aims at reducing the level of environmental stimulation to a minimum and achieving a sense of near weightlessness through floating in Epsom salt solution for several hours (up to 24 hours) in a room that is completely dark and sound proof. An average flotation session takes around 45 minutes. Twenty seven studies (N= 449) published between 1983 and 2002 were reviewed by Dirk Van Dierendonck and Jan Te Nijenhuis (2005). Results of the Meta analysis showed that flotation REST could be useful as a stress-management tool. Flotation REST has positive effects on outcomes relating to physiology, wellbeing and performance. The overall pre-post mean Effect size was 1.02. Flotation REST appeared to be more effective compared to other stress reduction techniques, such as JPMR, exercises, biofeedback or sitting comfortably on a couch. The Effect size for Flotation REST was higher compared to the mean effect size of 0.35 reported for relaxation techniques by Van der Klink, Blonk, Schene and Van Dijik (2001). This indicates that Flotation REST can be considered as stress management techniques with impact similar to that of other SM techniques.

Bood et al., (2006) used Flotation-REST on a group of 54 women and 16 men (physician diagnosed stress related, 12.1 years pain disorder
patients). After seven weeks of therapy results showed a significant improvement in pain, stress, anxiety, depression and sleep in the experimental group. Four months follow up showed the maintenance of the same. The authors have provided a brief review of flotation REST, its cost effectiveness, and its application in wide variety of conditions including stress.

**Meditation**

Meditation is an ancient practice that has its roots in the religious traditions of India and Tibet. It is a self directed practice for relaxing the body and calming the mind, it is self discipline skill, where one can train oneself to relax and learn how to concentrate on one thing, and it is essentially a mental exercise. Meditator makes a concentrated effort to focus on a single thought such as breathing or a sound. The basic principles of all types of meditation procedure is to sit comfortably in a quiet room (place), close one’s eyes, or focus on an inner process, breath abdominally, visualize a pleasant scene, and repeat an encouraging phrase to oneself called ‘Mantra’ such as ‘Om’ – a Sanskrit word-obviously to achieve control over one’s attention and to prevent distraction from other thoughts or environmental stimuli. Meditation and relaxation are similar in many respects except that the latter is guided by verbal instruction to tense and relax muscle.

According to Stein and Cutler (2001) meditation has been adopted and incorporated into SMIs and it appears to have a profound influence on the autonomic nervous system, producing a calming effect such as slower heart rate, decreased blood pressure, lower oxygen consumption, slowing of brain waves and decreased muscle tension. Empirical research provides support for meditation as relaxation therapy and its beneficial effect on the autonomic nervous system in reducing the symptoms of stress (Dua, 1998; Astin, 1997; Elias & Wilson, 1995; Rao, 1995).

Studies show that meditation reduces anxiety, reaction time, increased productivity, positive mood, alertness and feelings of well being (Carrington, 1984; Greenberg, 1993); Increased job satisfaction and job performance, good interpersonal relationship at work place with colleagues and reduced desire to quit the job (Frew, 1974). Peters, Benson and Peters (1977) besides providing evidence for reduced blood pressure, somatic symptoms, improved job satisfaction and performance suggested that regular practice is necessary to obtain stable changes.

Astin (1997) suggest using techniques of mindfulness meditation (14 chronic pain subjects each in treatment, no treatment and control group) with its emphasis on developing detached observation and awareness of contents of consciousness may represent a powerful strategy for transforming the ways in which we respond to life events.

However, Bellarosa and Chen, (1997) Survey indicated that meditation was least preferred and practiced SMI by stress management experts. Peters (2003) critically evaluated the therapeutic effects of meditation and argued that physiological effects such as a slowed heart rate or a particular electroencephalographic pattern occur during meditation which characterizes a “relaxed state” may give insight into how meditation works but does not prove its therapeutic value. Most trials of the cumulative effects of meditation have had weak designs and overall evidence for the therapeutic effectiveness of any type of meditation is weak.

**Yoga**

Yoga is a holistic science concerned with all aspects of human functioning. It provides a unifying framework by which stress can be understood and managed. According to yoga, we are unconscious of mental, emotional and perceptual processes which habitually create stress. Yoga systematically begins to expand our awareness of these processes and thus begins to gain control over them. In any stress disorders, the psycho-neuro-endocrinal
mechanisms fail to react adequately to stressful stimuli. Among several relaxation practices, Yoga and yogic meditation seem to have potentiality to influence the mechanisms in various ways. For example, Udupa, Singh and Dwivedi (1977) in a study noted a significant increase in the level of acetylcholine, cholinesterase, catecholamine and histaminases activities in the blood after 10 days of meditation and there was a reduction in the level of plasma cortisol, urinary corticoids and urinary nitrogen. Study by Singh and Udupa (1977) shows that six months practice of asanas and pranayamas resulted in increased feeling of wellbeing and reduction in body weight, blood sugar and serum cholesterol level, and accelerated adreno-cortical, thyroid and testicular functions.

Yoga appears to be one of the most frequently studies technique in the Indian context. Datey (1977), Singh and Udupa (1977) reported the positive effects of yoga practice in reducing stress. Stress mediated hypertensive cases treated with yoga and meditation showed a significant reduction in blood pressure levels, enhanced sense of wellbeing and reduction in drug dosages (Datey, 1977; Sachdeva, 1994; Poddar, Gangwal, Vinod & Palsane, 1984). Positive effects of yoga and meditation in number of other stress related conditions were reported (Dua, 1998; Rao, 1995; Vasudevan, Kamariah, Mishra & Balodhi, 1994; Venkatesh, Pal, Negi & Verma, 1994; Sahasi, Mohan & Kacker, 1989).

Exercise

It is generally described as the ability to carry out daily tasks with vigor and alertness, without much fatigue, and with ample energy to enjoy leisure time activity. Engaging in aerobic exercise increases one’s physical fitness (President’s Council on Physical Fitness and Sports, 1996). Blair, Collingwood, Smith, Upton, and Sterling (1985) reported positive effects of exercise like subjects stopped smoking, lowered blood pressure, improved wellbeing, diet habits, physical fitness, and the management of work related stress. Baun, Berkacki and Tsai (1985) reported Lowered voluntary absenteeism due to practice of exercise.

The type of exercise, its duration, intensity, frequency, and compliance to exercise prescription have the benefits of reducing stress. According to Cotton (1990), both active relaxation exercises such as yoga, Tai-chi, range of motion dance, and passive exercise such as massages, Rolfing, passive range of motions, are helpful in reducing stress. Exercise usually involves cognitive control where the individual moves his/her joints in a slow circular movement like in Tai Chi and range of motion dance or flexes muscles without joint movement like in JPMR or uses breathing, posture and visualization such as in yoga and the relaxation response. The link between exercise and the reduction of stress has been examined by a number of studies and Cotton (1990) concludes that aerobically fit individuals are more resistant to the physiological and psychological effects of stress, and may recover more quickly from stress. Kobasa, Maddi and Puccetti (1982) reported that exercise was associated with overall reduction in reduction in illness scores and stress level.

Gronningsaeter, Hytten, Skauli and Christensen (1992) study showed that, psychological SMI or no treatment to alleviate job stress and its consequences of health complaints. Results indicated that exercise group showed improved physiological indicators, but reported significantly reduced job satisfaction. The psychological SMI group reported increased coping and knowledge about stress, but showed no improvement in job stress and anxiety. Benefits of exercise on the cardiovascular system and the psychological wellbeing of the individual have been widely cited and advocated by President’s Council on Physical Fitness and Sports (1996).

Biofeedback

In this procedure, the individual is provided with prompt and exact information of a particular internal physiological process (e.g. blood pressure, heart rate, brain waves skin temperature
The physiological response is detected, amplified and presented to the individual continuously and instantaneously through auditory or visual signals. The individual is trained to achieve voluntary control over these responses – most of which once considered to be under involuntary control.

Biofeedback is a self-regulatory activity that enables the individual to become aware of bodily processes. It is based on the voluntary control of autonomic nervous system response. Biofeedback process described above was demonstrated by the practitioners of yoga (yogis) several 100 years back, who could control the physiological responses voluntarily during meditative state (Glueck & Storebel, 1975) from several minutes to hours. Leclere (1980) reported improvement in muscle tension, locus of control and self reported stress with biofeedback relaxation. Four weeks follow up showed maintenance of the gain.

In two studies comparing EMG biofeedback and JPMR, Murpy (1984) reported no clear superiority of one method over the other in terms of either physiological or self reported measures.

Electromyography (EMG), Electroencephalogram (EEG), Galvanic skin response (GSR) Electrocardiogram (EEG) is some of the biofeedback techniques used for relaxation training. Biofeedback is one of the most actively researched areas in stress management. Research conducted in this area, its rationale, its application in various conditions is described in detail by Stein and Cutler, (2001).

Biofeedback can be used to treat many health conditions including anxiety, asthma, backaches, chronic pain, constipation, dangerous rhythms of heartbeat, diabetes, digestive disorders, head injuries, high blood pressure, migraines, reconditioning the muscles, sexual disorders, spinal cord injuries, stress reduction, and teeth grinding.

Biofeedback therapy is also useful in management of some conditions like: controlling hunger, migraines, and impulse behavior in patients with ADHD, anger management, treatment of phobias and anxiety, sleep disorders, muscle tension, spinal cord injuries, and learning disabilities Anorexia nervosa and so on.

**Conclusion**

Researchers have attempted to assess the effectiveness of relaxation as SMI. Most of the studies demonstrated the evidence of improvement. Though, positive results are evident for all the relaxation techniques it is difficult to draw any valid conclusions about the relative superiority of one relaxation technique over the others because of methodological issues. However, SMIs studies show that combination of any two or more techniques are more effective than relaxation alone. Using emotion focused and problem focused coping strategies are beneficial to deal with stressful situations. The relative success of each strategy may vary according to how stressful encounters are appraised by the individuals.

**References**


The use of cognitive retraining techniques for the development of basic cognitive skills in school children has been rarely studied. The present study aimed to assess the efficacy of cognitive retraining techniques for enhancing cognitive skills and academic performance of primary school children. Thirty primary school children (between eight to ten years of age) without any diagnosable neuropsychiatric disorder participated in a 18 week Pre - Post experimental design study. The children were enrolled in either an experimental group (n=15) or a wait list control group(n=15). Intervention comprised of 36 hours of manualized CR package over 18weeks, consisting of activities for sustained attention, visual memory; and verbal learning and memory; and visuospatial skills. Pre-post intervention assessment was done using Grade Level Assessment Device (GLAD), Digit Cancellation task, Benton Visual Retention Test (BVRT), Rey’s Auditory Verbal Learning Test (AVLT) and Block Design Test. Significant improvement in attention, verbal memory, visual memory, visuospatial skills and academic performance was found in the experimental group as compared to the wait list control group. The study has implications for enhancing cognitive skills and academic performance.

Keywords: cognitive retraining, academic performance, primary school children

Cognitive retraining (CR) seeks to directly improve and/or restore cognitive functions utilizing a variety of pen and paper or computerized tests or games requiring cognitive skills such as attention, planning, problem-solving, and/or memory (Velligan 2009). It is a teaching process that targets areas of neuropsychological functioning involved in learning and basic day to day functioning. Thus, a more comprehensive definition of cognitive retraining can be, “ therapeutic interventions involving activities that improve a brain injured person’s higher cerebral functioning or help the patient to better understand the nature of those difficulties while teaching him/her methods of compensation” (Bracy 2003).

Enhancing cognitive/intellectual abilities of human learning has been a topic of great interest and considerable research in both education and rehabilitation. A number of CR methods have been utilized, many of which use specially designed computer software, and are called computer assisted cognitive rehabilitation (CACR). The empirical evidence for CACR seems to indicate a potential for improving cognitive function (Berrol, 1990). The widespread use of computer assisted cognitive retraining procedures is largely because the computers allow accurate timing of stimulus presentation. Further, it is possible to regulate time of stimulus presentation based on individual’s performance. However, the drawback of these programmes is their rigidity which may be incongruent with patient’s need. The floor and ceiling level along with the task content are relatively fixed. Further, the cost of cognitive retraining soft wares is
another major limitation. Manualized retraining programmes overcome these limitations though at the cost of precision. However, found no difference in outcome between computer assisted and manualized cognitive retraining programs (Batchelor et al. 1988). There is substantial evidence supporting the effectiveness of CACR for those suffering from traumatic brain injury, and it is strongly suggested that “micro-based rehabilitation” elicited improvements in the areas of “attention/information processing” and “memory dysfunction”, new learning and problem solving skills (Skilbeck 1991). The CACR literature seems to demonstrate the usefulness of these techniques. The success of this Computer Assisted Cognitive Rehabilitation (CACR) along with the known high brain plasticity in children, it seems probable that these same techniques could be utilized to enhance the intellectual function, and thus, hopefully the academic performance, of children having no diagnosable psychiatric/ neurological problem. All this has led the authors to hypothesize about the potential use of CR techniques in the traditional classroom environment. Supporting a foundational skills model (Bracy, 1986) over more traditional classroom skills training, this study seeks to determine if a manualized version of a CACR software protocol can be used to successfully improve students’ cognitive abilities as measured by standard tests along with enhancing their academic performance.

Main aim of the present study was to examine the efficacy of cognitive retraining techniques in enhancing cognitive skills and consequent academic performance in primary school children.

**Method**

**Sample**

A pre and post experimental design study was carried out with a sample of 30 primary school children (n=15). These children between ages eight to ten years were studying in English medium schools in Delhi in Grade 1st to 4th and were reportedly not having any difficulties in school performance or behavioural/ emotional problems. All children in the sample had average level of intellectual functioning, were attending school regularly and without any study breaks. Children having any physical disability, subnormal level of intellectual functioning, any sensory impairments, children from single parent families or those having any other developmental disorder including learning disability/ ADHD/ any other neurological/ psychiatric/ or any other major medical illness were excluded from the study. These children were randomly divided into two groups (n=15)- Experimental Group and Wait List Control Group.

**Tools**

These children were assessed using the following tests: Indian Adaptation of Wechsler’s Intelligence Scale for Indian Children (Malin 1969) was used to assess the Intelligence of children to screen out children with below average level of intellectual functioning. It gives full scale IQ, Performance Quotient and Verbal Quotient. The test retest reliability of MISC is 0.91 with concurrent validity of 0.61. Children’s Behaviour Questionnaire (CBQ) (Rutter, 1976) was used to screen children for having/ not having behavioural and emotional disorders. For assessment of targeted cognitive skills and academic performance at pre and post intervention the following tests were utilized: Grade Level Assessment Device for Children with Learning Problems in Schools (Narayanan,1997) was used to assess scholastic performance. The GLAD assesses the level of academic performance in three basic subjects viz. Hindi, English and Mathematics, in primary school children while systematically making an observation of the processing pattern in the child. The test- retest reliability of GLAD ranges from 0.68 for Grade IV to 0.99 for grade III. Its Criterion validity ranges from 0.74 to 0.89. Digit Vigilance Test (Lezak,1976) was used for assessment of sustained attention. This test is also a measure
of accurate visual scanning and activation and inhibition of a rapid response. The test consists of numbers 1 to 9 randomly ordered and placed in 50 rows on a page having 30 digits per row. The subject has to focus on target digits amongst other distracter digits. The test gives two scores a) the time taken to complete the test and b) Error Score- Sum total of the number of omissions and the number of commissions. Block Design Test (Malin 1969) was used for assessment of visuo-constructive abilities. The block design test consists of 9 blocks (cubes) each with two red sides, two white sides and two sides- half red and half white- divided diagonally. The block design test has a test retest reliability of 0.77 and split half reliability of 0.87. Benton Visual Retention Test (Sivan, 1992) was to assess visual memory and visual perception. The test provides a clinical and research instrument with which to assess visual perception, visual memory, and visuo constructive abilities. Interscorer agreement with respect to total scores on the BVRT Administration A is approx 0.94. Indian Adaptation of Rey’s Auditory Verbal Learning Test (Rao et al.2004) was used to measure verbal memory. The test is an individually administered test and gives a measure of immediate memory, acquisition of new learning, retention, primacy, and recency effects, susceptibility to proactive and retroactive interference. This test has shown moderate test-retest reliability over one year interval(r= 0.77). RAVLT correlates moderately well with other measures such as the California Verbal Learning Test.

Intervention

Activities in areas of attention, memory and visuo-spatial abilities were adapted from various cognitive rehabilitation therapy software programmes like PSCogRehab95, Challenge of the Mind (Bracy, 2003) and used in manualized forms. Activities used for attention involved both visual and auditory modality and involved various adaptations of cancellation tasks, vigilance tasks, discrimination in the presence of distracters, continuous performance tasks, scanning tasks, and mazes. Activities that targeted memory again involved both auditory and visual modalities. These activities included various verbal recall tasks, with increasing level of complexity, Chinese whispers, design recall, pattern recall, sequential verbal recall, visual spatial recall and encoding activities. For enhancing visuo spatial skills the activities included visual copying tasks, various levels of substitution tasks, spatial grids and sequencing activities.

Procedure

Children and parents were educated about the nature and procedure of the study. The children were enrolled for the study after obtaining parental consent. All the activities that were to be used in order of administration, including each program’s description, material requirements, set up, instructions to students, response inputs, were compiled. The first few sessions were devoted to baseline assessments of children. All the baseline assessments were done individually. After the pre intervention assessments, the participants began the retraining sessions, which were to be administered twice a week, over eighteen weeks. Of these 36 sessions, 20 were individual sessions while 16 were group sessions. Each session lasted for one hour. Unlike cognitive retraining with brain injured patients, the students were moved on to the next lesson regardless of mastery of goals on the lesson. However, high scores obtained by individual students were appreciated during sessions where participants could see them as reinforcement. After the completion of the 36-lesson program, all the tests were re-administered.

Results

The data was analyzed by using SPSS Version 17.0. (2009). Initially, Kolmogorov-Smirnov Test was applied to check if the data met the assumption of normal distribution. The z-values for all the domains were found to range between 0.78 to 0.99 indicating that our sample met the criteria of normal distribution. However, considering the small sample size, non parametric
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tests were used Mann-Whitney U Test to compare the performance of two groups and Wilcoxon Signed Rank Test to compare the performance of experimental group in the pre and post intervention conditions. The mean age of the experimental group was 9.2 years (SD 0.68) and for the wait list control group it was 8.9 years (S.D 0.97). The mean number of educational years for the experimental group was 5.2 years (SD 0.86) and of the wait list control group was 5.6 years (S.D 0.78). Tables 1 and 3 show the comparison of cognitive skills and academic performance for the two groups in both the conditions. Tables 2 and 4 show the pre post intervention comparison of cognitive skills and academic performance in the experimental group.

Tables 1 and 2 indicate that in the pre intervention condition the the experimental and wait list control group did not differ significantly on any of the assessed cognitive domains (obtained z-scores are below the critical z value). However, in the post intervention condition both the groups differed significantly on all the assessed cognitive domains. Further, the study of the mean scores reveals that the experimental group performed better on all the targeted cognitive skills in post intervention condition. Table 2, shows the z-values obtained using the Wilcoxon Signed Rank Test for the pre post

### Table 1. Pre and Post intervention comparison of Performance of two groups

<table>
<thead>
<tr>
<th>Cognitive/Academic Skills</th>
<th>Pre Intervention</th>
<th>Post Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean E.G</td>
<td>Mean C.G</td>
</tr>
<tr>
<td>Attention (Time Taken)</td>
<td>8.9</td>
<td>8.1</td>
</tr>
<tr>
<td>Attention (Error Score)</td>
<td>20.2</td>
<td>19.8</td>
</tr>
<tr>
<td>Visual Memory</td>
<td>4.2</td>
<td>5.2</td>
</tr>
<tr>
<td>Immediate Verbal Recall</td>
<td>43.0</td>
<td>45.7</td>
</tr>
<tr>
<td>Delayed Recall</td>
<td>32.0</td>
<td>31.9</td>
</tr>
<tr>
<td>Total Learning</td>
<td>50.0</td>
<td>47.9</td>
</tr>
<tr>
<td>Visuo Spatial skills</td>
<td>86.0</td>
<td>87.8</td>
</tr>
<tr>
<td>Hindi</td>
<td>60.8</td>
<td>63.4</td>
</tr>
<tr>
<td>English</td>
<td>63.2</td>
<td>64.2</td>
</tr>
<tr>
<td>Mathematics</td>
<td>52.8</td>
<td>55.8</td>
</tr>
</tbody>
</table>

Note: E.G- Experimental Group, C.G- Wait List Control Group * p>0.05, **p>0.01
intervention comparison of cognitive skills for the experimental group. It is observed from Table 2 that there is significant difference in the pre-post intervention scores on all the assessed domains of performance.

The academic performance of children—both pre and post intervention and the z-values (Table 1) for pre intervention condition for the two groups were found to be non-significant for all subjects. However, in the post intervention condition, there was a significant difference in the academic performance of the experimental group as compared to wait list control group (Table 1) and also significant enhancement in academic performance of experimental group was observed after the intervention (Table 2).

Table 2. Pre & Post Intervention Comparison of performance of experimental group

<table>
<thead>
<tr>
<th>Cognitive Skills</th>
<th>Pre Mean</th>
<th>Post Mean</th>
<th>z</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention (Time)</td>
<td>8.9</td>
<td>5.2</td>
<td>-2.84**</td>
</tr>
<tr>
<td>Attention (Error)</td>
<td>20.2</td>
<td>13.0</td>
<td>-1.98*</td>
</tr>
<tr>
<td>V. Memory</td>
<td>4.2</td>
<td>7.6</td>
<td>-3.77**</td>
</tr>
<tr>
<td>I.V. Recall</td>
<td>43.0</td>
<td>69.0</td>
<td>2.87**</td>
</tr>
<tr>
<td>D. Recall</td>
<td>32.0</td>
<td>62.0</td>
<td>2.09*</td>
</tr>
<tr>
<td>T. Learning</td>
<td>50.0</td>
<td>76.0</td>
<td>4.02**</td>
</tr>
<tr>
<td>V.S. Skills</td>
<td>86.0</td>
<td>106.5</td>
<td>3.92**</td>
</tr>
<tr>
<td>English</td>
<td>60.8</td>
<td>71.0</td>
<td>-2.94**</td>
</tr>
<tr>
<td>Hindi</td>
<td>63.2</td>
<td>75.6</td>
<td>-2.81**</td>
</tr>
<tr>
<td>Math</td>
<td>52.8</td>
<td>69.4</td>
<td>-3.15**</td>
</tr>
</tbody>
</table>

* p>0.05, **p>0.01  Note: V. Memory: Visual memory, I.V. Recall: Immediate visual recall, D. Recall: Delayed recall, T. Learning: Total learning, V.S. Skills: Visuuo-spatial skills, Math: Mathematics

Discussion

Cognitive Retraining techniques (CRT) have been reported to produce improvement in patients of traumatic brain injury (Tam et al. 2003), schizophrenia (Kurtz 2003), epilepsy (Gupta et al. 2003), substance abuse (Berrol 1990), learning disability (Malhotra et al. 2009), ADHD. The present study was the first of its kind in India in which efficacy of CRT was studied in primary school children with no diagnosable neuropsychiatric disorder and its impact on school performance was assessed.

From the results section, it is observed that cognitive retraining produced significant enhancement in the targeted cognitive skills of children in the experimental group while no significant gains were observed for the wait list control group (Table 1). This implies that largely the attained gains are attributable to the intervention and are most likely not developmental or maturational changes. With respect to attention, there is a significant reduction in the time taken to complete the task and number of errors committed. It was also observed that there was a reduction in both the number of omissions (indicative of visual scanning) as well as commissions (indicator of response inhibition). Thus, with retraining both visual scanning and response inhibition improved. Gains in performance on test of visual memory and visuo spatial skills have also been observed. There has been significant enhancement in all three measured aspects of verbal memory. This implies that either the consolidation process has improved or/and interference processes have decreased with this training package. Bracy et al. used computerized cognitive skills training program which focused on training attentional, executive, visuospatial and problem solving skills in 12 to 14 year old children and reported a significant increase in intellectual functioning (p<.01) (Bracy et al. 1999). Also, studies have reported significant improvement in attention after 10 training sessions by using Computer Assisted Instruction (CAI) approach for enhancing attention in elementary school children (Navarro et al. 2003). Review of these Cognitive Retraining Therapies (Diamond 2001) have stressed on techniques that are geared
toward improving visual scanning and ‘retraining’ of patients to attend to the neglected field as the mainstay of these therapies.

Further, in the post intervention condition, there have been significant improvements in performance on all the three academic subjects—Hindi, English and Mathematics in children of the experimental group whereas no such improvements were observed in the wait list control group. These improvements were observed despite the fact that no direct intervention was given for these three subjects (Table 2). This is largely because all the academic subjects rest on the basic cognitive skills and an enhancement in the cognitive skills of attention, memory and visuospatial abilities may have led to these functional improvements. As Bryant et al. (1990) had reported that visual-spatial problems may interfere with a child’s ability to perform mathematical problems correctly including misalignment of numbers in columns, difficulties with place value etc., thus, mathematical skills which largely involve the use of attention and visuo spatial functions (which were targeted in the study), the group has shown significant improvement. Also, attending to various sound stimuli requires attention. Further, reading primarily requires accurate analysis of the characteristics of visual pattern. Correct decoding of written words requires detailed processing which is made possible by sustaining attention. Since, sustained attention along with other required cognitive skills of memory and visuospatial abilities were retrained, it is probable that reading and other academic abilities improved as an indirect effect of intervention.

Thus, the capability to enhance the cognitive/intellectual functioning of children and thus potentially enhance their academic performance would have profound impact on education. In addition, improved academic performance stemming from an enhanced skill base (e.g., improved attentional skills, improved deductive and inductive reasoning, ability to manipulate numbers and concepts, etc.) rather than from just educational based interventions (e.g., memorizing math tables, using rote recall exercises, memorizing steps, etc.) would appear a more desirable avenue as the child would actually “own” the skills to acquire knowledge. Previous clinical work with those with impaired cognitive skills, from neurological anomalies, or learning disability have demonstrated the effectiveness of a comprehensive manualized cognitive retraining programmes. The results of this study show that a similar program may have the capability of enhancing cognitive/intellectual skills in the general population of primary school children. Further, the study provides additional academic performance measures collected from the same subjects which have also improved as a result of intervention. Future researches in this area will include higher cognitive functions like planning, and problem solving functioning. In addition, we plan to further study and refine the training program in order to broaden the skill areas addressed and affected by the intervention. The study purports that as much effort should be applied to the acquisition of the basic skills required for educational pursuits as is applied to the presentation of educational material. The end result may be children better enabled to utilize what they are learning and better equipped to learn.

From this study we conclude that manualized cognitive retraining over thirty six hours can be used to enhance selective and sustained attention, visual, verbal memory and visuospatial skills in children without any diagnosable disorder. These effects are significant enough to improve academic performance and have clinical and academic significance. The findings have implications for future educational curricula aiming at improved academic performance stemming from an enhanced skill base rather than from just educational based interventions.

Reference

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Simultaneous and Successive Processing in Children with Reading and Writing Difficulties

Nishi Tripathi and Bhoomika R. Kar

Reading is related to the dominant interaction between the simultaneous (top-down) and successive (bottom-up) processes. Simultaneous processing appears to mediate the visual coding whereas successive processing plays a major role in phonological coding. 17 children were identified with reading and writing difficulties on formal assessment. Out of these 17 children 10 children were reading disabled only and 7 children had both reading and writing disability. Their performance on reading and writing tests indicated errors pertaining to deficits in phonological decoding in Hindi and English language, poor reading comprehension, poor working memory and deficits in visuo-spatial analysis. Performance on writing tests in Hindi and English showed deficits in visuo-spatial analysis and temporal processing. In order to explore the cognitive processes involved in reading and writing, cognitive processes of planning, attention simultaneous and successive processing were examined using the Cognitive Assessment System (CAS) (Naglieri and Das, 1997). The performance of each child was evaluated with reference to the norms of CAS. Children with reading disability alone were significantly different from children with both reading and writing difficulties on successive processing. These results need further verification. More specific experiments on letter and word recognition and orthographic processing, interaction between linguistic processes, speed of visual analysis perception and working memory involved in reading and writing ability are required, particularly to understand reading, writing difficulties as pertaining to English and Hindi language.

Keywords: Reading and writing difficulties, Simultaneous and successive processing.

Learning disabilities are often not easily recognized, accepted or considered serious once detected. Learning disabilities affect one in seven people according to the National Institute of Health. It is believed that in the U.S 1-5% children in a classroom are learning disabled and up to 10% mildly disabled (Karanth, 2003). Epidemiological studies of learning disabilities in India are fraught with difficulties ranging from the very definition of learning disabilities, identification, assessment, to socio-cultural factors unique to India. In India learning difficulties are compounded by factors like parental illiteracy and lack of exposure to literacy related skills in the home environment (Suresh and Sebastian, 2003). Learning disabilities as reported in the western countries are common in India as well but with a different context. Learning disabilities in Indian context become a complex problem to understand because children are bilinguals/multilinguals. The most common learning disability is difficulty with language i.e. writing, spelling and reading. The majority of students who receive services for learning disabilities (LD) have severe writing problems that persist over time (Graham & Harries, 1989, 1990).

Reading is one of the most complex cognitive processes for humans involving visual and semantic decoding, temporal processing, phonological processing, orthographic, syntactic and contextual analysis and comprehension. Reading involves visual and semantic decoding, temporal processing, phonological processing.
orthographic, syntactic and contextual analysis and comprehension. Word reading is related to this dominant interaction between the simultaneous (top-down) and successive (bottom-up) processes. Simultaneous processing is dominant in visual coding whereas successive processing plays a major role in phonological coding (Das, Naglieri and Kirby, 1994). Generally, dysfunction in successive processing has been found in disabled readers based on the PASS model of cognitive processing (Perez-Alvarez and Timoneda-gallart, 2000). Reading disability is supposed to be a failure in learning to optimize the coordination of sub processes involved in reading with the consequence of errors in integrating reading related information represented in working memory (Lachman, 2002).

Writing related problems include errors in spelling, punctuation, capitalization, and handwriting. It is believed that at least three factors may account for students’ difficulties in writing (Graham & Harries, 1990). First, their problems in producing text may interfere with other important writing processes such as generating ideas. Second, their lack of knowledge about writing or their ability to access what they do know may impact on their ability to operate and deploy the cognitive process considered central to effective writing. Third, the cognitive moves or writing strategies employed by learning disabled children may be immature or ineffective. The complex process of writing integrates visual, motor and conceptual abilities, and is a major medium through which children demonstrate their knowledge in academic subjects.

Reading and writing are complex cognitive processes. Cognitive functions such as attention, motor control, working memory, word recognition and visual integration also have been a topic of research in dyslexia. An inefficient synchrony of these underlying mechanisms results in reading and writing disability. Reading and writing are not isolated processes rather a coordination of many processes. Children with reading difficulties have shown deficits in simultaneous and successive processing which may underlie difficulties in phonological and visual decoding. The present study aimed to examine cognitive deficits in children with reading disability alone as compared to children with both reading and writing disability.

**Method**

The present study aimed to examine cognitive deficits based on PASS model of planning, attention simultaneous and successive processing in children with reading and writing difficulties. Teachers’ perceived language related
problems concerned with phonetics, reading speed, writing errors, poor concentration and behaviour problems as the most prevalent problems in school children which served as an initial screening. Children with learning related problems were assessed on specific reading writing and visuo-spatial tests. Cognitive assessment of these children pertained to examine deficits in simultaneous and successive processing that correspond to phonological and visual coding involved in reading and writing. The cognitive profiles of children with reading and writing difficulties would aid in understanding the underlying cognitive processes affected, thus give an insight into the remedial strategies.

Participants

Seventeen children (8-12 years of age) were identified with learning disability out of which, 7 children (6 boys and 1 girl) had both reading and writing disability. Their Mean age 10.7 years (SD 1.6) and in the second group there were 10 children (9 boys and 1 girl), who had only reading difficulties (Mean age 10.5, SD 1.7). These 17 children were further assessed on the Cognitive assessment system to evaluate the cognitive deficits.

Measures

Coloured progressive matrices/Standard Progressive Matrices (CPM/SPM) (Raven 1998; Raven, 2000) was used to assess the intellectual functions of children with dyslexia in the age range of 7-11 years and SPM for the children above the age of 11 years.

NIMHANS Index of Specific Learning Disability (SLD), (Kapur et al., 2002) NIMHANS index for Specific Learning Disability (SLD) was used to identify children with reading, writing and arithmetical disability. The children taken for this assessment were those perceived as having learning related problems by the school teachers teaching language from 2nd std. to 8th std.

NIMHANS index for SLD provides a formal assessment of learning disability at two levels. Level 1 is for children in the age range of 5-7 years and Level 2 is for children in the age range of 8-12 years. It consists of the following subtests: number cancellation for attention, reading a passage (English), reading comprehension, spelling, copying a passage (English), writing arithmetic test, Bender Gestalt Test for visuo-spatial abilities, Benton visual retention test for visual memory, test for visuomotor integration, and paired associate learning test. Children performing two grades lower than the grade they are in at the time of assessment are considered as learning disabled. While doing the assessments with reading writing tests in English language it was realized that the poor performance is more because of the difficulties related to second language acquisition. Hence, reading and writing tests were also developed and administered for Hindi language for children from 2nd to 8th std. These tests included passages to read and write and test of reading comprehension.

Cognitive Assessment System, (Naglieri and Das, 1997) was used to examine the cognitive profiles of children with dyslexia. CAS is based on the PASS model of cognitive processing. PASS model was initially described as an information processing model by Luria (Luria, 1973) relating to functional organization of the brain. Das has conceptualized the PASS model as a new approach to the assessment of cognitive processing. CAS is based on the basic cognitive processes: planning, attention, simultaneous and successive processing.

CAS is organized into 4 different scales with subtests in each of the four scales. It yields an overall measure of cognitive functioning called the Full Scale Score. It is based on the equally weighted composite of planning, attention, simultaneous, and successive sub-tests. The scale has a normative mean of 100 and SD of 15. It provides an index of the overall level of an individual’s cognitive functioning. The Planning scales include tests like matching numbers, planned codes, and planned connections. The Attention scale includes tests of expressive
attention, number detection and receptive attention. Simultaneous processing scale comprises of tests of Non-verbal matrices, verbal-spatial relations and figure memory. Successive processing scale includes tests like word series, sentence repetition, and sentence questions.

Scoring

Each subtest of each of the 4 scales obtains a raw score. These raw scores are converted to scaled scores and further a total scaled score is obtained for each of the 4 scales.

Procedure

Thirty four children from 2nd to 8th std. perceived with learning related problems of reading and writing by the teachers from an English medium, coeducation, medium level school in Allahabad city, were taken for a formal assessment using the NIMHANS index of SLD in two sessions per child. Each child was also assessed on CPM/SPM to evaluate the intellectual functions. 17 children who performed at 2 grades below their current grade on reading and writing tests were identified as learning disabled. These 17 children were further taken for an assessment of cognitive functions using the Cognitive Assessment System based on the PASS model.

Results

Children with reading difficulties alone and those with reading and writing difficulties were matched on age. Academic performance was found poor for both the groups whereas children in both the groups were average or below average on intellectual functions as assessed on the CPM/SPM with reference to the Indian norms. Children with reading difficulties alone and those with both reading and writing difficulties were not different on measures of intellectual functions (CPM/SPM) $t=.75, p>.05$ and with respect to academic performance $t=1.17, p>.05$. These children showed specific difficulties in language, reading and writing as perceived by the teachers on the problem checklist used for initial screening. Figure 1 presents the frequency percentage of these problems across 2nd-8th standard.

![Figure 1](image-url)
Tripathi et al. / Information processing in reading and writing difficulties

Figure 2. Mean standard scores on PASS scales of CAS

Note: Group 1: Children with reading and writing difficulties; Group 2: Children with reading difficulties alone. Standard scores < 69: well below average; 70-79: below average; 80-89: low average (Naglieri and Das, 1997).

Figure 3. Mean performance of children with dyslexia on subtests of CAS

Note: Group 1: Children with reading and writing difficulties; Group 2: Children with reading difficulties alone. MN: Matching numbers; PCd: planned codes; PCon: planned connections; NM: nonverbal matrices; VSR: verbal spatial relations; EA: expressive attention; ND: number detection; RA: receptive attention, WS: word series; SREP: sentence repetition; SQ: sentence question.
Results presented in Figure 2 indicate below average performance on all the scales of CAS. Results also indicate that children with both reading and writing disability and children with reading disability alone were found more deficient on simultaneous processing. On the other hand children with reading difficulties alone were found to be more deficient on successive processing scales in comparison to children with both reading and writing difficulties.

Results presented in figure 3 indicate that Children with reading and writing disability were found below average on all the subtests of CAS. It is also found that children with reading and writing disability showed well below average performance (as per the norms of CAS) on subtests of simultaneous scale such as verbal spatial relations and nonverbal matrices as compared to those with reading disability alone. Children with reading difficulties alone were more deficient on tests of successive processing such as word series, sentence repetition and sentence question as compared to children with both reading and writing difficulties.

Table 2. Mean comparisons of children with reading difficulties and those with both reading and writing difficulties on scales of CAS

<table>
<thead>
<tr>
<th>Test scores</th>
<th>Mann-Whitney U</th>
<th>Z value</th>
<th>2-tailed p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning scale std. scores</td>
<td>28.00</td>
<td>-.635</td>
<td>.525</td>
</tr>
<tr>
<td>Attention scale std. scores</td>
<td>27.00</td>
<td>-.793</td>
<td>.428</td>
</tr>
<tr>
<td>Simultaneous scale std. scores</td>
<td>31.00</td>
<td>-.394</td>
<td>.694</td>
</tr>
<tr>
<td>Successive scale std. scores</td>
<td>6.50</td>
<td>-2.80*</td>
<td>.005</td>
</tr>
<tr>
<td>Full scale std. scores</td>
<td>19.00</td>
<td>-1.56</td>
<td>.117</td>
</tr>
</tbody>
</table>

Note: * p<.05. Group 1: Children with reading and writing difficulties; Group 2: Children with reading difficulties alone

Results presented in table 2 present mean comparisons of children with reading difficulties and those with both reading and writing difficulties on scales of CAS. Mann-Whitney U test was performed (using SPSS software for statistical analysis) to test the significance of the difference in performance of the two groups on each of the twelve subtests of CAS and also with respect to the standard scores of each of the four scales of CAS. Mann-Whitney U test (a nonparametric parallel test of t test) was performed because of the uneven small sample of the present study. Children with reading disability alone were found to be significantly different from children with reading and writing difficulties on successive processing scale (well below average performance). Both the groups were equally deficient on attention planning and simultaneous scales.

Results presented in table 3 indicate that children with reading and writing difficulties were significantly different from those with reading difficulties alone on tests of successive processing such as word series, sentence repetition and sentence questions. Children with reading difficulties alone were well below average on tests of successive processing as compared to children with both reading and writing difficulties. Children with reading difficulties alone and those with both reading and writing difficulties were found equally deficient on tests
of simultaneous processing as well as on tests of planning and attention. Both the groups performed worse on simultaneous subtests as compared to tests of planning and attention.

**Discussion**

Children with reading difficulties showed errors related to phonological processing in English and Hindi language. However, the present study has shown reading difficulties in both English and Hindi language but the errors in reading English language were much severe as compared to Hindi language. It is also realized that more sensitive tests may be required to assess phonological deficits in Hindi language as it is characterized by consistent grapheme to phoneme mapping. English, being the second language could be the reason for consistent high prevalence of problems related to phonological processing. Reading related problems were also observed in Hindi language though being the first language the difficulties were less severe as compared to English language. Language acquisition is largely determined by the type of orthography and its relationship with the phonology of the language, where there is consistent relationship between phonology and orthography such as in Indian languages. On the contrary where the relationship between the sound and spelling is inconsistent as in English the child has difficulty in understanding and internalizing the orthographic principle. Such difficulties related to second language acquisition extend to further difficulties in learning to read. When children learn to read and write they would have already mastered the language. So, it is natural for them to relate written symbols and language structure they have mastered (Prakash, 2003). It is also reported that phonemic awareness is not so crucial in learning to read Indian languages such as Hindi, Kannada and Oriya (Karanth and Prakash, 1996). Such reports explain the dependence on phonological strategy used for learning English language.

Writing difficulties were also prevalent across 2nd-8th std. as observed in the present study. Errors in writing pertained to difficulties in visuospatial analysis, spontaneous writing and inability to use phonetic cues. It has been reported that errors in writing include omissions, case confusion, mis-sequencing of letters, reversals, and substitutions (Berninger & Alsdorf, 1989). Such problems related to writing are consistent with the findings of the present study. The complex process of writing integrates visual, motor and conceptual abilities and it is a major means through which students demonstrate their knowledge in academic subjects, classroom. After the third grade, emphasis is placed on writing as a form of meaningful self-expression. High prevalence of writing related problems can also be explained in terms of the close supervision and emphasis on writing skills in the school curriculum.

Highest prevalence of language and writing related problems could be interrelated. Problems related to language pertain to the difficulties in second language acquisition, phonological awareness particularly with respect to English language. Such difficulties in language acquisition and dependence on phonological awareness relates to the problems observed in reading. Difficulties in learning to read relate to problems in writing. Writing skills include competence in writing, punctuation, spelling, capitalization and distinguishing one letter from another. These aspects of writing skills are related to the processes through which the child learns to read. It has been reported that orthographic processing is not as impaired in dyslexics as phonological processing in English language (Siegel, 1999). However, we have observed that orthographic processing is also affected along with phonological processing particularly in Hindi language.

Difficulties in reading and writing are mediated by underlying cognitive processes involved in reading. Cognitive processes such as simultaneous and successive processing contribute to the complex cognitive function of reading as it requires both phonological and visual decoding. The PASS model of reading explains
the simultaneous contribution of successive and simultaneous processing to reading and writing disability. Although most of the researches on simultaneous and successive processing in reading disability have primarily shown deficits in successive processing as reading is predominantly a temporal process (Perez-Alverez and Timoneda-Gallart, 2000). Simultaneous processing has strong spatial and logical-grammatical components and it requires perception of parts into a gestalt (Naglieri and Das, 1997). Cognitive processes underlying reading involve both visuo-spatial analysis and linguistic processing. Children with reading disability alone showed poor performance on tests like word series, sentence repetition and sentence question measuring successive processing. Below average performance on tests of nonverbal matrices (a measure of spatial reasoning) and verbal spatial relations was observed in children with both reading and writing disability and also those with reading disability alone. Some studies show only successive processing to be implicated in a reading disability, while others indicate both successive and simultaneous processing are involved. Yet others indicate that planning is the most significant process involved in reading. The present study has also found below average performance on tests of planning such as matching numbers, planned codes and planned connections on CAS. Most of the studies have found low scores on successive processing for students with reading disability. It has also been suggested that students with reading disability have additional difficulty with simultaneous processing and planning. It has been reported that scores for successive processing tasks were low for all children with reading and writing difficulties; Group 2: Children with reading difficulties alone. *p<.05. Group 1:

Table 3. Mean comparisons of children with reading difficulties and those with both reading and writing difficulties on subtests of CAS

<table>
<thead>
<tr>
<th>Scales of CAS</th>
<th>Subtests</th>
<th>Mann-Whitney U</th>
<th>z</th>
<th>2-tailed p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>Matching numbers</td>
<td>34.00</td>
<td>-1.08</td>
<td>.920</td>
</tr>
<tr>
<td></td>
<td>Planned codes</td>
<td>31.00</td>
<td>-.307</td>
<td>.696</td>
</tr>
<tr>
<td></td>
<td>Planned connections (time in secs)</td>
<td>23.00</td>
<td>-1.18</td>
<td>.242</td>
</tr>
<tr>
<td>Attention</td>
<td>Expressive attention</td>
<td>27.00</td>
<td>-.782</td>
<td>.434</td>
</tr>
<tr>
<td></td>
<td>Number detection</td>
<td>9.50</td>
<td>-2.49*</td>
<td>.013</td>
</tr>
<tr>
<td></td>
<td>Receptive attention</td>
<td>33.50</td>
<td>-.147</td>
<td>.883</td>
</tr>
<tr>
<td>Simultaneous</td>
<td>Nonverbal matrices</td>
<td>30.00</td>
<td>-.496</td>
<td>.620</td>
</tr>
<tr>
<td></td>
<td>Verbal spatial relations</td>
<td>30.00</td>
<td>-.492</td>
<td>.623</td>
</tr>
<tr>
<td></td>
<td>Figure memory</td>
<td>25.00</td>
<td>-.932</td>
<td>.352</td>
</tr>
<tr>
<td>Successive</td>
<td>Word series</td>
<td>10.00</td>
<td>-2.46*</td>
<td>.014</td>
</tr>
<tr>
<td></td>
<td>Sentence repetition</td>
<td>12.00</td>
<td>-2.29*</td>
<td>.022</td>
</tr>
<tr>
<td></td>
<td>Sentence question</td>
<td>16.00</td>
<td>-1.90*</td>
<td>.05</td>
</tr>
</tbody>
</table>

Note: Children with reading and writing difficulties; Group 2: Children with reading difficulties alone. *p<.05. Group 1:
students with a decoding disability. However, students with a severe disability also had difficulty with simultaneous processing (Das, Naglieri, and Kirby, 1994). Our results are partially consistent with such reports as we also found deficits in successive processing particularly in reading impaired children. However, worse performance on tests of simultaneous processing highlights the need to look at the deficient interaction of phonological and visual decoding mediating reading and writing difficulties.

We found that children with reading difficulties alone as well as those with both reading and writing disability were more deficient on simultaneous processing. Auditory information is presented successively while reading and visual information is presented simultaneously. However, after the information is in working memory, the coding or processing that is done with it may be either simultaneous or successive. While simultaneous processing is usually thought of as primary visual and spatial, and successive processing as temporal, either type of coding may be involved (Das, Naglieri, and Kirby, 1994). Luria (1966) and Jarman (1980) suggest that simultaneous and successive processes as well as attention and planning are involved in language use. Successive processing is implicated in understanding the syntax of a sentence or the organization of speech. Successive processing has been correlated with the decoding aspect of reading (Cummins & Das, 1977; Kirby & Das, 1977, Naglieri & Das, 1987). Words are made up of strings of letters which must be perceived in a particular order. In addition, words are related to the sounds associated with the particular letter or combinations of letters. Kirby and Das (1990) described the association of the naming or articulation of words with successive processing. Planning processes could be involved in the assembly of speech sounds. Children in both the groups have shown below average performance on tests of planning.

Reading comprehension was found impaired in both the groups. Comprehension has been linked to simultaneous processing also found deficient in both the groups. Das, Cummins, Kirby, and Jarman, (1979) found that comprehension requires simultaneous processing. However, some researches have confirmed that both simultaneous and successive processing as well as planning is involved in comprehension (Das, Mensink, & Janzen 1990; Kirby & Gordon, 1988).

Our observations on the nature of language and writing errors and the status of cognitive processes of simultaneous and successive processing implied in reading and writing difficulties need further verification with a larger sample in each grade and the developmental analysis of cognitive components of reading and writing. We have found that phonological decoding and visuospatial analysis is primarily affected in reading and writing disability in both English and Hindi language. However, orthographic processing seems to be equally affected in Hindi language. The specific cognitive processes i.e., simultaneous processing, which is a blend of perceptual and linguistic processes, was found most affected in both the groups and successive processing was found more deficient in children with reading difficulties alone. Simultaneous processing appears to mediate the interaction between visuospatial perception and language processing involved in reading and writing whereas successive processing is involved in the serial order processing that mediates successive processing (Das, 1988). There is a need to explore the mechanisms underlying the specific cognitive components involved in reading and writing particularly in Hindi language.

Acknowledgement

We deeply acknowledged the participation of the children and cooperation extended to us by the school authorities.

References
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Appendix-A
Means and standard deviations of the standardscores of the four scales of the Cognitive Assessment System for both the groups

<table>
<thead>
<tr>
<th>Test scores</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Group 1</td>
</tr>
<tr>
<td>Planning std.scores</td>
<td>76.28 (10.75)</td>
</tr>
<tr>
<td>Attention std.scores</td>
<td>74.57 (6.52)</td>
</tr>
<tr>
<td>Simultaneous std.scores</td>
<td>62.14 (8.61)</td>
</tr>
<tr>
<td>Successive std.scores</td>
<td>80.42 (4.54)</td>
</tr>
<tr>
<td>Full scale std.scores</td>
<td>69.57 (15.31)</td>
</tr>
</tbody>
</table>

Sorted: 76.28 70.90 62.14 80.42

**Appendix-B**

Means and SDs of all the subtests of the CAS for both the groups

<table>
<thead>
<tr>
<th>Scales of CAS</th>
<th>Tests</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Group 1</td>
</tr>
<tr>
<td>Planning</td>
<td>Matching numbers</td>
<td>6.0 (2.38)</td>
</tr>
<tr>
<td></td>
<td>Planned codes</td>
<td>49.57 (18.04)</td>
</tr>
<tr>
<td></td>
<td>Planned connections (time in secs)</td>
<td>397,4299.27</td>
</tr>
<tr>
<td>Attention</td>
<td>Expressive attention</td>
<td>24.57 (10.46)</td>
</tr>
<tr>
<td></td>
<td>Number detection</td>
<td>31.85 (11.71)</td>
</tr>
<tr>
<td></td>
<td>Receptive attention</td>
<td>21.57 (7.32)</td>
</tr>
<tr>
<td>Simultaneous</td>
<td>Nonverbal matrices</td>
<td>4.0 (3.41)</td>
</tr>
<tr>
<td></td>
<td>Verbal spatial relations</td>
<td>5.85 (3.02)</td>
</tr>
<tr>
<td></td>
<td>Figure memory</td>
<td>10.28 (2.92)</td>
</tr>
<tr>
<td>Successive</td>
<td>Word series</td>
<td>9.42 (1.71)</td>
</tr>
<tr>
<td></td>
<td>Sentence repetition</td>
<td>5.28 (1.38)</td>
</tr>
<tr>
<td></td>
<td>Sentence question</td>
<td>4.85 (1.57)</td>
</tr>
</tbody>
</table>

Note: Group 1: Children with reading and writing difficulties; Group 2: Children with reading difficulties alone.
Acknowledgement

We thankfully acknowledge Prof. Surya Gupta, Former Associate Professor, Clinical Psychology, AIIMS, New Delhi for his generous contribution of Rs. 3000 to Indian Journal of Clinical Psychology.

Editor, IJCP

Obituary

We are truly saddened by the death of Prof. T. R. Shukla, former Associate Professor of Psychology, Central Institute of Psychiatry and active member of Indian Association of Clinical Psychologists. Apart from being a clinical psychologist, an excellent teacher, and researcher, he was a fine human being. His passing will not only leave a void in IACP, but in the hearts of everyone who knew him closely. His memory will always inspire generations of clinical psychologists of this country. We express our deep condolence for him.

Editor, IJCP

Corrigendum

In our previous volume: Indian Journal of Clinical Psychology Vol.35, 2, 2008 pp.93 names of the following two co-authors: S. Venkatesan and M. Divya were misspelled as D. Venkatesn and M. Vidya. The error is regretted.

Editor, IJCP