DESIGNING AND EVALUATING THE BRIEF INDIVIDUAL PARENTAL TRAINING PROGRAMME FOR MOTHERS OF CHILDREN WITH ADHD

Thesis
submitted in partial fulfilment of the
award of the degree of

DOCTOR OF PHILOSOPHY
IN
PSYCHOLOGY

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Under the guidance of

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2026

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This is to certify that the Ph.D. thesis entitle "**DESIGNING AND EVALUATING THE BRIEF INDIVIDUAL PARENTAL TRAINING PROGRAMME FOR MOTHERS OF CHILDREN WITH ADHD"**is a bonafide record of research work carried out by SARA RENNI under my supervision and guidance and that no part of this has been presented before for the award of any degree, diploma, associateship or fellowship of other similar title or recognition.

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DECLARATION

I hereby declare that the work presented in the thesis entitled "**DESIGNING AND EVALUATING THE BRIEF INDIVIDUAL PARENTAL TRAINING PROGRAMME FOR MOTHERS OF CHILDREN WITH ADHD"** is based on the original work done by me under the guidance of **(Retd)Associate Professor (Dr.) Monsy Edward** (Supervising Guide) **and Dr. Soumya Starlet.C. T** (Co Guide) and has not been included in any other thesis submitted previously for the award of any degree. The contents of the thesis are undergone plagiarism check using i Thenticate software at C.H.M.K. Library, University of Calicut, and the similarity index found within the permissible limit. I also declare that the thesis is free from AI generated contents.

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ACKNOWLEDGEMENTS

Praises and thanks to the God, the Almighty, for His showers of blessings throughout my research work to complete the research successfully. I would like to express my deepest gratitude to my supervisor, (Dr.) Monsy Edward (Supervising Guide), Dr. Soumya Starlet.C. T (Co Guide) for her continuous support, guidance, and encouragement throughout my research. Their vast knowledge and insightful feedback were crucial in shaping the direction of this thesis.

I extend my heartfelt gratitude to Dr. C. Jayan, whose guidance and encouragement enabled me to pursue my Ph.D. studies. I owe my sincere gratitude to Dr. Baby Shari PA, Professor, Department of Psychology, University of Calicut for her motivation and inspiring words. I also extend my heartfelt thanks to Dr Soumya Varghese whose constructive feedback and essential suggestions in the statistical analysis enhanced the quality of my work.

I am sincerely grateful to Prajyoti Niketan College for providing me with the invaluable opportunity to conduct research at their esteemed research centre. I extend my deepest thanks to the manager of this institution, Rev Fr Dr Harshajan Pazhayattil. His dedication and love for Psychology department and the research work have been a constant source of inspiration, and I am profoundly grateful for the support. Special thanks to the Principal Dr.Simi Varghese for motivating me to submit the thesis at the earliest. I'd like to thank all the Faculties of Department of Psychology at the Prajyoti Niketan College Dr Nice Mary Francis, Dr Sukanya B Menon, Dr. Milu Maria Anto, Dr Jaya AT. I sincerely thank all the staff of Prajyoti

Niketan College for their support and assistance throughout my academic work. I want to express my gratitude to all of my colleagues who have helped me get to this stage in my research specially Dr. Bishmi and Dr.Soumya Mohan,Dr.Jisha,Dr.Vandana for their assistance in my thesis work.

I would like to express my sincere gratitude to all the participants in this research, particularly the mothers of children with ADHD. Their involvement, valuable insights, and willingness to share their experiences were essential to the completion of this study. This thesis would not have been possible without their support, and I am deeply appreciative of the time and commitment each of them contributed.

I also extend my gratitude to my colleagues at CDMDP, especially Dr. Nigesh, Mr. Faize, Mr. Shad, and Dr. Raheemudheen, for their support in my research work, and to the PGDRP students at the institution where I conducted my study for their assistance and cooperation during data collection. I also sincerely thank my friends, Dr. Abhinitha and Dinta, for their support, encouragement, and valuable companionship in my research journey.

I also sincerely thank my husband, in-laws, brother-in-law and his wife, and their children, as, for their constant support, prayers, encouragement, and understanding throughout the course of my research and writing. I also wholeheartedly thank my parents and sister for their unwavering support, guidance, and encouragement, which have been a constant source of strength throughout my research and writing journey.

In ending, I would like to take this opportunity to express my gratitude to everyone, both known and unknown, who has helped in some way with my research work. For their indispensable encouragement, support, and interest, as well as any other contribution they may have made, I am extremely grateful

Sara Renni

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LIST OF ABBREVIATIONS

ADHD	:	Attention Deficit Hyperactivity Disorder
PMT	:	Parent management training
CPRS	:	Conners Parent Rating Scale Revised
CBCL	:	Child Behavior Checklist
GHQ 28	:	General Health Questionnaire 28
APQ	:	Alabama Parenting Questionnaire
PSI	:	Parent Stress Index Scale
SDD	:	Socio Demographic Details

ABSTRACT

Attention-Deficit/Hyperactivity Disorder (ADHD) is a prevalent neurodevelopmental condition that often challenges and family dynamics and parenting practices. This study aimed to design and evaluate a Brief Individual Parental Training Programme tailored for mothers of children with ADHD. The intervention was designed to increase mothers' understanding of ADHD, strengthen their perceived family support, enhance parenting strategies, and promote positive interactions between mother and child. An exploratory sequential mixed-methods design was employed, beginning with a qualitative phase to explore the phenomenon, followed by a quantitative phase to examine prospective outcomes through pre- and post-test comparisons. The sample comprised thirty mothers of children aged 6–10 years diagnosed with ADHD, of different categories was collected from Community Based Disability Management and Rehabilitation Programme(CDMRP), Psychology Department, Calicut university and Convenient sampling was used. The research was conducted in two phases: Phase I involved the development of the intervention module and its validation through a pilot study, while Main Phase comprised the implementation of the main study. Pre-intervention assessments were conducted for both children and their mothers. The Binet–Kamat Test of Intelligence (BKT)was administered to rule out intellectual disability, the Conners Parent Rating Scale Revised (CPRS)was used to confirm the diagnosis of Attention-Deficit/Hyperactivity Disorder (ADHD), and the Child Behavior Checklist (CBCL)was employed to assess behavioural problems. For the mothers, the General Health Questionnaire–28 (GHQ-28) was administered to screen for

psychiatric concerns, the Parental Stress Index (PSI)was used to measure stress levels, and the Alabama Parenting Questionnaire (APQ) was employed to evaluate parenting practices.

Following these assessments, two checklists were administered sequentially: the ADHD Awareness Checklist, which assessed maternal knowledge about Attention-Deficit/Hyperactivity Disorder (ADHD), and the Family Dynamics Checklist, which explored perceived support and family relationships. Subsequently, mothers participated in an eight-session Brief Individual Parental Training Programme. The sessions incorporated psychoeducation on Attention-Deficit/Hyperactivity Disorder (ADHD), strategies for managing child behaviour, approaches to strengthening family dynamics, and techniques for improving mother–child interactions through structured activities.

Post-intervention assessments, conducted using the Alabama Parenting Questionnaire (APQ) and Conners Parent Rating Scale Revised (CPRS), indicated significant improvements in maternal awareness of Attention-Deficit/Hyperactivity Disorder (ADHD), parenting practices, and family interactions. These findings suggest that the Brief Individual Parental Training Programme is both feasible and effective in supporting mothers of children with ADHD, with potential for integration into clinical, educational, and community mental health settings.

Key Words: Attention-Deficit/Hyperactivity Disorder (ADHD), Brief Individual Parental Training Programme, Family dynamics, Mother–child relationship,

സാരാംശം

ADHD ബാധിച്ച കുട്ടികളുടെ മാതാക്കളെ സഹായിക്കുന്നതിനായി *Brief Individual Parental Training Programme* രൂപകല്പന ചെയ്ത് ഫലപ്രാപ്തി വിലയിരുത്തുകയായിരുന്നു പഠനത്തിന്റെ ലക്ഷ്യം. ഇടപെടലിന് മുമ്പായി ബിനെറ്റ്–കാമത് ബുദ്ധിമുട്ട് പരിശോധന, കോൺനേഴ്സ് റേറ്റിംഗ് സ്കെയിൽ–റിവൈസ്ഡ്, *Child Behavior Checklist* എന്നിവ കുട്ടികളിൽ നൽകി. മാതാക്കളിൽ *General Health Questionnaire–28*, *Parental Stress Index*, *Alabama Parenting Questionnaire* എന്നിവ നടത്തി. തുടർന്ന് ADHD അറിവിനും കുടുംബാന്തർബന്ധങ്ങൾക്കും രണ്ടു ചെക്ക്ലിസ്റ്റുകൾ നൽകി.

എട്ട് സെഷനുകളുള്ള ഇടപെടൽ മാതാക്കളിൽ സൈക്കോഎജ്യുക്കേഷൻ, കുട്ടികളുടെ പെരുമാറ്റ നിയന്ത്രണരീതികൾ, കുടുംബാന്തർബന്ധങ്ങളുടെ ശക്തീകരണം, മാതാവ്–കുട്ടി ബന്ധം മെച്ചപ്പെടുത്തൽ എന്നിവ ഉൾപ്പെടുത്തി. ഇടപെടലിന് ശേഷമുള്ള വിലയിരുത്തലുകൾ ADHD അറിവിലും രക്ഷാകർതൃത്വ രീതികളിലും കുടുംബാന്തർബന്ധങ്ങളിലും ഗണ്യമായ പുരോഗതി പ്രകടിപ്പിച്ചു.

ഫലങ്ങൾ സൂചിപ്പിക്കുന്നത് മാതാക്കളെ സഹായിക്കുന്ന പ്രായോഗികവും ഫലപ്രദവുമായ ഇടപെടലാണെന്നും, അത് ക്ലിനിക്കൽ, വിദ്യാഭ്യാസ, കമ്മ്യൂണിറ്റി മാനസികാരോഗ്യ മേഖലകളിൽ പ്രാവർത്തികമാക്കാവുന്നതാണെന്നും ആണ്.

സൂടകപദങ്ങൾ: ശ്രദ്ധ കുറവ് / അമിത ചാഞ്ചാട്ട വ്യാധി (ADHD), മാതൃത്വ പരിശീലനം, രക്ഷാകർതൃത്വ രീതികൾ, കുടുംബാന്തർബന്ധങ്ങൾ, മാതാവ്–കുട്ടി ബന്ധം.

CHAPTER 1
INTRODUCTION

Introduction

The present chapter provides brief descriptions on key themes of the present research. The following sections provide accounts of the History of Attention Deficit Hyperactive Disorder (ADHD), current diagnostic features, prevalence, co morbidity, causes, and theories regarding ADHD. Additionally, it outlines the concept of Parent training programme. At the end, the chapter concludes with objective, hypothesis and intervention process.

1. A Brief History of Attention Deficit/ Hyperactivity Disorder (ADHD)

Hyperactive reaction of children was the original name for ADHD(APA,1968).The American Psychiatric Association (APA) did not officially recognize it as a mental illness until the 1960s.In the 1980's the diagnosis was renamed "attention deficit disorder with or without hyperactivity."(APA,1980)Sir George Frederic Still, a British paediatrician, first described "an abnormal defect of moral control in children" (Still,1920).He discovered that while some impacted children were nonetheless intellectual, they were unable to regulate their behavior like other children. Barkley (1990) said that many children were coming from problematic families and inadequate upbringing. For good prognosis he encouraged special environment for young people.

According to the American Psychiatric Association (1968,1980), did not recognize ADHD in the first edition of the *Diagnostic Statistical Manual of Mental Disorder (DSM)*. It was only in 1968, with the release of Diagnostic and Statistical Manual of Mental Disorders, Second Edition **(**DSM-II), that the disorder was

formally introduced under the name "Hyperkinetic Reaction of Childhood" for the first time. By 1980 the Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSMIII) renamed it to attention deficit disorder (ADD), reflecting evolving scientific consensus that attentional problems rather than hyperactivity were central to the condition. At that time scientists believed hyperactivity was not a common symptom of the disorder.

The American Psychiatric Association (1980) created two subtypes of ADD: ADD with hyperactivity, and ADD without hyperactivity. The American Psychiatric Association (1987) later released a revised version of the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition (DSM-III).* They renamed it attention deficit hyperactivity distinction. Instead of identifying subgroups of the disease, the American Psychological Association consolidated the three symptoms of hyperactivity, impulsivity, and inattention into a single list.

Attention Deficit/ Hyperactivity Disorder **(**ADHD) existed throughout life, but under several titles. Ebaugh (1923) was one of the first to look into this subject. The disease known as "epidemic encephalitis "and its impact on teenagers captivated Dr. Ebaugh, a physician and the director of the Philadelphia general hospitals near Psychiatric Department.

Many teenagers in North America experienced behavior and cognitive impairment similar to signs of Attention Deficit/ Hyperactivity Disorder **(**ADHD) in 1917-1918 as a result of an encephalitis outbreak. Children with same disease were prone to arguments, hyperactive, impulsive, chatty, moody, irritable, uncontrollable, and experienced sleeplessness were found by Ebaugh. He reported first about

hyperactivity/hyperkinesis phenomena. For many years ie at least 70years hyperactivity was changed from one name to another and in the last 30years. Charles Bradley's (1937) used the term, "organic behavior syndrome" for "restlessness," "irritability," and "over activity."

According to Barkley (1990), beginning in the late 1930's researchers studied other causes of behavioral expression of brain injury in children. In that they found out that hyperactive children presented similarities to that of frontal lobe lesions who is having pathological deficit. This concept of brain injured child transferred to 1940's. In "Minimum Brain Damage" (MBD) condition children were educated with minimal stimuli, in regulate classroom condition. In present condition we now know that stimulation is the desired treatment environment for these disordered children. According to Strauss& Werner (1941) and Strauss & Lehtinen 1947), also in the 1940's, the behavioral term of "distractibility" gets up to popularity.

The theory of Minimum Brain Damage (MBD) became less important in 1950's and 1960's because it became too unclear, too comprehensive and of little help for further prognosis. After that too many terms came to explain cognitive, learning and behavioral disorders. (Cognitive disabled (CD), Learning Disabled (LD), Behaviorally Disabled (BD), etc.). In 1968 the idea the hyperactivity child got up to fame with explanation of excessive activity level and which gave the path into American Psychiatric Association's DSM-II.

Chess (1960) authored paper that gave importance to behavioral syndrome that may be the result of organic pathology. She gave explanation on less serious or pervasive behavioral problems. She encouraged a multi-modal approach including

parent counseling, behavioral modification, psychotherapy, medication and special education (Barkley, 1990).

More than 2000 published studies gave importance to hyperactivity but impulsivity came into discussion with short attention span, low frustration, distractibility and aggressiveness (Pooley, 1995 as cited in Barkley, 1990). At that time Barkley (1990) criticized regarding the above theories with lack of evidence.

In 1970 there was a fast increase in the use of medication for hyperactive children with more importance to national publicity about the Ritalin treatment. During this time period Congress passed the Vocational Rehabilitation Act of 1973(Public Law, 93-112) and in the same time actions came to highlight the nation's awareness of disabilities (Pooley, 1995, as cited in Barkley, 1990)

In overall observation, the 1980's and 1990's have given rise to considerable literature, an explosion of learning intervention strategies and more clearly defined diagnostic criteria. This actually recommend growing public and professional concern about this prevalent childhood disorder.

Although girls are not inherently less vulnerable, boys are more than twice as likely as girls to receive an ADHD diagnosis. Females with ADHD are likely under diagnosed for a variety of reasons, including some differences in symptoms and an unequal focus on males in research (Quinn & Madhoo, 2014).

1.1Description of the condition

Children with attention deficit hyperactivity disorder experience impulsivity, hyperactivity, and inattention due to physiological changes in th brain. Preschoolers'

difficulty to follow basic instructions and increased distraction are signs of inattention and increased distraction are signs of inattention. Their incapacity to wait in queue and take turns as well as their aggressive reactions to little issues, were characteristics of impulsivity. Constant fidgeting, difficulty setting down for quiet pursuits, and an incessant need to move are some of the symptoms of hyperactivity. Barkley,1990 cites Hopkins-Best,1999)

ADHD is identified using the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR),* diagnostic criteria. An ongoing pattern of hyperactivity-impulsivity and /or inattention that impedes development or functioning and is typified by (1) and /or (2):

In attentiveness For at least six months, six (or more) of the following symptoms have persistent to a degree that is out of line with development stage and has a direct detrimental influence on social and academic occupational activities: Note: Oppositional behavior, disobedience, aggression, or a failure to comprehend duties or instructions are not the only symptoms are necessary for older adults and teenagers(those who are 17years of age and older). a. Frequent overlooks important facts or makes thoughtless errors in assignments, jobs, or other tasks.

An ongoing pattern of hyperactivity-impulsivity and/or in attention that impedes development or functioning and is typified by (1) or (2):

1.Inattetnion: At least six of the following symptoms at a degree that deviates from developmental c stage and has a direct detrimental influence on social and academic/ occupational/activities, have persisted for at least six months.

Note Oppositional behavior, disobedience, aggression, or a failure to comprehend duties or instructions re not the only symptoms. At least five symptoms are necessary for older adults and teenagers (those who are 17 years of age and older).

a. Frequent neglects to pay attentive attention to details or makes thoughtless errors in assignments, work, or other activities (e.g.; misses or overlooks details work is wrong).

b. Frequently struggles to maintain focus on work or play activities (e.g. struggles to say attentive during extended reading lectures, or talks)

c. Frequently appears to be unresponsive to direct communication (e.g. mind appears elsewhere, even without and apparent distraction).

d. Frequently disregards directions and does not complete assignments, chores, or work-related responsibilities (e.g. begins tasks but rapidly loses attention and is easily sidetracked).

e. Frequently struggles with organizing activities and tasks (e.g. managing sequential chores keeping materials and things in order sloppy, disorganized work, poorly managing time, missing deadlines).

f. Frequently avoids despise or is hesitate to perform tasks that call for prolonged mental effort (e.g. homework or schoolwork for older teens and adults completing forms reviewing lengthy papers, preparing reports).

g. Frequently misplaces items needed for assignments or activities (e.g., school supplies, pencil, books, tools wallets, keys, documents, eyeglasses, cell phones).

h. Is frequently readily sidetracked by irrelevant stimuli which for older individual and adolescents may include irrelevant idea.

i. Frequently forgets to complete everyday tasks (such as running errands, completing housework, or for older people and teenager, returning calls, paying bills and keeping appointments).

2. Hyperactivity and Impulsivity: At least six of the following symptoms have been present for at least six months, to a degree that deviates from typical development and has a direct detrimental influence on social, intellectual, and vocational activities;

Note: The symptoms are not limited to disobedience aggression, oppositional behavior or difficulty understanding tasks or directions. At least five symptoms are necessary for older adults and teenagers (those who are 17 years of age and older).

a. Frequently fidgets tap hands or feet or wriggles in the chair.

b. Frequently gets up from their seat when it is required that they are in a classroom, office, or other workplace, or when they are in another situation that require them to stay in place).

c. Frequently runs around or climbs in improper places. (Note: This may be restricted to restlessness in adults or teenagers.)

d. Frequently unable to calmly play or partake in leisure activites.

e. is frequently “on the go”, behaving as though “driven by a motor” (for e.g. unable to remain motionless for long periods of time, as at meetings or restaurants may be perceived by other as restlessness or challenging to keep up with).

f. Frequently talks too much

g. Frequently answers questions before they are finished (e.g. finishing people’s sentences; unable to wait for turn in discussion).

h. Frequently finds it difficult to wait their turn such as when standing in queue

i. Frequently interrupts or interferes with other people e.g, butts into games, talks, or activities, utilizes other people’s belongings without permission, or in the case of teenagers and adults, interferes with or takes over what others are doing).

B. A number of hyperactive-impulsive or inattentive signs exited before the age of twelve.

C. Multiple Hyperactive impulsive or inattentive symptoms occur in two or more contexts (e.g, at work school, or home, with friends or family in other activities).

D. It is abundantly evident that the symptoms impair or interfere with social, intellectual or professional functioning.

E. No other mental illness (such as a mood disorder, anxiety disorder, dissociative disorder, personality disorder, substance intoxication, or withdrawal) can better explain the symptoms, nor do they only arise throughout the course of schizophrenia or another psychotic disorder.

Indicate if; 314 (F90.0) Presentation that is mostly inattentive; if during the previous six months, Criterion A1(in attention) is satisfied but Criteria A2(hyperactivity-impulsivity) is not.

314.01(F90.1) Presentation that is primarily hyperactive and impulsive; if, during the previous six months, Criterion A1(inattention)has not been met but Criterion A2 (hyperactivity, impulsivity) is.

Indicate if: Partial remission occurs when the symptoms still affect social, academic, or professional functioning even after the complete requirement have been satisfied for the previous six months.

Indicate the present level of severity:
Mild: Only mild functional impairment is caused by symptoms, and there are few, if any symptoms beyond those necessary to make the diagnosis.

Moderate: “mild to severe” symptoms or functional impairment are present.

Severe: Many symptoms in excess of those required to make the diagnosis, or several symptoms that are particularly severe, are present, or the symptoms result in marked impairment in social or occupational functioning (American Psychiatric Association, 2013)

Unique features and characteristics

Inattentive Nature

- Finding difficulty to focus attention to details or make faults in school work or in other work.
- Frequently finding difficulty in maintaining attention in tasks or play activities and find it hard to finish it.
- Often appear as if their mind is elsewhere or as if they are not listening or did not hear what has just been said.
- Finding difficulty to systematically order activities and tasks

Hyperactive Nature

- Features show as impatient, twist, or turn body in a seat, not seated for some time when situation demands, running so much, climbing here and there in not appropriate situation, not able to play quietly in free time, always move like driven by a motor or talk a lot.

Impulsive nature

- They include impaired executive functioning, poor sustained inhibition, poor behavior control, the inability to postpone gratification or delay a response, and the inability to suppress dominant or powerful reactions.
- They involve in endanger situations.
- They have unintended poisoning and wound are common in Attention-Deficit/Hyperactivity Disorder (ADHD) children.

- They demolish other things more frequently than other children.
- They find it difficult to hold back in a line or in a group before doing an activity
- They are very rigorous and take short cuts in job performance
- They talk very insensitively without understanding others' emotions
- Their answers are always loud with impulsive response and interfere the conversation in the common place
- They have deficiency in domains of adaptive functioning and academic achievement skills
- They have difficulty in speech pragmatics (story recall, verbal fluency, poor rule governed behavior, mild to moderate difficulties in thinking), verbal working memory, and deficit in planning ability.
- They have difficulty with emotional regulation

These behaviors would exhibit in many different situations includes home, school, work and social situation. To make the diagnosis we have to find the problem minimum in two different situations. It is strange in situation to show behavior problem same in all events. Behavior problems get severe in situation where sustain attention or mental effort or that lack essential or novelty. (e.g., listening to classroom teachers, doing classroom assignments, listening to or reading lengthy materials, or working on monotonous, repetitive tasks).

But Attention-Deficit/Hyperactivity Disorder (ADHD) features are less in very strict control situations, new settings and also in very interesting activities ie in one-to-one situation or in situation where reward is possible for appropriate behavior. (American Psychiatric Association, 1994).

1.2 Prevalence of Attention Deficit Hyperactivity Disorder (ADHD)

Estimates of prevalence for ADHD vary widely and are influenced by the assessment's nature, sample technique, and population variables. According to a study by Venkata and Paniker (2013),11.32%of elementary school students had ADHD.it was shown that the prevalence was higher in males (66.7%) than in females (33.3%). It was discovered that the prevalence was 6.84%amongthe medium socioeconomic group and 16.33%among the lower socioeconomic group. The age group of 9 and 10 years old had the highest frequency. By Chauhan et al. (2022) other ADHD studies was conducted in different parts of India also suggested prevalence between 2% to as high as 17%. In numbers, it is estimated that 10 million Indian children are diagnosed with ADHD annually.

Comorbidity between Attention-Deficit/Hyperactivity Disorder **(**ADHD) and conduct problems is high. In the British Child and Adolescent Mental Health Survey, 27% of those with conduct disorder (CD) and 26% of those with oppositional defiant disorder (ODD) also qualified for a diagnosis of ADHD, and more than 50% of those with ADHD had a comorbid behavior disorder (Ford, 2003).

In the mid-school years most common comorbid diagnoses with Attention-Deficit/Hyperactivity Disorder (ADHD) during early childhood are oppositional

defiant disorder, enuresis and language disorder, and anxiety and tics. In adolescence mood disorder and substance use disorder are observed. Many children with Attention-Deficit/Hyperactivity Disorder (ADHD) have a specific learning disorder. Antisocial behaviour in later life was also appeared to precede in early conduct problems. (Solanto et al., 2023; Ghanizadeh, 2010; CDC, 2024). Farrington (1995) estimated that it is possible to predict over half of future recidivist delinquents based on their aggressive behaviour and a family's ineffective child rearing practices. The precise relationship between conduct disorder or oppositional defiant disorder and Attention-Deficit/Hyperactivity Disorder **(**ADHD), especially the mechanism of development of antisocial behaviour in children with ADHD, is not, however, fully understood.

1.3 Etiology of Attention-Deficit/Hyperactivity Disorder (ADHD)

The cause of ADHD has been described in various theories. Most of the researchers admit that there is no single reason for ADHD. Rather than there is a combination of factors related to hyperactivity in various degrees to cause the disorder. These factors may include brain damage; poor or inadequate prenatal nutrition and care; maternal alcohol or drug consumption during pregnancy; malnutrition; abusive home environments; genetic factors; high levels of stress; food additives or allergies; and physical, neurological, or psychiatric conditions (Sealander et al., 1993). According to Schwiebert& Sealander (1995), in their study indicated that knowing the reason of the disorder often facilitate the acceptance of the disorder and increase the readiness to do various interventions.

In another study by C. Johnston, E.J. Mash (2001) indicate on developmental psychopathology of Attention-Deficit/Hyperactivity Disorder (ADHD). It incorporates and assesses the existing knowledge regarding the traits of families linked to attention deficit/hyperactivity disorder (ADHD)in children. Research indicates that children with Attention-Deficit/Hyperactivity Disorder (ADHD) are more likely to experience stress and psychopathology as parents, especially when ADHD co-occurs with conduct issues. They are also more likely to experience disruption in family and marital functioning, disrupted parent child relationships certain patterns of parental cognitions about child behavior, and decreased parenting self-efficacy. The review does, however, show that little is understood about the developmental mechanisms behind these correlations or the ways in which family and child variables interact to influence outcomes across time. Furthermore, nothing is known about how gender, culture, and Attention-Deficit/Hyperactivity Disorder (ADHD) subtype affect the relationship between ADHD and family factors. The study ends with suggestions on the need for more research to support an understanding of Attention-Deficit/Hyperactivity Disorder **(**ADHD) from the standpoint of developmental psychopathology.

According to a different study by Dr. John Durall, which Barkley (1997) cites, there is a neurobiological MA development delay in very particular parts of the brain's prefrontal cortex that deal with self-regulation. Studies have begun comparing MRI images of the brain with results from psychological tests that gauge inhibitory response inhibition. The findings also indicated a correlation between response inhibition on psychological tests and Magnetic Resonance Imaging (MRI),

which frequently reveals a smaller right globus Pallidus and right Caudate Nucleus the brain's right cortical striatal -thalamic- cortical circuitry.

In adding together, infancy period stages of brain development produce excitatory messages cause a high level of motor activity with increased level for exploration. As the child grows the excitatory messages decrease and replaced with inhibitory messages. But Attention-Deficit/Hyperactivity Disorder (ADHD) child has lack of inhibition problem. The Brain's braking or inhibitory mechanism depends heavily on dopamine, a neurotransmitter that transmits messages across synapses. However, researchers discovered that in the brain of Attention-Deficit/Hyperactivity Disorder (ADHD) hyperactive boys, concentration stay high and do not correctly decrease with maturity. Even other studies also support this theory such as brain imaging studies, PET and SPECT scans, have also shown support of either structural or functional differences in an Attention-Deficit/Hyperactivity Disorder **(**ADHD) child's brain (Durall,1999).

In another study by Quinn (1995) neurobiological dysfunction may be the result of dysregulation of certain neurotransmitters, such as dopamine or norepinephrine, which modulate information processing to the brain.

In American Psychiatric Association (1994), without co-morbidity, Attention-Deficit/Hyperactivity Disorder (ADHD)'s features include inattention to others' instructions or interactions, forgetfulness, impulsiveness, difficulties with organization or structure, mood lability, and low frustration tolerance, which may result in behavior.

According to Barkley (1990) view attention deficit hyperactivity disorder (ADHD) as a motivational deficit, rather than purely a problem of attention. Learning disability visible with situational variability that is in some areas of learning are easily mastered, while others remain elusive. Changes in behavior may not be seen when the child is alone and also in activities which is interesting for the child. Behavior problems would be less if demands were not placed on them. According to Barkley, term "rule governed behavior" it is very difficult to deal with attention deficit hyperactivity disorder (ADHD) child due to their conflict starts unavoidably. They also have difficulty in understanding the rules which is required in social or school situation, often results in interpersonal conflicts with peers or powerful figures. The outcome was also non-compliance, oppositionality, or manipulative-type responses, which are tied to the child's inability to self-regulate. According to Henely (1998, as cited in Barkley, 1990) a cycle of conflict and negativity becomes inseparably bound up with the child's relationship to others.

1.3.1Neurobiological Models of Attention Deficit Hyperactivity Disorder (ADHD)

The Genetic factors for attention deficit hyperactivity disorder (ADHD)

According to Faraone et al. (2005) studies indicate that there are 76% of heritability of family, twin and adoption studies of ADHD. Dopaminergic genes were more common in genetic studies. According to Heijtz et al. (2007) studies show Polymorphisms in the dopamine D4 receptor (DRD4), the dopamine transporter (DAT) and Beta-Hydroxilase (DBH) have been related to ADHD.

The Neuroanatomical basis of Attention Deficit Hyperactivity Disorder ADHD)

Studies found that the there is a reduction in total cerebral volume, the prefrontal cortex, the basal ganglia, the dorsal anterior cingulated cortex, the corpus callosum and the cerebellum. In Fronto-Striatal-Cerebellar Circuit Sowell et al. (2003) and Sonuga-Barke (2002) identified abnormalities in the limbic-fronto-striatal circuit. Shaw et al. (2007) reported there is a delay in Cortical maturation.

The Neurochemical basis of attention deficit hyperactivity disorder (ADHD):

Swanson et al. (2007), ADHD symptoms would increase in hypodopaminergic functions. Other theories suggest dysregulation in the dopamine transmission between the Prefrontal cortex and the Striatum causes ADHD cognitive deficits (Solanto, 2002). Moreover, hypofunction of noradrenaline and serotonin also associated with ADHD symptoms.

1.3.2Neuropsychological Models of Attention Deficit Hyperactivity Disorder (ADHD)

The Executive Dysfunction theory:

Alvarez & Emory (2006) theory recommend that there is deficiency in the management processes such as planning, sequencing, reasoning, holding attention to a task which controls the “lower level” cognitive operations, such as language, learning and action results in ADHD symptoms. Such anomaly is caused in the

fronto-parietal and frontostriatalneural networks. However, the theory fails to identify the exact locus of dysfunction

Behavioral/Response Inhibition Theories:

According to Barkley (2005) studies attention deficit hyperactivity disorder (ADHD) has important dysfunction is failure to inhibit responses. Nigg (2001) stated that there are two distinct types of inhibition in ADHD: (1) executive inhibition and (2) motivational inhibition. Gray projected two components of motivational inhibition (MI): a Behavioral Inhibition System (BIS) and a Behavioral Approach System (BAS). Both systems fall under the reward drive component in impulsivity (Dawe and Loxton, 2004).

Working Memory Deficits Theory:

According to studies of Levy and Farrow (2001), Rapport et al. (2008) and Martinsen et al. (2005) in attention deficit hyperactivity disorder (ADHD), working memory is overloaded by external stimuli resulting in avoiding behavior and it is not restricted to the Central Executive but also extend to visual and phonological sub-domains. Larger deficits in spatial working memory than for verbal working memory in attention deficit hyperactivity disorder **(**ADHD) has been reported.

The Optimal Stimulation Theory:

Hebb (1955) and Leuba (1955) proposed that the brain needs stimulation to maintain its functioning. Individual try to control their own effective amount of stimulation by altering their activities or attentional focus when internal and external stimulation are insufficient. If such behavior still unable to produce an optimal

arousal, then their attention, motor inhibition, and ability to allocate effort to a task are compromised (Banaschewski et al. 2003).

The Cognitive-Energetic Model:

The model comprises three components: (1) computational processes - low-level cognitive acts that include encoding, search, decision, and motor organization (2) energetic pools include effort, arousal, and activation (3) management and evaluative mechanisms - include planning, monitoring, error detection/correction, and behavioral inhibition. The effort and especially the activation of energetic pools found to have deficits in children with attention deficit hyperactivity disorder **(**ADHD) (Sergeant, 2000).

The Delay Aversion Model:

According Sonuga-Barke et al. (1992) most of the attention deficit hyperactivity disorder **(**ADHD) children select immediate reward than delayed reward. Green et al. (1996) in Luman et al. (2005) suggested that increased temporal discounting effect in ADHD has been suggested to be the base of impulsivity symptoms. Luman et al. (2005), states that ADHD child might be able to give more attention in video games than learning math due frequent delivering reward system.

The Dual-Pathways Model:

There are two distinct pathways in attention deficit hyperactivity disorder **(**ADHD) pathophysiology: one characterized by executive function deficits – related to the associative fronto-striatal circuit and the other by delay aversion related to the limbic fronto-striatal circuit (Sonuga-Barke,2002). The dual-pathways model,

categorizes neuropsychological ADHD deficits in two groups: *cool* processes and *hot* processes. The cool processes refer to 'top-down' cognitive control over behavior – brain regions involved in these processes are frontal regions. The hot processes refer to emotional and motivational aspects controlled by limbic-cortico-striato-thalami co-cortical circuits, which are highly modulated by dopamine mesolimbic branches.

The Dynamic Developmental Theory of Attention Deficit Hyperactivity Disorder (ADHD):

According to Sagvolden et al. (2005), altered reinforcement of novel behavior and deficient extinction of insufficient behavior are the two primary behavioral mechanism that underline many of the symptoms of ADHD. On schedule ADHD symptoms arise when socially appropriate behavior is not encouraged. Extinction happens when the reinforcer is no longer delivered and the response is not elicited. Reinforcement and extinction processes are hypothesized to be the core problems in ADHD.

A Hybrid model of the nature of Executive function

Barkley (1997) proposed that behavioral inhibition which is the foundation on which the four executive functions depend. Reconstruction affect/ motivational /arousal regulation, verbal working memory and nonverbal working memory are these four function. All of these are thought to be secret, self-directed behavioral patterns that produce internally represented information and have a regulating effect on the model's sixth element, the motor control and execution system. Because of

these executive processes, behavior can be directed towards hypothetical future events and effectively bridge delays in cross-temporal dependence through forms of inner action. They also give rise to a new form of sustained responding, apart from that form controlled by the immediate prevailing contingencies. Time, timings and timeliness then become important concept in understanding such goal directed behavior and in determining it making time and social future in a way the central executive. The ultimate purpose of these executive actions and the self-regulation relative to time they provide is the net maximization of long-term consequences for the benefits of the individuals self-interest.

1.4 Issue Regarding Diagnosis

According to Jadad (1999b) the diagnosis of ADHD has motivated significant debate and sometimes strong and conflicting views. The use of enlisted diagnostic criteria, such as the DSM-IV (APA 1994) or ICD-10 (WHO 1992), may reduce such bias. Professional and national bodies that are concerned about the importance of thorough and accurate attention deficit hyperactivity disorder (ADHD) diagnoses have issued guidelines to encourage good practice (American Academy of Paediatrics 2001; SIGN 2009; Pliszka 2007; NICE 2008).

Even in other studies shows that preschool diagnosis of attention deficit hyperactivity disorder **(**ADHD) is problematic because of lack of data in diagnostic practice exist (Sonuga-Barke, 2003a). According to Lahey (2004) verified that many four to six years old continue to meet ADHD diagnostic criteria three years on, because of high parental expectation about the severity of the condition and extend impairment it can cause. According to Sonuga-Barke (2003a), in other way even

where particular symptom levels are judged to be out of the normal range for that age, this might be brief and reflect normal step-wise or non-linear competency development. It is also uncertain that systematic and diagnostic way assessment in this age group could be problematic. It would be difficult to determine whether any behavioral and symptom changes brought about by the intervention happened in children who were actually at risk of developing ADHD as opposed to those who had opposition defiant disorder, conduct disorder, or were merely going through a specific development stage if there were no clear diagnoses for ADHD.

1.5 Typical Therapy Approaches

Studies shows that no single treatment will be effective in attention deficit hyperactivity disorder (ADHD). According to Gomez and Cole (1991) another common intervention for children with ADHD is behavioral interventions. In general, behavioral intervention fall into two categories: (a) antecedents of behavior and (b) repercussions of behavior. The task the environment, and the events leading up to the behavior are all covered by the antecedents setting and environmental design aspects of the work, such as the class type (e.g.; regular versus special class), setting arrangement, and the structure of the setting are example of antecedent circumstances. Contingency management is used in consequence intervention. Contingency management, or the application of consequence based on certain child behavior has included interventions including home-based

According to Schwieber and Sealander (1995) additional plan include group contingencies (strategies in which consequences for the whole group are contingent

on specific behaviors of individuals), peer mediated interventions, time-out, response-cost, and overcorrection.

Kauffman (1993) asserts that overcorrecting, response-cost, and time out are all forms of punishment. Reducing unwanted behaviors with time-outs form positive reinforcement is a widely recognized and successful strategy. Care should be taken in planning and implementation of such a program (Schweibert& Sealander, 1995). Cost of response removing the student's privileges or rewards is better kind of contingency. Another unfavourable outcome is overcorrection which forces the learner to either make amends or behave in a more proper manner.

Another intervention, which are given at home and school. In other words, contingencies are programs that integrate parent and school initiatives to enhance children's social behavior. A teacher usually fills out a three to five item checklist to determine whether the student has achieved the day's behavioral objectives. The parents sign the report which is then sent home and returned. The parents provide the appropriate consequence at home by applying contingencies that have already been developed (Schwiebert& Sealander, 1995). The intervention would be effective if all are involved and understand the procedure.

According to Gomez and Cole (1991); Kauffman (1993); Sealander et al. (1993) other area such as social and academic skill development are also important in treating ADHD symptoms.

According to Sealander et al. (1993) Peer-mediated interventions have several advantages over counselor/teacher-mediated strategies and may result in

important positive behavior changes. Benefits include the potential for students to study one another's behavior more closely, the potential for behavior to be more broadly generalized across contexts and the potential for peer mediated intervention to save the counselor or teacher time

According to Black (1992) child diagnosed with attention deficit hyperactivity disorder (ADHD) need a broad treatment therapy plan that may or may not include medication. Central nervous system stimulants' such as methlphenidate (Ritalin), dextromphetamone (Dexedrine), and permoline (Cylert), are often used medications when necessary. Compared to stimulants, antidepressants, clonidine, and monoamine oxidase inhibitors are less commonly utilized alternative drugs

2. Parental Training Programme in Mothers of Children with Attention Deficit Hyperactivity Disorder (ADHD)

One crucial element that attempts to improve the parent -child bond and lessen parental stress is the Parental Training Program. Various techniques are used to teach parents how to deal with difficult behaviors. Parent can benefit from this service by leaning practical strategies for enhancing their child's abilities, handling difficult behaviors, and fostering their development. Programs for training parents can be set up as one on one or group sessions. The demands of parents and the goals of the parent training program should be developed along with the teaching materials that will assist the educational process prior to the planning of group or one on one sessions.

In one of the studies seen that the parent training program was given to teach parents how to support their children naturally, rather than teach their children as a teacher would do (Fox & Binder,1990). Apart from these, the importance of parent training is revealed through pursuing, reinforcing the skills which are learnt at school, at home and the satisfaction they have out of helping their children's development which proves the importance of developing and enforcing various parent training programmes (Fox and Binder, 1990).

2.1General Parent training programmes based on reviews

According to an evidence-based study by Johnston and Mash (2001), children with attention deficit hyperactivity disorder (ADHD) are more likely to experience stress and psychopathology as parents, especially when ADHD coexist with conduct issues. They are also more likely to experience disruptions in family and marital functioning disrupted parent- child relationships specific patterns of parental cognitions about child behavior, and decreased parenting self-efficacy. The development mechanisms behind these correlations, or the methods in which child and family factors are able to exert their effects across time, are likewise poorly understood, according to this research. Because of this little is known about how gender, culture and the kind of ADHD affect the relationship between ADHD and family factors.

In another evidence based study on effective psychosocial intervention in Attention Deficit Hyperactivity Disorder(ADHD) Pelham (2008) indicate that Behavioral Parental training were more effective treatment for ADHD. But according to Wells (2000) and NICE (2008) suggested that children with ADHD or

Hyperkinetic Disorder(HKD) had multiple problems and comorbid disorders, so multi model treatment will be effective.

According to Pliszka (2007), parent training intervention was focused on psychosocial areas, such as cognitive and behavioral. These areas would help them in handling difficult child behavior problems. This was done through psycho educating parents about attention deficit hyperactivity disorder (ADHD) and how it affects their child performance and behavior. The nature of ADHD positive reinforcement techniques (such as paying close attention to appropriate behavior and play and ignoring inappropriate behavior), reward systems the use of "time out", communication with teachers, and problem-solving planning are all covered in the ten to twenty weekly sessions that last one to two hours.

A study by Anastopolous, A. D.et al.(1993) found that parental involvement in a behavioral parent training (PT) program created especially for school -aged children with attention-deficit hyperactivity disorder (ADHD) altered parent functioning. Subjects who finished the nine-session physical therapy program created especially for school aged children with attention deficit hyperactivity disorder (ADHD) altered parent functioning. Subject who finished the nine-session physical therapy program demonstrated notable posttreatment improvement in both parent and child functioning which persisted two months following treatment, in contrast to wait list controls. Alongside parent reported improvement in the overall severity of their child ADHD symptoms, there were also changes in parenting stress reduction and parenting self-esteem.

Despite the extensive body of research demonstrating the effectiveness of stimulant medication in treating attention-deficit/hyperactivity disorder (ADHD), a number of pharmacological treatments, limitations underscore the urgent need to identify effective psychosocial interventions according to research by Chronis, A.M., Jones, H., and Raggi, V. (2006). Behavioral intervention such as parent education and school-based intervention, have been classified as empirically validated treatments due to the abundance of data supporting them. Furthermore, intense summer treatment programs, educational therapies, and social skills training with generalization components seem helpful in the treatment of ADHD. Multimodal therapy is usually required to normalize the behavior of children with ADHD because of the persistent impairment they experience across numerous areas of functioning.

In study of Morgan, and O'Keefe (2021) found suggest that there is a relation between child behavior problems and parenting practices. Behavioral Parent Training (BPT) was given as the first line treatment for children with ADHD under the age of six, and as part of a combined treatment plan for children over six. The frequency of attention deficit hyperactivity disorder (ADHD) related problem behaviors of impulsivity, hyperactivity, and inattention has been shown to significantly decrease with BPT training. The effectiveness of the BPT program was assessed using the Vanderbilt ADHD Diagnostic Rating Scales for Parents and Teachers as well as the BPT Parenting Scales before and after the program. Each participant's pre and post BPT percentage changes were computed. Following BPT, there was a substantial improvement in both the overall Parenting Scale score and

the over reactivity factor score (p=.05). Enrolling on a BPT program can influence parenting styles and enhance results for children with ADHD.

There was another study done by Shata et al. (2014) to know the efficacy of psychosocial intervention for parents of attention deficit hyperactivity disorder (ADHD) children in Alexandria, Egypt. That was done as pre-posttest intervention at Child Mental Health Clinic for School Students affiliated to the Health Insurance Organization, Alexandria. The objective of the intervention was to improve parent understanding about attention deficit hyperactivity disorder (ADHD), their parenting skills, stress management and problem solving, and also giving social assistance. Each of the 50 parents who look part was divided into group of five to eight parents. Each week they were given eight sessions in total. Arabic Version of the Conners' Rating Scale, the Home Situation Questionnaire, the Parenting Scale, the Arabic Version of the Depression Anxiety Stress Scales (DASS), and a parental ADHD related knowledge questionnaire were used to evaluate the program both immediately after completion and two months later. The findings indicate that parents' knowledge methods of discipline, and psychological health improved, and that the perceived intensity of the symptoms and problematic situation decreased.

In another study done by Vuori et al. (2015) was given importance to Family-based psychosocial interventions for children with attention deficit hyperactivity disorder (ADHD), oppositional defiant disorder, and conduct disorder. In that, intervention family therapy, cognitive-behavioral parent training and family-based treatment protocol were given to support the therapies for children with conduct disorder, oppositional defiant disorder, and attention deficit hyperactivity

disorder (ADHD). Group based and remote intervention were provided. Additionally, it demonstrated increases in the quality of parenting, and the child's reduced conduct and behavioral issues.

Lai (2018) conducted a study on impact of Multifamily Therapy on fathers and mothers from Hong Kong whose children have attention deficit hyperactivity disorder (ADHD). Those were done on Fathers and mothers' ratings on ADHD severity, parent–child relationship, parenthood stress, and parental self-esteem were compared between those who attended multifamily therapy and those who attended psychoeducation talks. Results indicated that there was reduction in ADHD symptoms severity in multifamily therapy than psycho educational group. In that study mother reported there was a competition between father and mother in parent and child relationship.

Study examined by Cunningham (2007) related parenting and family factors that should be considered when planning and measuring the outcome of interventions for children with attention-deficit/hyperactivity disorder (ADHD).These include parenting and parent-child relationships, parental cognitions, parental adjustment, marital interactions, general family relationships, and adaptive child functioning within the family. It was determined that using multiple informants, creating tools with higher content and contextual validity, depending more on observational methods and determining which measures are most important to families could all improve treatment outcome measures for children with ADHD

In another study conducted by McElroy (2002) to promote positive behavior in children with attention deficit hyperactivity disorder (ADHD) by educating

parents on nonpharmacological management strategies. That was done in two phases. In the first phase, a weekly schedule template, daily report card, and parent tip sheet were among the evidence based national ADHD resources include in the educational toolkit given to parent. In phase II, parents and carers were given post intervention surveys to gauge results. Parents discussed how they perceive their child's symptoms at home and at school, as well as how they have adopted psychological therapies. They also evaluated how the toolbox affected their discussions with parents and professional judgement.75% of parents said their child's ability to focus and finish tasks improved after obtaining the toolkit. The majority of parents (62.5%) thought that their child's behavior at home and at school had improved. According to the providers, the toolkit had a favourable impact on their clinical judgement and sparked discussions about behavioral changes for the treatment for ADHD.

Esmaili Alamut et al. (2016) did this study, on to compare the effect of parent and child Cognitive Behaviour therapy in reduction of symptoms of attention deficit hyperactivity disorder (ADHD) in 7 to 12 aged children. This research was done in semi-experimental way. For testing including 50 sample children were selected from, child and adolescent psychiatry clinic which were referred to clinic who were suffering from ADHD based on the psychiatrist's diagnosis. A questionnaire specifically designed to diagnose this kind of interference was created Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR). The sample was then divided into three groups at random: 15 control group,18 child CBT group, and 17 parent CBT group. For eight one and a

half hour sessions, the parents and children in the experimental groups received cognitive and behavioral therapy. At baseline weeks1,4, and 8, teachers and parents of children with ADHD completed the DSM-IV-TR questionnaires, which were used to evaluate treatment effects. The data was analyzed using on-way analysis variance (ANOVA). According to the findings children with ADHD showed a substantial decrease in attention-deficit and hyperactivity at the end of the cognitive and behavioral groups($p<0.02$) when compared to the control group.

The effects of parent based cognitive behavioral therapy (CBT) on Attention-Deficit/Hyperactivity Disorder (ADHD) overweight and self-esteem in obese children aged 6 to 11 with attention deficit hyperactivity in Isfahan was investigated by Afsaneh, K.A.et. (2018).40 children with ADHD who were overweight or obese (weight over the 85^{th} percentile for age, height and sex diagram) and whose parents had referred them to the Isfahan child and Adolescent Psychiatric Clinic at Ali Asghar Hospital in 2015 were the subject of this quasi-experimental study. While the other patients in the experimental group took part in CBT sessions, twenty individuals received only ADHD therapy and no further intervention. The Coppersmith Self Esteem Scale, the ADHD Conners' Test, and the body mass index (BMI) were used as analysis methods. Analysis of variance with repeated measurement was used to analysis the data, and the results showed that CBT by teaching parents had a significant effect in ADHD symptoms, overweight and the self-esteem of the obese children with ADHD in both the posttest and follow up ($P<0.001$).

According to Zwi (2011) did study on to determine whether parent training interventions are effective in reducing attention deficit /hyperactivity disorder (ADHD) symptoms and associated problems in children aged between five and eighteen years with a diagnosis of ADHD, compared to controls with no parent training intervention. They discovered that five trials that compared parent training with de facto treatment as usual (TAU) had 284 people who satisfied the inclusion criteria. A second control arm in one study was a nondirective parent support group. One study evaluated improvements in parenting techniques while four research focused on behavioral issued in children. The remaining four studies examined children's behavior at home and two on behavior at school. The outcomes of the two studies that examined behavior at home differed one found no difference between treatment as usual and parent training, while the other found statistically significant differences between parent training and control. The outcomes of the two research on school behaviorals differed: one study revealed no difference between groups, while the second study found that parent training was effective when ADHD and oppositional defiant disorder were not co-occurring. In the later trial, children on medicine and girls had superior results. Two outcomes the child's externalizing behavior and the child's internalizing behavior were subjected to metal analysis. Result from a meta-analysis of three research that included information on externalizing behavior were not statistically significant. In the parent training groups, a meta-analysis of two research on internalizing behavior produced noteworthy findings. The findings of individual studies on the behavior outcomes of children varied. One small study indicated positive results on an inventory of child behavior problems; however, it was cautioned that the results were only useful when

parent training was given to individuals rather than groups. In a different study the intervention group showed improvement on a social skills test.

Richards et al. (2014) investigated the association between strained parent child relationship and attention deficit /hyperactivity disorder (ADHD).They looked at the cross sectional and longitudinal links between mother's psychopathology and expressed emotion (EE; warmth and criticism) and externalizing psychopathology in children with ADHD.385 children with ADHD mixed subtype were enrolled in the 6year follow up study at baseline(mean age,11.5years,83.4%male),and 285 of them (74%) were available at follow up (mean age,17.5years,83.5%male).Measures of maternal EE, mother psychopathology (i.e., ADHD and affective issues), and child psychopathology (i.e., ADHD severity, oppositional and behavior difficulties) were collected at both time periods. The findings show that there was no significant correlation between EE and time. At baseline, we discovered a nominally negative correlation ($p<.05$) between the degree of ADHD in children and maternal warmth. Maternal criticism was moderately linked to child conduct issued at follow up, and it was considerably linked to oppositional issues in children. theoretically children's conduct and oppositional issues were linked to maternal tenderness. Maternal psychopathology had no bearing on this correlation. There were no long-term correlations between baseline EE and follow up child psychopathology or between baseline child psychopathology and follow up EE.

Van den Hoofdakker, M.A.et al. (2007) to investigate the effectiveness of behavioral parent training (BPT) as adjunct to routine clinical care (RCC). They did in phase wise. In the initial stage of RCC,94 children aged 4 to 12 who had been

referred to a Dutch outpatient mental health clinic and had attention deficit/hyperactivity disorder (ADHD) were randomized to receive either 5 months of BPT plus concurrent RCC(n=47) or 5 months of RCC(n=47) exclusively. RCC included family support and medication where necessary, while BPT comprised 12 group sessions. Children with without medication were able to participate, and exclusively criteria were kept to a minimum. Assessments of internalizing issues, parenting stress, ADHD symptoms and behavioral issues reported by parents were conducted both before and after therapy. Twenty-five weeks after the BPT intervention, the BPT +RCC group underwent a follow up evaluation. On an intention to treat basis, repeated measure analysis of variance was conducted. According to the results, both groups improved with time on every metric. BPT +RCC reduced internalizing (p=.042) and behavioral (p=.017) issues better than RCC alone. There was no difference in the results for parenting stress(p=.643) or ADHD symptoms (p=.161). Children who took medicine and those who did not had similar outcomes. More polypharmaceutical treatment was given to children assigned to RCC only.

Ghanizadeh et al. (2005) investigated the effect of Parent Management Training (PMT) on behaviour of children diagnosed with attention deficit hyperactivity disorder (ADHD) and the general mental health of their parents. For that Twelve parents whose children or adolescents has been diagnosed with ADHD consented to attend the eight weekly, one and a half hour PMT sessions. The children ranged in age from to thirteen. At the first and last training sessions, the overall Mental Health Questionnaire (GHQ28), Conners' Parent Rating Scale - Revised (CPR-R), and Conners' teacher rating Scale Revised (CTRS) were used to

evaluate the overall mental health of the parents and the behavior of their children. The findings show a significant decline in the CPRS-R overall score as well as in the subscale scores assessing conduct issues, learning issues, and the hyperactivity index. There was no discernible change in any of the CTRS-R scores. The GHQ - 28 mean scores were significantly lower following the intervention that they were prior to it.

Dutta (2017) present study assessed the comparative efficacy of both multimodal and behavioural treatment approaches on symptoms severity level of children with attention deficit /hyperactivity disorder (ADHD) as well as on the selected variables: family pathology; parenting style; parents' trait anxiety level; marital quality of the parents and general well-being of parents. The sample consisted of families involving 20 children with ADHD (Combined type) (6 to 10years old) and their parents. The families were randomly assigned into 2 groups; one received behavioural intervention and the other received multimodal intervention. The interventions were given in individual sessions, once a week, for a period of 10 sessions. While using ADHD medication, children with ADHD were evaluated and trained. Data analysis demonstrates that both therapeutic modalities found to be effective in reducing the severity of the ADHD core symptoms. Mothers of children with ADHD found to be benefitted more following multimodal intervention with respect to family pathology and marital quality measures; whereas fathers showed more involvement in parenting following multimodal therapy. General well-being of both the parents got significantly enhanced following multi modal intervention in comparison to behavioural intervention. The findings indicate that multimodal treatment programs have the better potential to facilitate symptomatic and global ADHD management.

Paliwal et al. (2017) done psychological support for parents of children in Meerut cantonment who suffer from attention deficit hyperactivity disorder. It was done for parents of children with attention deficit /hyperactivity disorder (ADHD) (3-15 yrs) The research design for the study was Experimental research with Pre-Post Test Design and was conducted in line with action research in the form of psychological intervention. Parents were measured on needs and stress before the introduction of psychological intervention. The impact of intervention was equal to the level of phenomenon after intervention minus the level of phenomenon before the intervention. In present study cross-sectional method has been used. Asha School was selected for working with ADHD children and their parents / legal guardian, who were considered as population for the study. Purposive sampling technique was adopted for the study ADHD children and their parents/legal guardian. Children were administered Development Screening Test and Vineland Social Maturity Scale were used. On the basis of scores, those children who exhibited higher symptoms of ADHD were considered for further study. For parents/Legal guardians Stressful life events scale for parents (PSLES) was used. Parents needs and problems were also assessed. The study has been conducted in three phases; Phase (l) was screening phase, Phase (II) was Planning, Organizing and Conduct of Psychological Intervention and Phase (III) was Assessment of Impact of Psychological Intervention. Main findings of the study out of 30 children, 18 males and 12 females were identified as ADHD children. Nine ADHD children (five males and four females), were identified as predominantly inattentive; three ADHD children (two males and one female) were predominantly hyperactive-impulsive; thirteen ADHD children (seven males and six females) were hyperactive; and five ADHD children (four males and one female) were impulsive ADHD children and parents of these

children were considered for further study. Mothers were 21.8 years old on average, and fathers were 31.6 years old. According to the table, parents came from variety of socio-economic backgrounds. Parents from middle class and lower-class background made up comparatively larger amounts (56.60 and 26.60 percent, respectively). It is evident that those with lower and moderate socioeconomic class are more likely to have ADHD. Nuclear families made up a larger share of parents of children with ADHD (80%). Approximately 57 per cent children were in the I.Q. range of 20 to 51 (trainable group); 37 per cent belonged to 52 to 84 I.Q. range (educable group) and 7 per cent children were in severe retardation group. On the basis of S.Q., 57 per cent were in trainable group. (S.Q. range of 20 to 51) followed by educable group (37 per cent) in the S.Q. range of 52 to 84 and seven per cent children were in severe retardation group Majority parents (86.6 per cent) needed guidance related to behaviour problems followed by dealing with out-of-control children (53.3 per cent) and hyperactive children (53.3 percent). Parent knowledge of ADHD was lacking in 73% of cases. Due to differing viewpoints, 70% of parents encountered difficulties when it came to raising children with ADHD. They had to deal with sarcastic societal attitudes and social stigmas in the community. Compared to mild and negative stress, parents have a higher level of positive stress in their lives. A three-month psychological intervention of parents of children with ADHD was planned and carried out based on need. CBT was a psychological intervention. Parents received training in behavior therapy, individual and group psychotherapies, how to manage children at home and various stress reduction techniques. Because without their parents, children could not improve. Children and their parents received psychological support. First month: In the first month, sessions were conducted in five weeks. First week had two sessions of rapport building; second week had 2

sessions and third week had one session. Fourth week had 1 session and fifth week had 2 sessions. Stress scores after the test have significantly decreased. There is no discernible difference in the stress scores if mothers and fathers under unpleasant situations. They (97%) said they learnt child behaviour management, enhanced their competence and confidence to care for children, improved their mutual relationship with child through open communication. They (97%) learnt problem-solving skills like self-talk. They learnt how and when to be lenient and when to be liberal. When to provide extra time for recreational activities. The majority of the parents' (94%) questions about how to deal with children who are out of control, impulsive, hyperactive, or inattentive, a s well as when to enforce rules, be firm, be patient, or give special treatment were addressed during the psychological intervention.

OVER VIEW OF LITERATURE AND REVIEW

So previous studies indicate that most of the interventions were done on behavior and cognitive areas of the child by giving training to the mother or by psycho educating the mother for few sessions. So, my research is on Parental management training to mother, based on integrated method to develop skills in parents to deal with child cognitive, emotional and behavioral problems.

Rational for the present study

Numerous other studies have proposed that a child's attention deficit /hyperactivity disorder (ADHD) may result from a combination of inadequate parenting and specific temperamental traits, such as distractibility. Carlson et al. (1995) investigated the role of both children's temperament and maternal characteristics in predicting hyperactivity at ages 6–8. They discovered that while a

child's degree of distractibility predicted later hyperactivity, overstimulating and intrusive parenting in the early years of life was a strong predictor of later hyperactivity.

In another similar studies of have documented impaired parenting and family functioning associate with adult ADHD (Biederman et al. 2002; Chronis-Tuscano et al. 2008; Murray and Johnston 2006). According to this research, women who have been diagnosed with ADHD or who exhibit elevated symptoms of the disorder are more likely to be permissive and overreacted, less involved positive and consistent, and less adapt at planning, monitoring and problem solving than mothers who do not have ADHD.

But there are studies which have attempted to improve parenting deficits by treating mothers with ADHD with stimulants have found that, despite reductions in adult attention deficit /hyperactivity disorder (ADHD) symptoms, parenting remains unchanged (Chronis-Tuscano et al. 2010). According to another research by Sonuga Barke, Daley and Thompson (2002), preschool aged children with ADHD who had mothers with high levels of ADHD symptoms themselves received less benefits from a parent education program. This finding suggested that maternal ADHD may interact with early-onset ADHD symptoms in children to produce greater symptomatology later in life, possibly because mothers with high levels of ADHD symptoms are at risk for exhibiting the maladaptive parenting behavior

In another empirical study to examine the relation between parental attention deficit /hyperactivity disorder (ADHD) symptoms and child outcomes following behavioral parent training, it was reported that mothers who had the highest self-reported ADHD symptoms (i.e., those in the highest third of the sample on an adult

ADHD measure) reported no child symptom reduction following a parent training program for their preschool-aged children with ADHD (Sonuga-Barke et al. 2002).

Even though studies indicate that after parental training programme in mothers there were decrease in attention deficit /hyperactivity disorder (ADHD) symptoms in their children but the other studies shows that there was less improvement in parenting after parent training programme to mothers, in severe cases of ADHD symptoms in children. This may be due to lack of mother's attendance in the training programme, severity of ADHD symptoms in child or in mother, and due to lack of support from spouse and family to mothers.

So, there is a need to evaluate the efficacy of parental training programme in mothers to reduce attention deficit /hyperactivity disorder (ADHD) symptoms in their child. Because mother spent most of the time with their children, and most of the studies done in severity of ADHD symptoms in child, and less studies in parenting skills.

Aim

It is about to enhance parental awareness of attention deficit /hyperactivity disorder (ADHD), strengthen perceived support from family members, improve mother–child interactions, and promote consistent and effective parenting practices. The focus is on developing cognitive, behavioral, and emotional management strategies for the child through a personalized, one-on-one parent training program.

Research Question

The key research question is formulated as "How effective is an individual parental training programme for mothers in reducing attention deficit hyperactivity

disorder (ADHD) symptoms in their children and improving their parenting skills?" Based on this sub questions were also formulated such as:

1. Does participation in an Individual Parental Training Programme reduce ADHD symptoms in children?

2. Does the Individual Parental Training Programme improve parenting skills among mothers of children with ADHD?

Objective

Designing Brief Individual Parental Training Programme in mothers of children with attention deficit /hyperactivity disorder (ADHD) and assessing the efficacy of the impact of training in parenting children with ADHD through pre and post-test.

To examine the impact of training in of the Brief Individual Parental Training Programme on the behavioural outcomes of children with Attention-Deficit/Hyperactivity Disorder (ADHD), as reflected in changes between pre-test and post-test measures.

Hypotheses

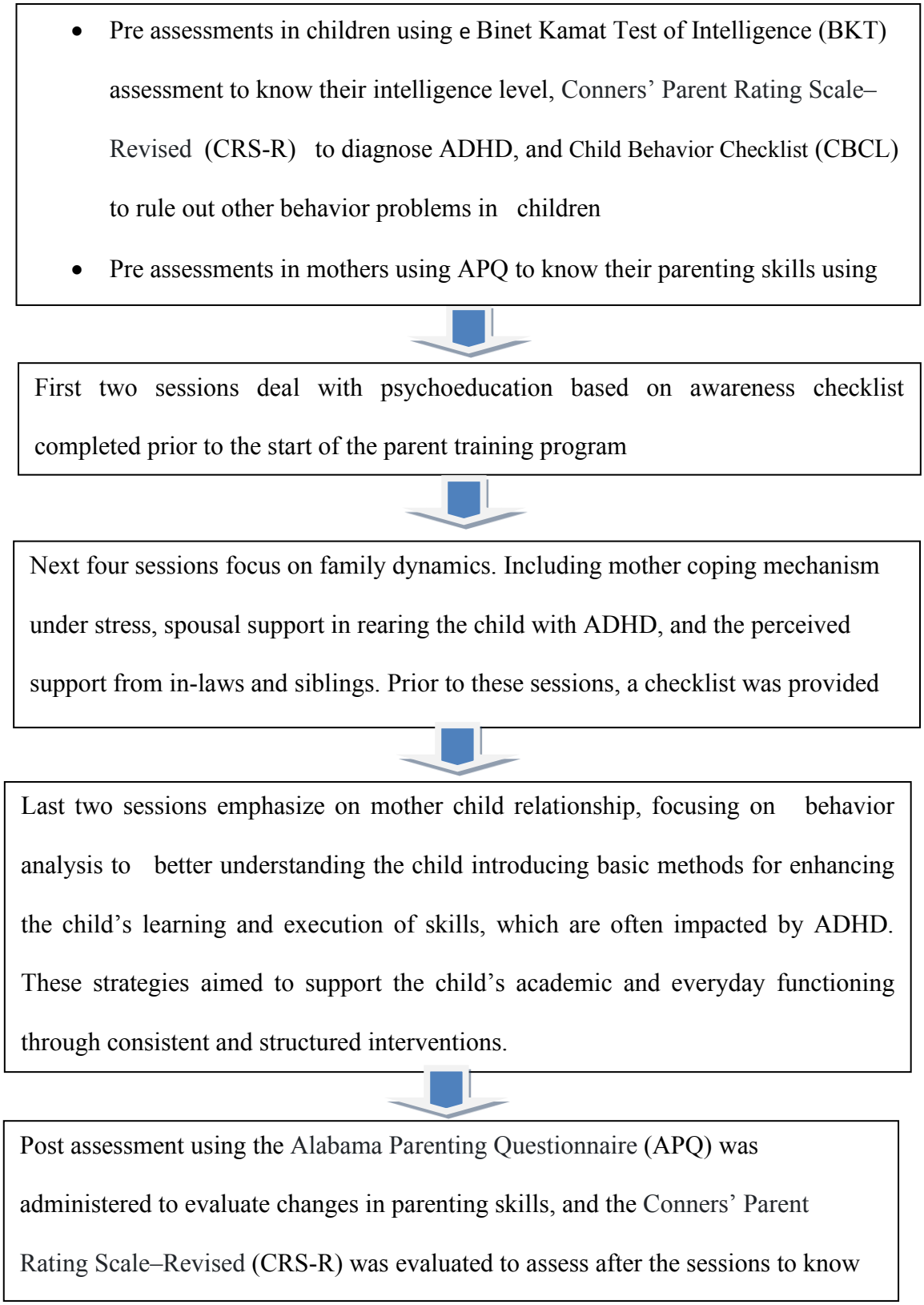
1. There will be a significant difference in the parenting practices of mothers of children with Attention-Deficit/Hyperactivity Disorder (ADHD) following participation in the Brief Individual Parental Training Programme.

2. There will be a significant difference in the behavioural outcomes of children with Attention-Deficit/Hyperactivity Disorder (ADHD) following the Brief Individual Parental Training Programme provided to their mothers.

How intervention work in the session

Figure 1

Flow chart representation of the research process



CHAPTER II
METHOD

Method

Research methods refer to the various techniques and procedures employed in booming out to an investigation. It is the way answering the research question by structured way of collecting the data, organizing it, analyzing the result and get into a decision. Data collection is comprised of observing, measuring and recording the information. Another way is data analysis, in which arranging and organizing the data which we got and find out the importance of it and then generalizing it. Then finally writing the report for the outcome of the research study. Rizvi, T. (Ed.). (2019).

Noushad (2024) research is of two types. One is based on Purpose and another one is based on Method. In Purpose type of research, three categories of research exist. Three types of research: Basic research is a kind of scientific study that aims to comprehend and increase our understanding of a particular event or topic. One kind of research is called applied research. Applied research, is a type of research that takes the data from the basic research and applies it to answer a question and give a possible solution. In Evaluative research method is used to get in depth understanding about the concept and collect data to help improve the solution. In Method, second type of research which includes Historical, Descriptive, Correlation, Ex Post Facto, Experimental, Case Survey, and Content Analysis. Historical research involves collecting and analyzing data to understand and evaluates data to understand reports or observation made by others. Descriptive research is a research method explain the characteristics of the population or phenomenon being studied. A correlation research design explores relationships between two variables (or more) without the researcher control or manipulating any

of them. Bhattacherjee (2012) Ex post facto design is considered a quasi-experimental type of study, which involves grouping participants together based upon specific characteristics or traits they share. It also emphasizes on how actions that have already occurred can predict certain causes. McLeod (2019) experimental research is a scientific methodology of understanding relationship between two or more variables. Baxter and Jack (2008) case survey is a qualitative investigating design in which the researcher explores in depth a program, event, activity, process or one or more individual. Schreier (2012) Content analysis, on the otherwise is a research technique used to find out whether specific words, themes, or concepts are present in a particular piece of qualitative data, such text. Researchers can measure and investigate the meanings and investigate the meaning, frequency and connections of these elements by using content analysis.

In other way research method is broadly classified as qualitative and quantitative approach. In Qualitative research method focuses more on how participants experience each life events and its interpretation. This method only we can use when we give chance to participants to express themselves openly without any constraints. Types of qualitative approach are Ethnography involves the close observation people's behavior and interactions and cultural practices with their natural settings. Grounded theory focuses to investigate a specific phenomenon or process with the goal of constructing new theories based on gathering and examination of empirical data. Action research studies improve progressional practices and examine the impact of the actions implemented. Phenomenological research objective is to understand and characterize a particular fundamental element. Narrative research centers on how individuals construct and communicate their personal stories as well as the cultural discourse. Quantitative approach is to

observe how conditions or events that affect people and it clearly express through statistics and numbers. Qualitative research includes methodologies such as questionnaires, structured observation or experiments. (Creswell & Creswell, 2018)

Another method in research method is Mixed Method which are becoming increasingly important for addressing impact research questions" (Saville, 2012). By integrating both qualitative and quantitative approaches, combining two sets of strengths while minimizing the drawback of each approach offers the highest chance of addressing research problems (Johnson & Onwuegbuzie,2004). Researchers can obtain research topics with adequate specificity and elucidation by employing mixed methods research. Enosh, Tzafrir and Stolovy (2014) stated that mixed methods research aids in extrapolating the results and significant ramifications of the studied problems to the entire populace. Additionally, it advances research question in a suitable and moral way, which entails gathering evaluating interpreting and disseminating both qualitative and quantitative elements into s single study, is also entails connecting or integrating them so that they are conversing with one another. The exploratory sequential mixed methods technique is a popular strategy that starts with a qualitative phase to investigate a phenomenon and then moves into a quantitative phase to test or generalize the results.

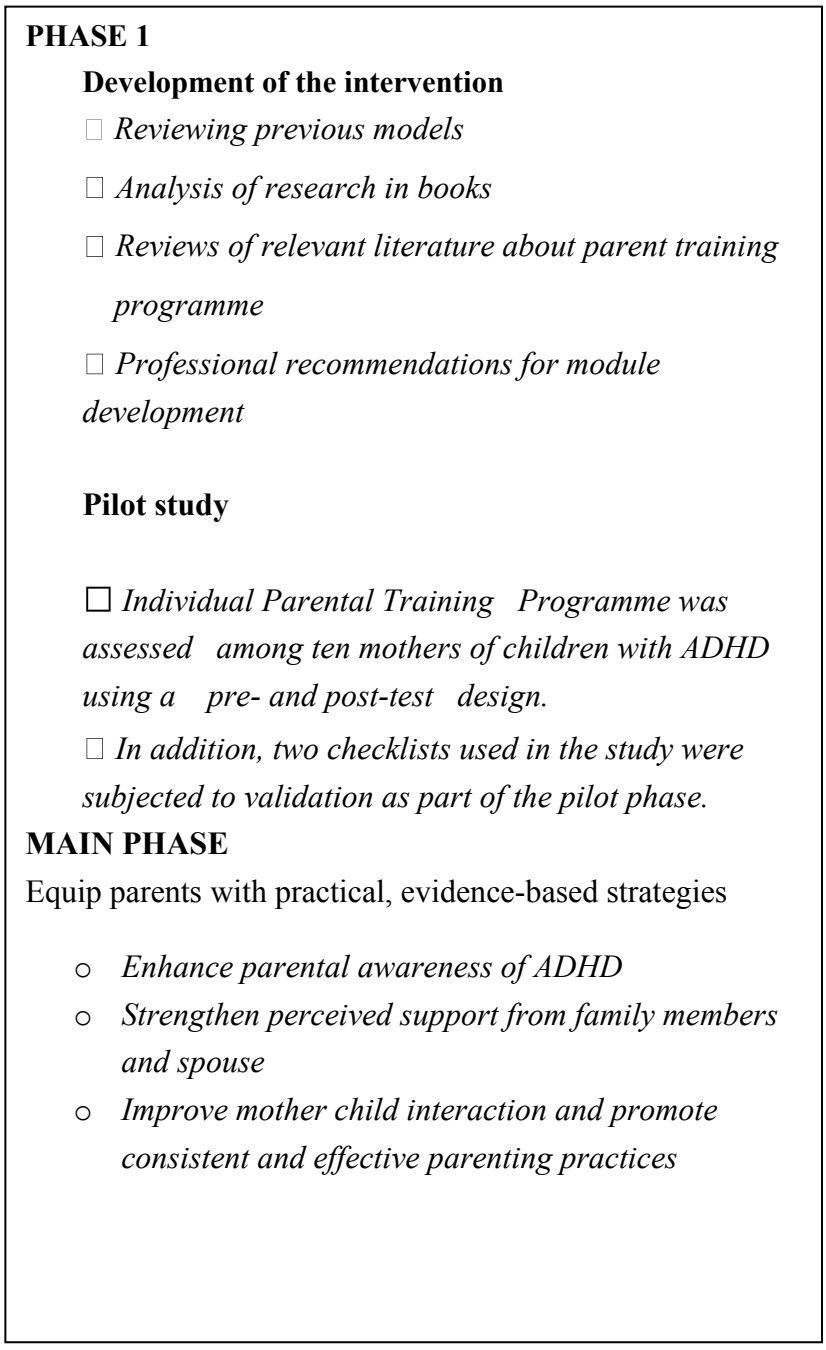
DESIGN OF THE STUDY

An exploratory sequential mixed-methods design was employed, beginning with a qualitative phase to explore the phenomenon, followed by a quantitative phase to examine prospective outcomes through cross-sectional pre- and post-test comparisons (Creswell & Plano Clark, 2011). The research was conducted in two phases: Phase I involved the development of the intervention module and its

validation through a pilot study, while Main Phase comprised the implementation of the main study.

Figure 2

Overall design of the study



PHASE I: Development of the module

1. Reviewing previous models

Barkley (2013) Barkley's Parent Training Program, developed by Dr. Russell A. Barkley, a leading expert in the field of ADHD, is a well-established behavioral intervention designed specifically for parents of children between the ages 3 to 12 years diagnosed with attention-deficit/hyperactivity disorder (ADHD). The program is grounded in the principles of Behavioral Parent Training (BPT) and applied behavior analysis. Its core objectives are to reduce child behavior problems such as inattention, defiance, and impulsivity; improve the quality of parent-child interactions; equip parents with consistent, structured behavior management strategies; and strengthen parental confidence while reducing caregiver stress. The model comprises ten key components. First, it provides psychoeducation, helping parents understand ADHD as a neurodevelopmental disorder rather than a result of poor parenting, thereby reducing guilt and stigma. Parents are trained to monitor their child's behavior regularly, identify triggers and consequences, and use praise and positive attention to reinforce desirable behaviors. A structured token economy system is introduced to link rewards to behavioral goals. Parents are also taught to give effective commands using calm, specific instructions and to ignore minor misbehaviors strategically. Time-out techniques are used as consistent and calm consequences, not as punitive measures. The program emphasizes establishing daily routines covering school, meals, play, and sleep and encourages the use of visual schedules and timers to manage transitions. Additionally, it promotes problem-solving and negotiation by teaching children decision-making within appropriate

limits and role-playing solutions. Lastly, it addresses parental stress by normalizing emotional challenges and encouraging self-care and social support.

In adapting Barkley's model to the Indian context, several culturally sensitive modifications have been recommended, as illustrated in the work of (Ruchita, 2021). These adaptations include replacing material rewards with contextually appropriate reinforcers such as verbal praise from elders or family outings, addressing maternal guilt and the influence of extended family dynamics, and simplifying intervention language and examples to match regional literacy levels. Moreover, training is often conducted in the mother tongue or regional languages to enhance understanding and engagement.

In reviewing existing parent training models, the present intervention the Brief Individual Parental Training Programme was specifically developed for mothers of children diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD). The training module was designed prior to the pilot phase through a systematic development process that included consultation of standard textbooks, a comprehensive review of relevant literature, expert evaluations, and incorporation of feedback from the research supervisor. The programme emphasized psychoeducation, with a particular focus on assessing and enhancing maternal awareness of ADHD. Additionally, the intervention actively involved key family members namely grandparents, siblings, and the spouse to strengthen perceived familial support by evaluating and addressing the mother's perception of support within the family system. The intervention also prioritized improving the mother–child relationship and fostering positive developmental outcomes in children by

promoting informed parenting practices related to cognitive stimulation, emotional regulation, and behavioral modification

2.Analysis of research in books:

Attention-Deficit/Hyperactivity Disorder (ADHD) is widely familiar as a universal disorder, with an increasing international recognition of both its existence and its impairing condition, for which psychosocial treatments for effective managements (Barkley,2006). Research has verified that providing a suitable combination of treatments as needed will result in enhance functioning for the child over the short term. Most effective treatment will be parent training programme which involve increase parent understanding, differentiate incompetence from non-compliance, develop parent ability to provide direction to the child, and end interaction successfully. In that integrated cognitive behavioral model and social skill training were also accepted as an essential component in multi treatment approach (Goldstein & Goldstein, 1990).

3.Reviews of relevant literature about parent training programme:

Several authors have contributed significant insights into parent training programs for Attention-Deficit/Hyperactivity Disorder **(**ADHD), emphasizing the role of parents in managing ADHD-related behaviours. According to Barkley (2006), a parent training program based on behavioural principles is designed to help parents manage children with ADHD and its associated behaviour problems. Barkley suggests that structured routines, consistency, and the use of behavioural techniques lead to improvements in the mother-child relationship and help in

managing ADHD symptoms. In a similar vein, Monastra (2014) argues that medication alone is insufficient to address Attention-Deficit/Hyperactivity Disorder (ADHD) symptoms. He emphasizes the need for parents to adopt specific strategies that support their child's development and self-regulation. This aligns with the perspective who notes that children with ADHD do not engage in problematic behaviour intentionally; rather, they lack the skills of flexibility, frustration tolerance, and problem-solving to cope with demands. Meanwhile, Dawson and Guare (2008) focus on building executive function skills in children with attention issues. They assert that while children with ADHD are often highly intelligent, they frequently lack essential executive skills such as time management, planning, and self-control, which are critical to success. This ties into Robin (2006) review, which highlights the importance of parent training interventions to help manage ADHD behaviours at home**.** Reid Lyon (2001) contributes to the discussion by focusing on learning disabilities that often co-occur with ADHD. Lyon advocates for remedial training and psychological interventions, which can significantly improve the functioning of children with ADHD. Rapport (2013) similarly suggests that specific parenting strategies can be highly effective in managing ADHD behaviours and improving the overall child-parent dynamic. Quinn and Maitland (2011) provide a parent-centered approach to managing children with ADHD, where parents are given tailored training to address their child's needs. Similarly, Brown (2008) focuses on the deficits in executive function that are common in children with ADHD. He highlights how parent training can play a key role in addressing these deficits and improving children's organizational skills and impulse control. Finally, Goldstein and Goldstein (1998) discusses the psychological and behavioral aspects

of ADHD, emphasizing the need for parental involvement in teaching children to navigate their challenges. Goldstein stresses that parents can help their children develop coping strategies and improve emotional regulation through structured training. These diverse perspectives underscore the critical role of parent training programs in managing ADHD symptoms, highlighting the importance of structured interventions, behavioral techniques, and executive function support in fostering long-term success for children with ADHD. Shah, Sharma, Grover, and Sachdeva (2021) conducted a culturally contextualized, non-randomized pre-post study evaluating the usefulness of a parent skills training intervention (PSTI) for Indian families of children diagnosed with ADHD. Delivered through videoconferencing in 10 weekly sessions, the PSTI was integrated with standard clinical care. The intervention led to statistically significant improvements across key ADHD domains, such as inattention, hyperactivity/impulsivity, conduct issues, academic performance, and classroom behavior. Additionally, qualitative feedback highlighted increased parental awareness, reduced guilt, and improved relationships, although some parents reported difficulty sustaining strategies over time. Methodological limitations—such as the absence of a randomized control group, exclusive reliance on parent-reported outcomes, and lack of long-term follow-up—restrict the causal inferences and generalizability of findings. Nonetheless, the study provides compelling support for culturally adapted behavioral interventions and the feasibility of remote delivery formats in Indian clinical settings. Another study did by Dekkers et al. (2021) conducted a comprehensive meta-regression analysis aimed at identifying the most effective behavioral components within parent training (PT) programs for improving parental outcomes when managing children diagnosed with

ADHD. Unlike traditional meta-analyses that assess general intervention effectiveness, this study dissected specific behavioral techniques to determine their distinct contributions to outcomes such as positive and negative parenting practices, parental mental health, parenting competence, and parent–child relationship quality. From over 23,000 screened studies, 29 randomized controlled trials (RCTs) were selected, yielding 138 effect sizes and involving 2,345 participants. The researchers coded and analysed 39 behavioral techniques, offering a granular look at intervention components. Results revealed small- to medium-sized improvements across all targeted parental outcomes. Notably, antecedent-based strategies (e.g., setting expectations, structuring environments) and reinforcement of desired behaviors emerged as the most impactful. These techniques were significantly linked to improved parental confidence, mental health, and reduced negative parenting behaviors. A critical insight was that higher amounts of psychoeducation were negatively associated with outcomes, suggesting that knowledge-based sessions without practical behavioral components might not be sufficient—and could even dilute intervention efficacy. The study's strengths lie in its methodological rigor, including the use of manual-based coding, meta-regression modeling, and detailed sensitivity analyses. However, a noted limitation is that the techniques were not evaluated in complete isolation, so while associations are strong, causal claims about individual techniques remain tentative. Even so, the findings have practical implications: PT programs should emphasize active behavioral strategies over purely educational components for greater parental benefit. In 2022 there was another systematic review, Hakami and Che Ahmad synthesized findings from eight controlled studies focusing on parent-administered behavioral interventions for

children with ADHD. The review reinforced the value of caregiver-led strategies in managing ADHD symptomatology, noting consistent improvements in behavioral outcomes. While the findings align with global clinical guidelines emphasizing parent involvement, the review lacks methodological depth, such as detailed bias assessments and discussion of intervention heterogeneity. Absence of effect size data and long-term outcome evaluations further limits the conclusions. Despite these gaps, the review's key contribution lies in affirming the effectiveness and practical applicability of parent-administered interventions as a frontline approach for ADHD treatment. Another research continues on evidence-based behaviour parent training by Marquet-Doléac, Biotteau, and Chaix (2024) directed a methodical review of randomized controlled trials (RCTs) assessing BPT for school-aged children with ADHD. Their inclusion of 20 studies across five major databases provides a broad yet focused assessment. The review highlighted significant benefits of BPT for both parents and children, including reductions in parenting stress and improvements in child behavior, especially as perceived by parents. However, the heterogeneity in study designs and measures limited the generalizability of the findings. The authors rightly conclude that BPT is effective, but emphasize the need for individualized and context-sensitive approaches. In contrast, Nijboer et al. (2024) investigated a brief BPT format in a nonrandomized pilot involving 28 families. Their findings are notable for demonstrating moderate-to-large within-group effects on daily-rated behavior problems and high treatment fidelity (96%). Despite some limitations such as a lack of randomization and reliance on a historical control the study provides promising evidence that condensed interventions may enhance accessibility without severely compromising efficacy. It fills an important gap in implementation science

by exploring more resource-efficient models of parent training. Another study did by Zainel and Yaseen (2024) offered a large-scale, cross-sectional evaluation of a parent training program in Iraq. Involving 500 children with ADHD, the study found statistically significant improvements in both child outcomes and parental functioning post-intervention ($p = 0.007$). However, methodological concerns—such as the cross-sectional design, lack of control group, and unclear measurement tools—limit causal interpretation. Still, the study makes a valuable contribution by illustrating the relevance and impact of culturally grounded interventions in non-Western settings. Pezzica and Bigozzi (2015) explored the impact of parental mentalization as a supplementary element within traditional parent training models. Comparing a standard Cognitive Behavioral Parent Training (PTCC) with an enhanced model (PTCC-M) that integrates emotional awareness and reflective functioning, the study found that parents in the PTCC-M condition reported greater perceived competence, emotional atonement, and partner support. These findings emphasize the value of incorporating components that go beyond behavior management to include deeper emotional understanding and parent-child relational quality. While the study was limited by sample size and generalizability, it contributes an important perspective to Attention-Deficit/Hyperactivity Disorder (ADHD) intervention research highlighting the relevance of parental self-reflection and affective engagement in improving treatment outcomes. Complementing this micro-level perspective, Fabiano et al. (2015) directed a meta-review of 12 existing meta-analyses on psychosocial treatments for children with ADHD. The study identified significant inconsistencies across reviews, including limited overlap in included trials (ranging from 2% to 46%) and varied methodological standards.

Despite these discrepancies, the review confirmed that psychosocial interventions generally yield moderate to strong effects in improving behavioral and social outcomes, while outcomes in academic domains remain less robust. The authors advocate for the standardization of inclusion criteria, clearer operational definitions of psychosocial treatments, and closer attention to outcome moderators to enhance the interpretability and applicability of future research.

Together, these studies illustrate two critical insights. First, as shown by Pezzica and Bigozzi (2016), enhancing parent training with emotional and reflective dimensions may yield more sustainable family-level improvements. Second, as Fabiano et al. (2015) demonstrate, the field requires better methodological consistency to synthesize and evaluate the diverse body of ADHD interventions. Moving forward, integration of reflective parenting components and meta-analytic rigor may enhance both clinical efficacy and research coherence. Hartman (2003) highlights the potential usefulness of Parent Training (PT) interventions for families of children diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD), particularly when comorbid with Conduct Disorder. The study underscores PT's capacity to address core ADHD symptoms—inattention, hyperactivity, and impulsivity—as well as broader behavioral challenges associated with comorbid conditions. The review notes that mothers who undergo PT report improved perceptions of their children and themselves, which contributes to enhanced emotional understanding and parent–child dynamics. The intervention appears to positively affect both maternal self-esteem and children’s behavioral outcomes, including increased attentiveness and reduced anger in post-treatment assessments.

Importantly, the study implies that the acquisition of knowledge about ADHD, along with practical behavioral strategies, allows parents to modify their parenting style in a way that is more attuned to their child's individual needs. This adaptive parenting approach contributes to healthier family functioning and reduced parental stress. While the study supports the benefits of PT in ADHD management, it would benefit from clearer methodological details (e.g., sample size, duration of training, and outcome measures used). Nonetheless, Hartman's findings affirm the critical role of parent-focused interventions in fostering behavioral improvements and emotional resilience within families navigating ADHD-related challenges.

4.Professional recommendations for module development

Professional recommendations are included in this module development to ensure the content is evidence-based, practical, culturally appropriate, ethically sound, and scientifically valid. Experts help tailor the module to real-world needs, improve its effectiveness, and enhance its acceptance by the users.

The initial draft of the module was sent to field experts with an introduction explaining its purpose and feedback requirements. Based on their feedback, necessary changes were made, and the revised module was shared again for final confirmation.

a. Objective

To enhance the understanding and management of ADHD, thereby strengthening training programs for mothers.

b. Participants

Clinical psychologists, specializing in this area, and other rehabilitation professionals—such as speech therapists, special educators, and occupational therapists with experience in intervention programs for children with ADHD since 5years were consulted during the module development. Professional experts includes5 clinical psychologist,2 speech therapist, 3 special educators,2 occupational therapist. Total professional included in recommendations were 12

c. Measures

Qualitative suggestions were taken from each area of therapist to modify module preparation.

Inclusion criteria

Professionals with a minimum of five years of experience working in the field of disability.

Professionals proficient in both spoken and written English and Malayalam.

Exclusion criteria

Professionals with less than five years of experience in the field of disability were excluded.

Professionals who were not proficient in both spoken and written English and Malayalam were excluded from the study.

d. Procedure

A preliminary version of the parent training module was developed based on relevant books and literature reviews. This initial draft was then reviewed by professional experts in the field. Prior to distributing the module for expert feedback, a brief introduction was included, outlining the purpose of the module, the specific input being sought, and the expected time frame for response. The module, along with a structured questionnaire targeting suggestions regarding the training content, target population, and areas requiring improvement, was sent to experts via email at their convenience. Based on the feedback received, appropriate modifications were made to the session content. The revised and finalized version of the module was subsequently emailed to the experts for confirmation.

e. Data analysis

A descriptive qualitative approach was utilized to analyze data derived from previous model, academic books, literature reviews, and expert feedback. This method objects to offer a complete summary of events in the everyday terms of those events, without the imposition of pre-existing theoretical frameworks. The focus was on identifying and organizing meaningful content related to the development of the parent training module. Expert suggestions were reviewed and grouped based on similarity, relevance, and applicability. Data from previous module, books, literature reviews, and expert recommendations were analyzed using a descriptive qualitative approach to identify key concepts relevant to the development of the training module.

In the descriptive qualitative approach, the primary purpose was to inform the development of the parent training module. Key areas for parent training were explored through previous model, extensive review of academic books, scholarly articles, and expert suggestions. Relevant content from each source was carefully examined, and significant points were identified and extracted. These data were then organized into key meaningful areas, allowing for a structured integration of evidence-based practices and expert recommendations into the module content.

f. Validity

Suggestions for improvement were collected in areas such as language simplification in session. The inputs were carefully reviewed and incorporated into the module as appropriate.

g. Guidelines for Developing Program Content

The guide emphasized starting with a thorough assessment of the child's behavioral challenges and the parent's current parenting practices. This helped in identifying specific areas for intervention and in tailoring the content to individual needs. Then Incorporation of theoretical frameworks, the content was structured in alignment with key psychological theories such as behavioral theory**,** social learning theory**,** family systems theory, and cognitive-behavioral principles**.** This ensured that each session had a solid theoretical foundation and addressed multiple dimensions of parenting and child behavior, then Session-Wise Structuring, the research guide recommended organizing the programme into clearly defined sessions, each with specific objectives. Sessions were to include: A review of the previous session,

Introduction of new skills or concepts, Practical exercises, home assignments to apply the learned techniques. The researcher advised mechanisms for ongoing monitoring, such as verbal self-reports from the parents, discussion of assignments, and behavioral observations. This helped track progress and address any challenges in implementation. Focus on Parent Empowerment Content was designed to not only address child behavior but also empower parents by improving their confidence, emotional regulation, and problem-solving skills, as guided by the researcher. Finally, the researcher recommended pre- and post-assessment using standardized tools like the Alabama Parenting Questionnaire (APQ) and Conners' Rating Scale–Revised (CRS-R) to evaluate the effectiveness of the training.

The module and checklist were validated during the preliminary stage through a pilot study.

Pilot Study

a. Objective

The preliminarily developed Individual Parental Training Programme was assessed among ten mothers of children with ADHD using a pre- and post-test design. In addition, two checklists used in the study were subjected to validation as part of the pilot phase.

b. Hypotheses

I. There will be a significant difference in the parenting practices of mothers of children with ADHD after participating in the, the Brief Individual Parental Training Programme.

II. There will be a significant difference in the ADHD symptoms of children whose mothers received the Brief Individual Parental Training Programme.

c. Participants

Sample

Sample will consist of ten Mothers of their children with Attention-Deficit/Hyperactivity Disorder **(**ADHD) of different categories will be collected from Community based Disability Management Rehabilitation Programme (CDMRP), Psychology Department, Calicut university. Convenient sampling was used.

Inclusion criteria

- *Children with ADHD*
- *Children ages between 6 and 10*
- *Children living with their Biological Mothers*.
- *Primary caretaker must be mother*

Exclusion criteria

- *Children IQ above 90 were only included*
- *Mother having psychiatric problems.*
- *Children having other physical and mental disabilities and psychiatric complaints*

- *Child taking stimulant medication for ADHD*

d. Measures

Prior to starting the intervention, assessments were conducted for both the child and the mother to confirm that they met the specified inclusion and exclusion criteria. Additionally, two checklists were administered before the sessions to assess the mother's knowledge of Attention-Deficit/Hyperactivity Disorder (ADHD) and her perceived level of support from family members and her spouse.

For child

1. The Binet-Kamat Test of Intelligence (BKT) was administered by the researcher, a qualified clinical psychologist, to assess the intelligence quotient (IQ) as well as educational abilities, including memory, comprehension, analysis, interpretation, repetition, and problem-solving skills. This test includes both verbal and performance components and is suitable for individuals aged 3 to 22 years, as well as adults with intellectual disabilities. In this research this test was specifically used to rule out intellectual disability among children with Attention-Deficit/Hyperactivity Disorder (ADHD). Only mothers of children with average intelligence were included in the parental intervention. The Binet Kamat Test of Intelligence (BKT) evaluates a range of cognitive domains, including verbal comprehension, reasoning, memory, visual-spatial abilities, quantitative reasoning, and problem-solving. It effectively measures a child's overall intelligence through culturally adapted tasks that assess language

understanding, information recall, and spatial navigation within the Indian context.

2. To assess and diagnose ADHD in children, the Conners' Parent Rating Scales-Revised (CRS-R), developed by C. Keith Conners, was utilized. This paper-and-pencil assessment tool was completed by the mother, who rated her child's cognitive functioning, oppositional behavior, and hyperactivity levels based on observations over the past year.

3. To understand child behavior problems which is comorbid in Attention-Deficit/Hyperactivity Disorder (ADHD) child, The Child Behavior Checklist (CBCL) was administered. This checklist done by mother to identifying problem behavior in their child. Recent studies have employed confirmatory factor analysis to examine the structure. The raw score for each symptom is calculated by adding up similar things. Aggressive behavior Anxious/Depressed Attention Problems, Ruling Breaking Behavior, Somatic Complaints, Social Problems, Thought Problem, and Withdrawn/Depressed are the eight experimentally derived syndrome measures. Furthermore, a number of syndrome scales were combined to create two “broad band” scales: Anxious/depressed, and somatic complaints scores are examples of externalizing problems. The sum of the scores for each problems item is used to determine the total problems scores. The test’s validity is congruence validity and its reliability is test-retest reliability.

For mothers:

1. Parenting practices were evaluated using the Alabama Parenting Questionnaire (APQ; Shelton et al., 1996), a 42-item measure in which parents state how often they engage in specific parenting behaviors. The APQ assess five core domains: Involvement, Positive Parenting, Poor Monitoring/Supervision, Inconsistent Discipline, and Corporal Punishment. Each item is rated on a 5-point Likert scale ranging from 1 (never) to 5 (always). The APQ demonstrates moderate to high internal consistency (Shelton et al., 1996), and test-retest reliability over a three-year period averages 0.65 (McMahon et al., 1997).

2. The General Health Questionnaire -28 (GHQ-28), developed by Goldenberg in 1978, is a widely used screening tool designed to identify individuals who are likely to have, or are at risk of developing, psychiatric disorders. Since its development, the GHQ-28 has been translated into 38 languages. It consists of 28 items assess emotional distress particularly in medical settings. Based on factor analysis, the GHQ-28 has been divided into four subscales. These are: somatic symptoms (items 1–7); anxiety/insomnia (items 8–14); social dysfunction (items 15–21), and severe depression (items 22–28) (Goldberg 1978).

3. To know the stress level in mother Parent stress index scale (PSI) was also done in beginning of the session. It is a parent self-report questionnaire. The purpose of the 101 item test is to detect possibly unhealthy parent-child relationships. The PSI predicts a child's future psychological adjustment and

aids in intervention in high stress areas. There were 101 things on the scale. A 5-point Likert scale, with 1 denoting strongly disagree and 5 denoting strongly agree, is used to score each item. After summarizing and converting the responses into percentages, the score was transformed into qualitative variables by categorizing them using a 60% cutoff criterion. Parenting stress was rated as high scores>60%) or low (scores<60%) depending on whether it was related to the child's or parent's domains. B. the overall score for parenting stress in both areas is likewise regarded as high (scores>60%) and low (scores,60%).

e. Validity

The validation of the module and checklist was carried out with ten mothers using pre- and post-intervention assessments of parenting practices and Attention-Deficit/Hyperactivity Disorder (ADHD) symptoms in their children. These assessments were conducted before and after the implementation of the Brief Individual Parental Training Intervention.

Before the intervention began, both mothers and children underwent screening to determine their eligibility for the study. To exclude children with intellectual disabilities or borderline intelligence, the Binet-Kamat Test of Intelligence was administered. Behavioral issues were assessed using the Child Behaviour Checklist (CBCL), and the Conners' Parent Rating Scales-Revised (CRS-R) was used to confirm the diagnosis of ADHD.

The General Health Questionnaire (GHQ) was used to assess psychiatric concerns in mothers, while parenting practices were evaluated using the Alabama Parenting Questionnaire (APQ) and maternal stress levels were measured with the Parenting Stress Index (PSI).

After assessing the conditions of both the mother and the child, a brief individual parental training program was initiated. The intervention consisted of eight sessions focusing on three key areas. The first area involved providing psychoeducation to the mother. Before beginning this, an Attention-Deficit/Hyperactivity Disorder (ADHD) awareness checklist was administered to assess her existing knowledge. Based on her responses, tailored psychoeducation was provided, covering the nature of ADHD, its causes, and general strategies for management. The second session served as a follow-up, during which the therapist reviewed the mother's understanding of ADHD and explored her grasp of the condition as it relates to her child.

The second area of focus was family dynamics, addressed over six sessions. This component explored the mother's coping mechanisms under stress, the level of support she received from her spouse in raising a child with ADHD, and the perceived support from in-laws and siblings. Prior to starting these sessions, a checklist was provided to assess the mother's perception of familial support and to identify any feelings of isolation.

The third session began with introducing coping strategies for the mother. This included cognitive restructuring to reduce stigma, embarrassment, and to foster acceptance of her child's condition. Guidance was also provided on how to handle

negative or insensitive remarks from family members. To address the child's early emotional and behavioral challenges, the mother was trained in basic behavior therapy techniques such as contingency management and time-out methods, aimed at improving the mother-child relationship.

In the fourth session, the therapist followed up on these issues, discussing the mother's progress and any ongoing challenges. Beginning with the fifth session, the focus shifted to helping the mother educate her spouse about Attention-Deficit/Hyperactivity Disorder (ADHD). She was encouraged to seek his support in facilitating attention enhancement tasks and managing behavioral and emotional issues in their child. The sixth session continued this work, including a follow-up discussion, and introduced the concept of adopting a democratic parenting style. The mother was guided on how to involve the father more actively in parenting and share responsibilities for their child with ADHD.

The third area focused on strengthening the mother–child relationship. The seventh session began with helping the mother better understand her child's condition through behavior analysis. This approach enabled her to identify specific behavior patterns and apply appropriate behavioral techniques to manage them effectively. As a result, the mother could respond more sensitively to her child’s needs and support the development of skills that promote better compliance and cooperation.

Behavior analysis also guided the mother in refining her parenting strategies to be more responsive and effective. In the eighth session, the focus shifted to introducing basic methods for enhancing the child’s learning and execution of skills, which are often impacted by Attention-Deficit/Hyperactivity Disorder (ADHD).

These strategies aimed to support the child's academic and everyday functioning through consistent and structured interventions.

f. Data analysis

Descriptive analysis was employed in the pilot study to identify patterns and relationships within the data. Frequency distribution and measures of central tendency were used to examine these patterns. To assess the content of mothers' knowledge regarding Attention-Deficit/Hyperactivity Disorder (ADHD) and the perceived support they received from their families, frequency distribution was utilized. Additionally, the association between parenting practices scores before and after the exam and the decrease in ADHD symptoms in their children was assessed using a t-test.

Main Phase

The main phase was conducted in a sequential manner.

a. Objective

Main phase is to equip parents with practical, evidence-based strategies to better understand, manage, and support their child with Attention-Deficit/Hyperactivity Disorder (ADHD). This phase also aims to enhance parental awareness of ADHD, strengthen perceived support from family members, improve mother–child interactions, and promote consistent and effective parenting practices. The focus is on developing cognitive, behavioral, and emotional management strategies for the child through a personalized, one-on-one parent training program.

c. Hypothesis

There will be a significant difference in parenting practices and a reduction in Attention-Deficit/Hyperactivity Disorder (ADHD) related problems in children following the Individual Parental Training Programme.

d. Participants

Sample

Sample will consist of thirty Mothers of their children with Attention-Deficit/Hyperactivity Disorder (ADHD) of different categories will be collected from Community Disability Management Rehabilitation Programme(CDMRP), Psychology Department, Calicut university. Convenient sampling was used.

Inclusion criteria

- *Children with ADHD*
- *Children aged between of 6 and 10 years*
- *Children living with their Biological Mothers*.
- *Primary caretaker must be mother*

Exclusion criteria

- *Children IQ above 90 were only included*
- *Mother having psychiatric problems.*

- *Children having other physical and mental disabilities and psychiatric complaints*
- *Child taking stimulant medication for ADHD*

e. Measures

Before initiating the intervention, assessments were conducted for both the child and the mother to confirm their eligibility based on the inclusion and exclusion criteria. In Addition, two checklists were administered to assess the mother's knowledge of Attention-Deficit/Hyperactivity Disorder (ADHD) and her perceived support from family members and spouse.

For child

1 The Binet-Kamat Test of Intelligence (BKT) was administered by the researcher, a qualified clinical psychologist, to assess the intelligence quotient (IQ) as well as educational abilities, including memory, comprehension, analysis, interpretation, repetition, and problem-solving skills. This test includes both verbal and performance components and is suitable for individuals aged 3 to 22 years, as well as adults with intellectual disabilities. In this research this test was specifically used to rule out intellectual disability among children with Attention-Deficit/Hyperactivity Disorder (ADHD). Only mothers of children with average intelligence were included in the parental intervention. The BKT evaluates a range of cognitive domains, including verbal comprehension, reasoning, memory, visual-spatial abilities, quantitative reasoning, and problem-solving. It effectively measures

a child's overall intelligence through culturally adapted tasks that assess language understanding, information recall, and spatial navigation within the Indian context.

2 To diagnose Attention-Deficit/Hyperactivity Disorder (ADHD) in children, the Conners' Parent Rating Scales-Revised (CRS-R), developed by C. Keith Conners, was utilized. This is a paper-and-pencil assessment tool completed by the mother, who rated her child's cognitive functioning, oppositional behavior, and hyperactivity levels based on observations over the past year.

4. The Child Behavior Checklist (CBCL)was utilized to comprehend behavioral issues that are comorbid in children with Attention-Deficit/Hyperactivity Disorder (ADHD). Using this checklist mothers can recognize their child's problematic behavior. Confirmatory factor analysis (CFA) has been used in recent investigations to validate the items structural make up. The raw score for each symptom is calculated by adding up similar things. Aggressive Behavior, Anxious/Depressed Attention Problems, Rule breaking Behavior, Somatic complaints, Social Problems, thought Problems, and Withdrawn/Depressed are the eight experimentally derived syndrome measures. two "broad band" scales were also created by combining multiple syndrome scales: Anxious/depressed, and somatic complaints scores are examples of internalizing problems, rule breaking and aggressive behavior are examples of externalsing problems, rule breaking and aggressive behavior are examples of externalizing problems. The sum of the scores for each problem item is used to determine the total problems score. The tests

validity is congruence validity, and its reliability is test-retest reliability. (Achenbach & Rescorla, 2001)

For mothers:

4. Parenting practices were assessed using the Alabama Parenting Questionnaire (APQ; Shelton et al., 1996), a 42-item measure in which parents indicate the frequency of specific parenting behaviors. The APQ evaluates five key domains: Involvement, Positive Parenting, Poor Monitoring/Supervision, Inconsistent Discipline, and Corporal Punishment. Items are rated on a 5-point Likert scale ranging from 1 (never) to 5 (always). The measure demonstrates moderate to high internal consistency, and test-retest reliability over a three-year period averages 0.65. (Shelton et al., 1996)

5. To screen yes for psychiatric illness in mother, The General Health Questionnaire (GHQ-28) was administered. It developed by Goldberg in 1978 and it is widely used screening instrument designed to identify individuals who are likely to have or be at risk of developing, psychiatric disorders. It has been translated into 38 languages and is commonly used in both clinical and research settings. The GHQ-28 consist of 28-item that assess emotional distress in medical population. Through factor analysis, the GHQ-28 has been divided into four subscales. These are: somatic symptoms (items 1–7); anxiety/insomnia (items 8–14); social dysfunction (items 15–21), and severe depression (items 22–28) (Goldberg, 1978).

6 T**o** know the stress level in mother Parent stress index scale (PSI) was also done in beginning of the session. The PSI is a parent self-report, comprising 101-items questionnaire, designed to identify potentially dysfunctional parent-child interaction. The PSI focuses intervention into high stress areas and predicts children's future psychosocial adjustment. Each item is rated on a 5- point Likert scale format, ranging from strongly agree (5) to strongly disagree (1). The scores were summarized up and converted into percentage, then the score, were converted into qualitative variables through categorization based on a cutoff point of 60%. A- scoring of parenting stress regarding either of the child's domains or parent's domains was considered high with scores ≥ 60% and low with scores <60%. B-Total scoring of parenting stress regarding both domains together was considered high with scores ≥ 60% and low with scores < 60%.

e.Validity

The validation of the module carried out with Thirty mothers using pre- and post-intervention assessments of parenting practices and Attention-Deficit/Hyperactivity Disorder (ADHD) symptoms in their children. These assessments were conducted before and after the implementation of the Brief Individual Parental Training Intervention.

Before the intervention began, both mothers and children underwent screening to determine their eligibility for the study. To exclude children with intellectual disabilities or borderline intelligence, the Binet-Kamat Test of Intelligence was administered. Behavioral issues were assessed using the Child

Behaviour Checklist (CBCL), and the Conners' Parent Rating Scales-Revised (CRS-R) were utilized to support and use to confirm the diagnosis of Attention-Deficit/Hyperactivity Disorder (ADHD).

Mothers were assessed for psychiatric concerns using the General Health Questionnaire (GHQ) while parenting practices were evaluated using the Alabama Parenting Questionnaire (APQ), and maternal stress levels were measured with the Parenting Stress Index (PSI).

After assessing the conditions of both the mother and the child, a brief individual parental training program was initiated. The intervention consisted of eight sessions focusing on three key areas. The first area involved providing psychoeducation to the mother. Before beginning this, an Attention-Deficit/Hyperactivity Disorder (ADHD) awareness checklist was administered to assess her existing knowledge. Based on her responses, tailored psychoeducation was provided, covering the nature of ADHD, its causes, and general strategies for management. The second session served as a follow-up, during which the therapist reviewed the mother’s understanding of ADHD and explored her grasp of the condition as it relates to her child.

The second area of focus was family dynamics, addressed over six sessions. This component explored the mother's coping mechanisms under stress, the level of support she received from her spouse in raising a child with Attention-Deficit/Hyperactivity Disorder (ADHD), and the perceived support from in-laws and siblings. Prior to starting these sessions, a checklist was provided to assess the mother's perception of familial support and to identify any feelings of isolation.

The third session began with introducing coping strategies for the mother. This included cognitive restructuring to reduce stigma, embarrassment, and to foster acceptance of her child's condition. Guidance was also provided on how to handle negative or insensitive remarks from family members. To address the child's early emotional and behavioral challenges, the mother was trained in basic behavior therapy techniques such as contingency management and time-out methods, aimed at improving the mother-child relationship.

In the fourth session, the therapist followed up on these issues, discussing the mother's progress and any ongoing challenges. Beginning with the fifth session, the focus shifted to helping the mother educate her spouse about Attention-Deficit/Hyperactivity Disorder (ADHD). She was encouraged to seek his support in facilitating attention enhancement tasks and managing behavioral and emotional issues in their child. The sixth session continued this work, including a follow-up discussion, and introduced the concept of adopting a democratic parenting style. The mother was guided on how to involve the father more actively in parenting and share responsibilities for their child with ADHD.

The third area focused on strengthening the mother–child relationship. The seventh session began with helping the mother better understand her child's condition through behavior analysis. This approach enabled her to identify specific behavior patterns and apply appropriate behavioral techniques to manage them effectively. As a result, the mother could respond more sensitively to her child's needs and support the development of skills that promote better compliance and cooperation.

Behavior analysis also guided the mother in refining her parenting strategies to be more responsive and effective. In the eighth session, the focus shifted to introducing basic methods for enhancing the child's learning and execution of skills, which are often impacted by Attention-Deficit/Hyperactivity Disorder (ADHD). These strategies aimed to support the child's academic and everyday functioning through consistent and structured interventions.

f. Mode of Delivery

The intervention sessions were delivered individually**,** meaning they followed a one-on-one format between the therapist and the parent participant. This individualized approach allowed the content, pace, and interaction could be adjusted according to the specific needs, concerns, and progress of each parent. The sessions were conducted at the Community Disability Management and Rehabilitation Program (CDMRP)**,** housed within the Department of Psychology at the University of Calicut**.** This setting provided a structured, supportive, and professional environment conducive to focused learning and skill development.

g. Facilitation and Interaction Strategies

The intervention sessions were conducted on an individual basis, following a one-on-one format between the therapist and each parent participant. This individualized approach allowed for personalized attention, ensuring that the training could be tailored to the unique challenges, parenting styles, and progress of each parent-child dyad. At the beginning of each session, participants were asked to provide a follow-up or feedback on the implementation of strategies discussed in the

previous session. This served two key purposes: (1) it reinforced the application of learned skills at home, and (2) it enabled the therapist to address any difficulties, clarify doubts, and adjust the intervention as needed.

All sessions were held at the Community Disability Management and Rehabilitation Program (CDMRP), located within the Department of Psychology at the University of Calicut**.** The CDMRP provided a structured, professional, and resource-equipped environment conducive to learning and therapeutic engagement.

h. Theoretical and Empirical Basis The individual parental training program for children with Attention-Deficit/Hyperactivity Disorder (ADHD) is grounded in several well-established psychological theories, each contributing to the structure and goals of the intervention. The individual parental training program designed for children with Attention-Deficit/Hyperactivity Disorder (ADHD) is grounded in several well-established psychological theories that inform both its structure and objectives. One foundational framework is the Behavioral Theory developed by B. F. Skinner**,** which is based on the principles of operant conditioning. This theory posits that behavior is influenced by its consequences. In the context of parental training, this approach is applied by teaching parents to reinforce desirable behaviors such as completing homework through positive reinforcement**,** while managing undesirable behaviors such as interrupting or aggression through planned ignoring or consistent consequences. The aim is to promote self-regulation and task compliance in children by establishing predictable routines and structured responses (Barkley, 2013). This program also draws on Social Learning Theory proposed by Albert Bandura, which emphasizes that behavior is learned through observation, imitation,

and modelling (Bandura,1977). Within the context of Attention-Deficit/Hyperactivity Disorder (ADHD), parents are taught to model calm, organized, and consistent behavior, recognizing that children benefit from clear and predictable cues. By actively demonstrating appropriate behaviors and engaging positively with their children, parents help shape more adaptive behavior patterns, enhancing overall parent-child interaction quality. Additionally, the intervention incorporates principles from Family Systems Theory, which views the family as an interconnected system where changes in one member affect the entire unit. ADHD symptoms can disrupt family harmony, leading to conflict, stress, and inconsistent parenting. Parental training grounded in family systems theory aims to restore balance within the family by improving communication, establishing structured routines, and enhancing emotional regulation among all members. This systemic approach supports a more cohesive and supportive family environment. Finally, the program integrates Cognitive-Behavioral Principles, which help parents identify and manage their own cognitive and emotional responses to parenting challenges. CBT techniques assist parents in reframing negative thoughts, engaging in constructive problem-solving, and regulating emotional reactions such as guilt or frustration (Beck, 2011). These strategies not only enhance the parent's psychological well-being but also foster a more nurturing and responsive caregiving environment.

i. Monitoring progress

Maternal self-reports, provided verbally, were used to monitor both engagement and the acquisition of skills.

j. Progression to the concluding phase

Over a period of four months, no active intervention was provided; however, the mother–child relationship was monitored through periodic assignments. Following the monitoring phase, a post-intervention assessment was conducted to evaluate the efficacy of the brief group-based parental training program. Parenting skills among mothers were assessed using the Alabama Parenting Questionnaire (APQ), while reductions in children's Attention-Deficit/Hyperactivity Disorder (ADHD) symptoms were measured using the Conners' Parent Rating Scale–Revised (CRS-R).

Summary of the chapter

This chapter outlines the research design, procedures, and techniques used to conduct the study. An exploratory sequential mixed-methods design was adopted, beginning with a qualitative phase to explore the phenomenon and inform intervention development, followed by a quantitative phase to assess outcomes using a cross-sectional pre- and post-test design. The study was conducted in two stages: Phase 1 (exploratory and developmental) and the Main Phase (intervention and evaluation). In Phase 1, a parental training module was developed based on existing models, literature reviews, professional input, and theoretical frameworks. This preliminary module was then pilot tested with eight mothers of children diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD). Prior to the intervention, participants were screened and the diagnosis of ADHD was confirmed using standardized assessments. The pilot intervention involved eight individual training sessions, after which feedback was collected to identify limitations in the module.

Based on insights from the pilot study, the module was revised to enhance mothers' awareness of ADHD, increase perceived support, and strengthen the mother–child relationship. In the Main Phase, the revised module was implemented using the same structure and procedures. Assessments were carried out both before and after the intervention to see how well the training program improved parenting techniques and decreased children's symptoms of ADHD.

CHAPTER III
RESULT AND DISCUSSION

This chapter presents the inferences drawn from the study, interpreted in light of relevant empirical findings and theoretical frameworks, with statistical analysis conducted using *Jamovi* software. As the present research was conducted in two distinct phases each employing different tools for screening, diagnosis, and pre-test/post-test evaluations the results are discussed accordingly. The discussion begins with the findings from Phase 1 in the pilot study, followed by insights gained from the Main phase involving the development and refinement of the intervention, and concludes with the outcomes.

Although results from Phase 1 in the pilot study were briefly presented, they were meaningfully integrated into the subsequent main phase. The Main phase served to further validate and refine the intervention through pre- and post-intervention assessments of parenting practices and Attention-Deficit/Hyperactivity Disorder (ADHD) symptoms."

Phase 1

Pilot study

The pilot phase of the study aimed to assess the preliminary version of the Brief Individual Parental Training Programme and to validate two checklists developed for the intervention. A pre- and post-test design was employed with a sample of ten biological mothers of children diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD). Participants were selected using convenient sampling from the Community Disability Management Rehabilitation Programme (CDMRP) at the Department of Psychology, University of Calicut.

Inclusion criteria required that the children be between the ages of 6 and 10, reside with their biological mothers, and that the mother be the primary caregiver.

Children with an intelligence quotient (IQ) above 90 were included, while those with other physical, mental, or psychiatric disorders, as well as those on stimulant medication, were excluded. Mothers with diagnosed psychiatric illnesses were also excluded from participation.

To ensure eligibility, both mothers and children underwent initial screening. To evaluate the child's overall cognitive functioning and rule out intellectual disability, the Binet Kamath Test of Intelligence (BKT) was used. Using the Conner's Parent Rating Scales Revised (CRS-R), a mother reported tool that evaluates cognitive challenges, oppositional behaviors, and hyperactivity, the diagnosis of Attention-Deficit/Hyperactivity Disorder (ADHD) was verified. Mother also filled out the Child Behavior Checklist (CBCL), which was used to evaluate comorbid behavioral and emotional issues.

The General Health Questionnaire-28 was used to test mothers for mental health issues (GHQ). The Alabama Parenting Questionnaire (APQ), which assesses five areas of parenting behaviors, was used to measure parenting practices. The Parenting Stress levels evaluated using the Parenting Stress Index (PSI) which focused on the domains of both parents and children. Before the intervention, the mother was also given two checklists, the first the Attention-Deficit/Hyperactivity Disorder (ADHD) Awareness Checklist, was administered prior to the beginning of the sessions to assess the mother's knowledge of ADHD. The second was given at the start of the third session, which addressed family dynamics, to evaluate her perceived support from her spouse and family."

Mothers took part in an eight session Brief Individual Parental Training Program following first evaluations. The first session focused on psychoeducation, tailored according to the results of the Attention-Deficit/Hyperactivity Disorder (ADHD) Awareness Checklist, and included information on the nature, causes, and management strategies for ADHD. The second session involved a review of the mother's understanding of ADHD. The next six sessions addressed family dynamics and the mother–child relationship. Topics included maternal coping strategies, perceived spousal and familial support, stigma reduction through cognitive restructuring, and the application of behavioral techniques such as contingency management and time-out methods. Sessions five and six encouraged the mother to educate family members about his condition and involve the father in child-rearing responsibilities and introduced democratic parenting practices. The final sessions focused on behavior analysis to identify patterns in the child's behavior, and on introducing techniques to support the child's academic and functional skill development.

To validate the intervention and the checklists, pre- and post-intervention assessments were conducted using the Alabama Parenting Questionnaire (APQ) and Conner's Parent Rating Scales Revised (CRS-R) to measure changes in parenting practices and Attention-Deficit/Hyperactivity Disorder (ADHD) symptoms, respectively. Descriptive statistics, including frequency distribution were used to analyse maternal knowledge and perceived family support. A paired-samples *t*-test was also used to examine the effectiveness of the intervention by comparing pre- and post-test scores on parenting practices and the reduction of ADHD symptoms in children.

Table1

Percentage Analysis of Mothers awareness Levels Regarding Attention Deficit/Hyperactivity disorder (ADHD)

Items	**Frequency**	**Percentage**
Do you know your child condition	8	80%
Do you know what is attention and what is its deficit	4	40%
Do you know the clinical features of attentiondeficit	1	10%
Do you know what is hyperactivity	2	20%
When you say the child is hyperactive	1	10%
Do you know what is impulsivity	1	10%
Do you know what are the clinical features of impulsive child	0	0%
Do you know academic difficulty child facingdue to ADHD	6	60%
Do you know social skill problems child facingdue to ADHD	1	10%
Do you know execution difficulty child facingdue to ADHD	1	10%
Do you know child facing other emotionalproblem due to ADHD	1	10%

Table 1 indicates the awareness of mothers regarding various features of Attention-Deficit/Hyperactivity Disorder (ADHD) in their children. The findings indicate a substantial recognition of behavioral concerns but a limited understanding of ADHD as a clinical condition. Results show that 80% of mothers are aware of behavioral issues such as temper tantrums, anger outbursts, and stubbornness.

However, these behaviors are not explicitly linked to ADHD-related impulsivity. Instead, mothers tend to perceive impulsivity as a general behavioral problem rather than a core symptom of ADHD. Regarding academic difficulties, 60% of mothers acknowledge challenges related to attention deficit or ADHD, though only 40% specifically recognize attention deficit as a symptom. The tendency to attribute inattentiveness to personality traits rather than a clinical disorder may reflect a lack of psychoeducation about ADHD, which can hinder timely intervention and support. Awareness of hyperactivity as a symptom of ADHD is low (20%), suggesting that many mothers may not differentiate high activity levels from typical childhood energy. More notably, only 10% of mothers demonstrate an understanding of the broader clinical features of ADHD, including attention deficit, impulsivity, social skill difficulties, executive function deficits, and emotional regulation issues. These findings highlight a significant gap in parental awareness regarding the multidimensional nature of ADHD. Importantly, 0% of mothers recognize impulsivity as a specific feature of ADHD, reinforcing the notion that impulsive behaviors are frequently misinterpreted as general misbehaviour rather than a neurodevelopmental symptom. The finding that all mothers lack awareness of ADHDs.

Table 2

Checklist for Perceived Support from Family Using Percentage Analysis

Item	Frequency	Percentage
Do you have difficulty in accepting the child having ADHD in the family	1	10%
Do you have difficulty in managing emotional behavior problems of the child having ADHD in the family	3	30%
Do you lack support from spouse in rearing the child with ADHD?	3	30%
Do you lack perceived support from grand parents and siblings of the child having ADHD	0	0%
Do you feel isolated from the family due to your child having ADHD?	3	30%
Do you think that due to our child having ADHD others in the family members representing unpredictable behaviors	1	10%
Do you think that there is an imbalance happened in the family due to this child having ADHD	1	10%
Do you think that family members lack in the understanding the child condition	2	20%
Do you think that difference in parenting in thespouse that affect our child having ADHD in rearing	1	10%
Do you feel lack of communication in betweenfamily members that interfere in our ADHD child rearing condition	1	10%

The present study explores the level of support mothers perceive from family members and their attitudes toward managing Attention-Deficit/Hyperactivity Disorder (ADHD)-related challenges in their children. The findings indicate variations in the degree of family support, which significantly influence maternal

experiences and coping strategies. Results show that 30% of mothers experience insufficient support in managing their child's emotional and behavioral difficulties. These mothers report a lack of spousal support and feelings of isolation from family members due to their child's condition. Conversely, 70% of mothers perceive adequate support in these areas, highlighting the protective role of family involvement in managing Attention-Deficit/Hyperactivity Disorder (ADHD)-related challenges. Regarding family understanding of the child's condition, 80% of mothers believe their family comprehends the difficulties associated with ADHD, whereas 20% feel unsupported in this regard. This discrepancy suggests that while many families acknowledge ADHD, some may lack the necessary awareness or willingness to engage in a supportive manner. Crucially, in key areas such as family acceptance of the child's condition, minimizing unpredictable behaviors among family members, maintaining family balance, reducing parenting discrepancies, and fostering effective communication within the family, 90% of mothers report substantial support. This level of support is essential, as it enhances parents' ability to manage their child's symptoms effectively and contributes to a stable family environment. Notably, the findings emphasize the significant role of grandparents in child-rearing. Full support from grandparents appears to be a critical factor in providing emotional and practical assistance to mothers, reinforcing the importance of extended family in caregiving dynamics. Overall, these findings highlight the positive impact of strong family support on parental coping mechanisms and child management strategies. However, the 30% of mothers who experience insufficient support remain at risk of increased stress, underscoring the need for family-focused

interventions that promote spousal and extended family involvement in ADHD management

Table 3

Pre- and Post-Intervention Scores on the Five Subscales of the Alabama Parenting Questionnaire (APQ) among Mothers of Children with Attention-Deficit/Hyperactivity Disorder (*ADHD) (N = 10)*

Variable	Pre		Post		t value	Sig
	Mean	SD	Mean	SD		
PRE- POST Positive Involvement with children	73.70	7.903	64.10	4.654	1.10	0.299
PRE- POST Supervision and Monitoring	39.50	4.249	40.50	5.297	2.75	.22
PRE- POST Use of Positive Discipline Techniques	26.70	2.541	28.00	2.000	1.89	.092
PRE- POST Consistency in the use of such discipline	25.00	6.200	21.00	4.899	3.23	.010
PRE-F POST Corporal Punishment	18.50	3.274	14.50	4.601	4.71	.001
PRE-APQ POST APQ	7.00	2.160	3.70	0.823	3.74	.005

Table 3 indicates Pre- and post-intervention assessment of parenting dimensions across the five subscales of the Alabama Parenting Questionnaire (APQ) among ten mothers of children with Attention-Deficit/Hyperactivity Disorder (ADHD). Pre-Post assessment of the parenting dimensions of the five subscales for

mothers of children with ADHD of ten mothers. Positive Involvement with Children Pre-test mean = 73.70 (SD = 7.903). Post-test mean = 64.10 (SD = 4.654). Mean difference = 1.10.p-value = 0.299 This suggests no significant change in the level of positive involvement with children after the intervention. Supervision and Monitoring: Pre-test mean = 39.50 (SD = 4.249). Post-test mean = 40.50 (SD = 5.297). Mean difference = 2.75.p-value = 0.22The slight improvement in supervision and monitoring of the child is not statistically significant. Use of Positive Discipline Techniques Pre-test mean = 26.70 (SD = 2.541). Post-test mean = 28.00 (SD = 2.000). Mean difference = 1.89.p-value = 0.092 This indicates a trend toward improvement in using positive discipline techniques, though the change is not statistically significant. Consistency in the Use of Discipline: Pre-test mean = 25.00 (SD = 6.200). Post-test mean = 21.00 (SD = 4.899). Mean difference = 3.23. p-value = 0.010 (statistically significant). This demonstrates a significant reduction in consistency in discipline practices post-test, which may reflect challenges in maintaining discipline routines. Corporal Punishment: Pre-test mean = 18.50 (SD = 3.274). Post-test mean = 14.50 (SD = 4.601). Mean difference = 4.71.p-value = 0.001. There is a significant reduction in the use of corporal punishment following the intervention. Overall Parenting Practices (APQ): Pre-test mean = 7.00 (SD = 2.160). Post-test mean = 3.70 (SD = 0.823). Mean difference = 3.74.p-value = 0.005 This indicates a significant overall improvement in parenting practices as measured by the Alabama Parenting Questionnaire (APQ).

Table 4

Means, Standard Deviations, t-Values, and Significance Levels for the Four Dimensions of Attention-Deficit/Hyperactivity Disorder (ADHD) in Pre- and Post-Assessment Using the Conners Parent Rating Scale-Revised (Pilot Study with 10 Children)

Variable	Pre		Post		t value	Sig
	Mean	SD	Mean	SD		
Oppositional	12.30	2.36	8.50	1.51	4.52	.001
Cognitive problem/ Intension	12.20	4.52	9.00	2.87	2.80	.021
Hyperactivity	14.40	3.10	9.40	4.06	5.44	<.001
ADHD Index	26.60	5.38	19.80	3.08	4.92	<.001
Totals	65.50	10.29	46	6.91	5.30	<.001

Table 4 This represents the pre-test and post-test scores on the Conners Parent Rating Scale -Revised in the pilot study. The results indicated a statistically significant reduction in oppositional behavior scores from pre-test (M = 12.30, SD = 2.36) to post-test (M = 8.50, SD = 1.51), $t = 4.52$, $p = .001$. Cognitive problems/inattention also showed a significant decrease from pre-test (M = 12.20, SD = 4.52) to post-test (M = 9.00, SD = 2.87), $t = 2.80$, $p = .021$.Hyperactivity scores significantly declined from pre-test (M = 14.40, SD = 3.10) to post-test (M = 9.40, SD = 4.06), $t = 5.44$, $p < .001$. The ADHD Index showed a significant reduction from pre-test (M = 26.60, SD = 5.38) to post-test (M = 19.80, SD = 3.08), $t = 4.92$, $p < .001$.Overall total scores significantly decreased from pre-test (M = 65.50, SD = 10.29) to post-test (M = 46.00, SD = 6.91), $t = 5.30$, $p < .001$. These findings suggest that the intervention was effective in significantly reducing core symptoms

and behavioral difficulties associated with Attention-Deficit/Hyperactivity Disorder (ADHD).

Discussion of Pilot study

The efficacy of the brief individual parent training intervention during the pilot phase was evaluated through checklist responses assessing maternal awareness of Attention-Deficit/Hyperactivity Disorder (ADHD), perceived family support, parenting practices (measured via the Alabama Parenting Questionnaire), and ADHD symptomatology (via the Conners Parent Rating Scale-Revised). The findings provide important insights into both the strengths and limitations of the intervention, as well as broader psychosocial factors influencing parenting outcomes.

The results revealed a notable gap in parental awareness regarding the multidimensional and neurodevelopmental nature of Attention-Deficit/Hyperactivity Disorder (ADHD). While mothers were able to identify certain behavioural features of the condition, these were often misinterpreted as instances of intentional misbehaviour rather than symptoms of an underlying disorder. This lack of comprehensive understanding was observed across all participants, indicating a general deficit in ADHD-related knowledge**.** These results highlight the necessity of more focused psychoeducational elements in parent education programs to help correctly conceptualize ADHD and lessen the stigma attached to child conduct.

The results demonstrated the positive impact of robust familial networks on improving parental coping and child management techniques in terms of perceived

family support. Nonetheless almost 30% of mothers said their spouses or other family members did not provide enough support. The subgroup continues to be especially continued to be especially vulnerable to parental difficulties and high stress levels. These findings inclusive strategies in intervention frameworks that promote shared accountability and involvement in Attention-Deficit/Hyperactivity Disorder (ADHD) management outside of the primary carer

Analysis of the Alabama Parenting Questionnaire (APQ) subscales revealed no statistically significant improvement in the following areas related to parenting practices: Use of positive discipline Techniques, Supervision and monitoring and Positive Involvement. These facets of parenting are frequently influenced by ingrained attitudes, emotional reactivity, and internalised caregiving models that stem from the carers own early life experiences. Therefore, in order to bring about significant change, individuals might need more intensive, customized and prolonged in intervention efforts. Furthermore, the degree of involvement with these particular parenting approaches may have been influenced by participant differences in cognitive and motivational readiness for behavioral change. These results imply that short term interventions might not be able to significantly alter more complex relational or emotional parenting styles.

Conversely, considerable improvement was noted in Consistency in the Use of Discipline and Reduction in Corporal Punishment. These modifications imply that the intervention's behavioral modelling and structured skill-based training were successful in changing particular, outwardly visible parenting practices. The emphasis on setting consistent standards and supporting nonviolent disciplinary

alternatives appears to have allowed parents to accept these techniques more readily. The direct application and clarity of the behavioral methods taught throughout the sessions are probably what caused these changes.

Post-intervention evaluations of children behavioral outcomes showed statistically significant decreases in the ADHD Index, Impulsivity, Cognitive Problems/Inattention and Oppositional Behaviour. These outcomes show how well the parent skills training programme works to change the main symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD). Children may have shown better attention and impulse control, improved parent child interactions and more effective behavior regulation as a result of more parental consistency and less physical punishment. These results align with the theoretical framework of behavioural parent training, which holds that by altering environment circumstances and reinforcement patterns, parenting practices can enhance child conduct in proportion.

Before the interventions main phase, change was made in response to the pilot study's results. Parental individual training sessions were redesigned to emphasized the development of good parenting technique, raising knowledge of Attention-Deficit/Hyperactivity Disorder (ADHD), and strengthen the sense of family support. This improvement addressed the relational emotional and cognitive aspects of parenting as well as the larger familial context in which child development takes places. These also helped parents learn effective management techniques, boost their perception of family support and improve parent child interactions.

Main phase

The results obtained from the pilot phase provided a solid phase for improving the intervention's main phase. According to the findings, a large number of mothers had incomplete or erroneous knowledge of Attention-Deficit/Hyperactivity Disorder (ADHD) and commonly mistakenly attributed its primary neurodevelopmental characteristics to deliberate misbehaviour. Significant discrepancies in the use of successful parenting techniques were also discovered and differences in how supportive families were seen further underscored the need for a more thorough approach. Despite the short individual training session's initial success in raising parental awareness and competence levels, the outcomes highlight the need for a more comprehensive organised intervention approach. Crucially, the pilot period also showed a measurable decrease in ADHD symptoms among children, indicating the intervention's potential effectiveness and reinforcing its ongoing development and suitability for use in a bigger, more representative population.

In response to the findings derived from the pilot phase, alterations were made to both the content and delivery of the intervention for implementation in the main phase. The checklist used to assess parental awareness of Attention-Deficit/Hyperactivity Disorder (ADHD) and perceived familial support demonstrated acceptable validity during the pilot phase, thereby justifying its continued use. Given the consistency in study objectives and participant characteristics across both phases, the same checklist was employed in the main phase to confirm methodological continuity. This checklist effectively captured the

extent of maternal unawareness regarding ADHD symptomatology and the level of perceived support from immediate family members, including siblings, grandparents, and the child's father. The main phase focused on applying an individualized parent training program tailored specifically for mothers of children diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD). The primary objective was to evaluate the efficacy of the revised intervention in enhancing parenting skills and improving the management of ADHD-related behavioral issues in children. A pre-test–post-test design was employed with a sample of 30 biological mothers, selected through convenient sampling from the Community Disability Management and Rehabilitation Programme (CDMRP) under the Department of Psychology, University of Calicut. The inclusion and exclusion criteria remained consistent with those used in the pilot phase. Children were eligible to participate if they were between 6 and 10 years of age, resided with their biological mothers, and if the mother was the primary caregiver. Children with an intelligence quotient (IQ) above 90 were included, while those with comorbid physical, mental, or psychiatric conditions, as well as those on stimulant medications, were excluded. Similarly, mothers with diagnosed psychiatric illnesses were not included in the study.

Although socio-demographic data (SDD) were not collected during the pilot phase, they were incorporated in the main phase to provide general background knowledge for the researcher while administering the intervention. Gathering information on variables such as maternal age, education, occupation, and family structure helped contextualize the sample and allowed for a better understanding of the participants' living conditions and potential influences on parenting practices.

While not used for hypothesis testing, the SDD served to enhance the interpretive depth of the study.

To ensure measurement consistency and enable meaningful cross phase comparison, the same set of psychological evaluation instruments was employed in both the pilot and main phases. During the pilot phase, the target sample Indian parents of children with Attention-Deficit/Hyperactivity Disorder (ADHD) was asked to rate the instruments clarity, cultural for and initial reliability. The results showed that participants understood the tools well and that their evaluations were administered in the main phase without any changes in light of this preliminary evidence of validity and reliability. The study internal validity was enhanced and measurement bias was reduced thanks to this methodological consistency (Creswell&Creswell,2018). Furthermore, any observed changes in outcomes could be ascribed to the intervention rather than inconsistent assessments because the same assessment framework was used. Both mothers and children went through an initial screening procedure to guarantee proper selection. The Binet Kamath Intelligence Test (BKT) was conducted by the researcher, a qualified clinical psychologist, to measure general cognitive functioning and to rule out intellectual disability. The Conners Parent Rating Scale - Revised (CRS-R), a parent reported tool used to evaluate oppositional behavior, cognitive problems, and hyperactivity was used to validate the Attention-Deficit/Hyperactivity Disorder (ADHD) diagnosis. The mother completed the Child behaviour Checklist (CBCL) which was used to further assess comorbid behavioural and emotional issues.

To check for mental health issues, mothers were given the General HealthQuestionnaire-28(GHQ). The Alabama Parenting Questionnaire (APQ), which gauges five important areas of parenting behaviors was used to evaluate parenting practices. Additionally, two distinct checklists were given at various intervals; the Perceived Family support Checklist was given before the session to assess the mother's perceptions of the emotional and practical support she received from her family and spouse, and the ADHD Awareness Checklist was given before the intervention to assess the mother's knowledge and comprehension of Attention-Deficit/Hyperactivity Disorder (ADHD).

Mother took part in an eight session Brief Individual parental Training Program after the first evaluations. Based on the findings of the ADHD Awareness Checklist, the first session's psychoeducation focus covered topics such as the nature, causes and management technique of Attention-Deficit/Hyperactivity Disorder ADHD. In the second session, the mother's knowledge of ADHD reviewed. The mother child bond and family dynamics were the topics of the following six sessions, Maternal coping mechanisms, perceived support from spouses and family, cognitive restructuring to lessen stigma, and the use of behavioral interventions like time ours and contingency management were among the subjects covered. In sessions five and six, authoritative parenting techniques were introduced, and the mother was urged to educate and involve the father and other family members in child rearing duties

In order to find patterns in the child's behavior, the final sessions concentrated on behavior analysis. They also included strategies to help the younger

develop their academic and functional skills. To maintain uniformity, the checklist and intervention protocol used in the pilot phase were carried over into the study's main phase. The Conners' Rating Scale Revised (CRS-R) and the Alabama Parenting Questionnaire (APQ)were used for pre and post intervention evaluations to gauge changes in Attention-Deficit/Hyperactivity Disorder (ADHD) symptomatology and parenting styles, respectively. The analysis of mother knowledge and perceived family support was done using descriptive statistics, such as measures of central tendency and frequency distributions. A paired samples t test was used to compare the pre post test results on parenting techniques and the intensity of children's ADHD symptoms in order to evaluate the effectiveness of the intervention.

Table 5

Mother and child sociodemographic and parenting characteristics

Variable	**Frequency (n)**	**Percentage %**
Participant		
Mother of ADHD male child	30	100
Birth weight of child		
Above2.5gm	26	86.6%
Below 2.5gm	3	10%
Age Range of Mother		
20-30	9	90%
30-40	7	70%
40-50	2	20%
Medication during gestation		
No	26	86.6%

Yes	4	13.3%
Education of mother		
Number of mothers completed 10thclass	8	26.6
Number of mothers completed 12th class	11	36.6
Number of mothers completed above plus two TTC, DIPLOMA, DEGREE, BED	11	36.6
Education of child		
Number of children in first std		18
Number of children in second std		2
Number of children in third std		3
Number of children in fourth std		3
Number of children in fifth std		4
Mother age at time of delivery		
18-20	5	16.6
20-37	25	83.3
Parenting Style		
Authoritative	28	93.3
Authoritarian	1	3.33
Permissive	1	3.33
Mother Temperament		
Slow to warm up	24	80
Difficult	5	16.6
Easy	1	3.33
Mother child relation		
Secured	24	80
Ambivalent	6	20

Sociodemographic and Parenting features of mother and child, as shown in Table 5, looked at the psychosocial and demographic traits of mother of male children with attention deficit/hyperactivity disorder (ADHD). Mothers (N=30) made up the entire sample and were represented by 100% of the respondents. Only a small percentage(n=3,10%) were categorised as low birth weight, whereas the majority of children (n=26, 86.6%) were reported to have a normal birth weight (above 2.5kg). Although previous research has identified low birth weight as a potential risk factor among the current group (Banerjee et al., 2021). This group's preponderance of normal birth weight may suggest that other variables, such parental practices or environmental stresses, may have a bigger impact on how ADHD symptoms appear. According to the age distribution of mothers, the majority were in the 20-30 and 30-40 age ranges, making them comparatively young, due to reduced rates of child bearing in that age group, a lesser percentage were in the 40-50 age range. Furthermore 83.3% of mothers gave birth between the ages of 20 and 37, compared to just 16.6% in the 18-20 age range, according to data on maternal age at delivery. These findings fit with conventional reproductive trends and show that ADHD is frequently found among children on to mothers within the average childbearing age. The mother's educational background fell into three main categories: education beyond higher secondary (n=11,36.6%) which included Bachelor of Education (B.Ed.) degrees, diplomas, Teacher Training Certificates(TTC), and undergraduates degrees;10^{th} standard (n=8,26.6%;and 12^{th} standards(n=11,36.6%).According to this educational profile, a significant percentage of mothers had completed at least higher secondary school, which could have improved the access to and use of knowledge on diagnosing and treating

ADHD(Daley et al;2014). The existence of mother with less education, however, also emphasises how crucial it to adapt psychoeducational materials to a range of literacy levels. ADHD symptoms are frequently identified around the time of school enrolment, as evidenced by the fact that majority of the children (n=18 were enrolled in the first standard.

In the second (n=2), third (n=3), fourth n=3), and fifth (n=4) standards, fewer children were seen. According to this pattern, the early school years could be a crucial time for seeing behavioural and attentional issues that lead to clinical assessment and diagnosis (DuPaul et al;2011). According to the results,93.3% of women used an authoritative parenting style, which is defined by adequate control and high responsiveness. Permissive (3.33%) and authoritarian (3.33%) styles were reported by only one mother each. Given its proven correlation with favourable child outcomes, such as emotional regulation and social competence domains frequently compromised in children with attention deficit/hyperactivity disorder (ADHD) the prevalence of the authoritative style is hopeful (Baumrind, 1991; Biederman et al., 2002). Mother temperament analysis reveal that the majority of mother were classified as “slow to warm up” (n=24,80%) showing hesitancy and caution in unfamiliar circumstances. However, only one mother was categorised as “easy” (3.33%), while a smaller number had a “difficult” temperament(n=5,16.6%). The speed and adaptability of meeting the requirements of a kid with ADHD might be impacted by a temperamentally cautious parenting approach, especially in situations that are unfamiliar or stressful. These temperament traits could influence both parenting behavior and stress levels in caregiving contexts (Chess & Thomas, 1996). The mother–child relationship was largely reported as secure (n = 24, 80%), with the remaining 20% (n = 6) classified as ambivalent. A secure attachment between

mother and child has been linked to improved emotional functioning and behavioral outcomes in children with attention deficit/hyperactivity disorder (ADHD), suggesting a protective role against the disorder's challenges. In contrast, ambivalent attachment patterns may reflect inconsistent caregiving or emotional unavailability, which can exacerbate behavioral symptoms (Hinshaw, 2002). These findings point to the importance of early relational support and parental guidance programs that promote secure attachment. Taken together, the results highlight generally positive parenting practices and relational dynamics among mothers in the sample. However, the presence of less optimal patterns in a minority of families such as authoritarian parenting, difficult maternal temperament, or ambivalent attachment—underscores the need for individualized, culturally sensitive interventions**.**

Table 6

Awareness Checklist for Attention-Deficit/Hyperactivity Disorder and Percentage Analysis

Item	Frequency (n)	Percentage%
1. Child condition	11	36.6
2.Know about Attention	22	73.3
3.Clinical features of attention	1	3.33
4.Know about hyperactivity	12	40
5.Hyperactivity features	1	3.33
6.Impulsivity	2	6.66
7.Features of impulsivity	0	0
8.Accademic difficulty	7	23.33
9.Social skill problems	3	10
10.Executive difficulty	3	10
11.Emotional problems	2	6.66

Mothers of children with Attention Deficit/Hyperactivity (ADHD) exhibit a diverse pattern of knowledge, according to research on parental awareness and comprehension of the disorder. While a substantial proportion of participants (n = 22, 73.3%) reported being aware of the term "attention," only a very small number (n = 1, 3.33%) demonstrated an understanding of its clinical features. Similarly, while 12 mothers (40%) indicated familiarity with the term "hyperactivity," only one participant (3.33%) was able to identify specific features of hyperactivity. Knowledge about impulsivity was notably low, with only two participants (6.66%) acknowledging awareness of the term and none (0%) able to describe its features.

These results indicate that although many mothers are somewhat familiar with general attention deficit/hyperactivity disorder (ADHD)-related terminology, detailed knowledge about symptomatology particularly regarding impulsivity and clinical diagnostic criteria is limited. This gap is significant, as accurate parental understanding of ADHD symptoms is crucial for early identification, appropriate intervention, and effective home-based behavioral management strategies (Daley et al., 2014; Sciutto et al., 2000).

When the data from the main phase are compared with findings from the pilot phase (see Table 6), a significant gap in parental awareness becomes even more evident. In both phases, while basic recognition of terms such as attention and hyperactivity was present, understanding of the clinical features of attention, hyperactivity, and impulsivity as well as knowledge of associated challenges such as

executive functioning deficits, social skill difficulties, and emotional problems remained limited. These patterns point to a consistent lack of in-depth awareness across both study phases.

Such persistent gaps highlight the need for targeted psychoeducational interventions. General awareness is not sufficient; parents must be equipped with a deeper understanding of attention deficit/hyperactivity disorder (ADHD)'s manifestations to facilitate early detection and improve their child's access to interventions. This is particularly important given that only 36.6% of mothers reported awareness of their child's condition and even fewer recognized associated functional impairments such as academic (23.3%), social (10%), or emotional (6.66%) difficulties.

Overall, the data underscore the importance of integrating comprehensive parent training focused not only on symptom identification but also on the broader developmental challenges faced by children with attention deficit/hyperactivity disorder (ADHD). Enhancing parental insight into these areas may strengthen collaborative care efforts, promote timely interventions, and ultimately support better long-term outcomes for affected children (Chronis et al., 2004; Barkley, 2014).

Table 7

Percentage Analysis of mothers perceived family support

	Items	Frequency (n)	Percentage %
1	Difficulty in accepting the child	2	6.66
2	Difficulty in managing emotional behaviour problem	15	50
3	Lack of support from spouse in rearing the child	3	10
4	Lack perceived support from grandparents and siblings of the child	10	33.3
5	Do you feel isolated from the family	3	10
6	Other family member represent unpredictable behavior	4	13.3
7	Imbalance happened in the family	3	10
8	Lack understanding of family members	13	43.3
9	Difference in parenting	5	16.6
10	Lack of communication in between family members	4	13.3
11	Supportive factors getting from family	5	16.6

The data reveals a range of family-related difficulties experienced by mothers of children diagnosed with ADHD. The most frequently reported challenge was *difficulty in managing emotional behaviour problems* (50%), indicating a pressing need for behavioral management support within the home. This finding is consistent with research highlighting that children with ADHD often exhibit

emotional dysregulation, placing significant stress on caregivers (Barkley, 2015). Another prominent concern was the *lack of understanding from family members* (43.3%), which may contribute to feelings of invalidation and hinder effective caregiving. Emotional and informational support from family has been identified as a critical protective factor for parental well-being (Chronis et al., 2007). Furthermore, a substantial number of participants reported *lack of perceived support from extended family members* such as grandparents and siblings (33.3%), suggesting that ADHD-related caregiving is often an isolating experience, especially in joint or extended family systems prevalent in Indian culture. *Differences in parenting approaches* (16.6%) and *lack of communication among family members* (13.3%) reflect intrafamilial conflict, which can worsen the stress experienced by the primary caregiver. This aligns with prior studies that emphasize how inconsistent parenting strategies and poor spousal or family communication can negatively affect child outcomes (Johnston & Mash, 2001). Interestingly, only a small percentage (6.66%) reported *difficulty in accepting the child*, implying that while acceptance may not be a primary issue, managing day-to-day behavioral challenges and family dynamics remains critical. Finally, the presence of *supportive factors from the family* was acknowledged by only 16.6% of participants, indicating that positive familial support is limited for most caregivers in this sample.

Table 8

Pre- and Post-Intervention Scores on the Five Subscales of the Alabama Parenting Questionnaire (APQ) for Mothers of Children with ADHD (N = 30)

Variable	Pre Mean	Pre SD	Post Mean	Post SD	t Value	Sig	Cohen's d
Positive Involvement with children	39.33	4.63	41.43	3.84	3.87	<.001	.706
Supervision andMonitoring	27.27	2.53	28.43	1.94	3.25	0.003	.593
Use of Positive Discipline Techniques	22.80	6.75	19.57	6.32	3.44	0.002	.628
Consistency	18.03	4.72	14.23	4.67	6.76	<.001	1.234
Corporal Punishment	8.07	2.68	4.57	2.53	6.91	<.001	1.261
Total	75.17	9.20	66.83	8.89	5.44	<.001	.994

Table 8 indicates series of paired-samples *t*-tests which were conducted to examine the effect of the intervention on various parenting dimensions. There was a significant increase in positive involvement with children from pre-test ($M = 39.33$, $SD = 4.63$) to post-test ($M = 41.43$, $SD = 3.84$), $t = 3.87$, $p < .001$, with a moderate to large effect size ($d = 0.706$), indicating a statistically significant improvement in this domain. The improvement in positive involvement may be attributed to the intervention's emphasis on building emotional connection, enhancing communication, and encouraging parents to engage more consistently and meaningfully with their children. Through structured sessions focusing on empathy, active listening, and recognition of the child's emotional needs, parents may have developed a deeper understanding of how their involvement impacts their child's behavior and well-being. Furthermore, mothers were probably inspired to embrace

more responsive and loving behaviors in their daily interactions by the growing understanding of and reinforcement of good parenting strategies. Likewise, modest effect size (d=0.593) indicated improved parental monitoring after the intervention and a significant rise in supervision and monitoring scores was seen from the pretest(M=27.27,SD=2.53) to the post test (M=28.43,SD=1.94),t=3.25,p=.003.This implies that the intervention was successful in enhancing the mother's supervision and awareness of the child's everyday actions and conduct. The intervention's emphasis on teaching mothers the value of regular supervision, establishing clear expectation, and monitoring behavioral patterns in children with ADHD may be the reason for the improvement in this area. The program probably promoted more proactive and regular participation in behavior monitoring by raising mother awareness of the benefits of organised monitoring for safety and behavioral regulation.

In contrast, positive discipline scores showed a significant decrease from pre-test (M = 22.80, SD = 6.75) to post-test (M = 19.57, SD = 6.32), t= 3.44, p = .002, with a moderate effect size (d = 0.628) indicating a reduced confidence on positive discipline strategies post-intervention. This may reflect a shift in parental focus toward emotional regulation and relationship-based approaches over behavioral reinforcement techniques. Increased awareness of their own parenting styles may have led some parents to become more cautious or uncertain about applying specific disciplinary strategies, especially during the transition phase following the intervention. A significant reduction was also found in consistency scores, from pre-test (M = 18.03, SD = 4.72) to post-test (M = 14.23, SD = 4.67), t = 6.76, p < .001,

and a large effect size (d = 1.234) reflecting decreased consistency in parenting behavior. While consistency is typically a positive parenting trait, this decrease may reflect greater parental honesty and insight gained during the intervention. Parents may have become more self-aware of inconsistencies they had previously overlooked, leading to more accurate post-test reporting. Additionally, the process of integrating new parenting strategies could have temporarily disrupted previously established routines, contributing to variability in parenting behavior. Corporal punishment scores significantly decreased from pre-test (M = 8.07, SD = 2.68) to post-test (M = 4.57, SD = 2.53), t= 6.91, p < .001, with a large effect size (d = 1.261), indicating a marked reduction in the use of corporal punishment. indicates the intervention's success in discouraging harsh disciplinary practices and promoting more constructive, non-violent approaches to child behavior management. The sessions likely emphasized the negative long-term effects of physical punishment and provided alternative methods rooted in empathy, communication, and structured guidance, thereby encouraging parents to adopt healthier disciplinary practices. Finally, analysis of the total parenting score revealed a significant decrease from pre-test (M = 75.17, SD = 9.20) to post-test (M = 66.83, SD = 5.44), t = 5.44, p < .001 with effect size was large (d = 0.994), This suggests that the intervention led to an overall improvement in parenting practices as measured by the total score. Together, these findings highlight a nuanced pattern of change: while certain dimensions showed expected improvements, others may reflect transitional phases in parenting behavior or increased self-awareness rather than a decline in parenting quality.

Table 9

Indicates Mean, Standard Deviation, t-Test, and Significance of the Four Dimensions of ADHD in Pre-Post Assessment of Conners Parent Rating Scale-Revised

Variable	Pre Mean	Pre SD	Post Mean	Post SD	t value	Sig	Cohen's d
Oppositional	12.53	3.15	8.97	2.13	7.60	<.001	1.388
Cognitive problem/ Intension	12.10	3.79	9.00	2.64	5.80	<.001	1.059
Hyperactivity	13.50	2.81	10.80	3.02	4.96	<.001	.905
ADHD Index	26.93	3.98	21.17	2.61	7.67	<.001	1.401
Totals	65.13	7.59	50.30	5.73	9.06	<.001	1.653

A series of paired-samples *t*-tests were conducted to evaluate the effectiveness of the intervention in addressing Attention-Deficit/Hyperactivity Disorder (ADHD) related behavioral concerns. The results revealed statistically significant improvements across all assessed domains. Specifically, there was a significant reduction in Oppositional Behavior scores from pre-intervention (M = 12.53, SD = 3.15) to post-intervention (M = 8.97, SD = 2.13), $t = 7.60$, $p < .001$, with a large effect size ($d = 1.388$), indicating strong practical significance. indicating a notable decrease in oppositional tendencies following the intervention. This improvement may be attributed to the structured parent training program,

which likely enhanced mothers' understanding of behavioral triggers and promoted the use of effective behavioral management strategies.

In a similar pattern, scores on the Cognitive Problems/Inattention subscale significantly declined from pre-intervention (M = 12.10, SD = 3.79) to post-intervention (M = 9.00, SD = 2.64), $t = 5.80$, $p < .001$, with a large effect size ($d = 1.059$). This suggests improvements in children's attentional functioning as perceived by the mothers, possibly reflecting increased parental awareness and improved ability to support and guide their children in sustaining attention and regulating behavior.

Hyperactivity scores also demonstrated a significant reduction from pre-intervention (M = 13.50, SD = 2.81) to post-intervention (M = 10.80, SD = 3.02), $t = 4.96$, $p < .001$with a large effect size ($d = 0.905$). This decrease may reflect the incorporation of structured physical activities into the child's daily routine, which likely contributed to better regulation of impulsive behavior. These improvements can be attributed to behavioral strategies learned by the mothers during the intervention sessions.

The *ADHD Index* score showed a substantial decrease from pre-test (M = 26.93, SD = 3.98) to post-test (M = 21.17, SD = 2.61), $t = 7.67$, $p < .001$, with a very large effect size ($d = 1.401$), suggesting a marked improvement, representing a significant overall reduction in Attention-Deficit/Hyperactivity Disorder (ADHD) symptom severity. This composite measure reflects broad improvements in the child's behavior, which can be seen as a strong indicator of the intervention's effectiveness in targeting core ADHD features.

Finally, the *Total Score* across all behavioral domains significantly declined from pre-test (M = 65.13, SD = 7.59) to post-test (M = 50.30, SD = 5.73), $t = 9.06$, $p < .001$, and corresponding Cohen's $d = 1.653$. This comprehensive reduction across oppositional behavior, inattention, and hyperactivity domains suggests a substantial improvement in the child's overall behavioral functioning following the parent-based intervention.

According to mother, these results offer compelling proof of the intervention's efficacy in lowering Attention-Deficit/Hyperactivity Disorder (ADHD) symptomatology and related behavioral problems. The observed gains in number of areas most likely stem from a combination of improved parent child interaction patterns encouraged by the intervention, more parental knowledge and increase use of perceived familial support.

SUMMARY OF THE CHAPTER

The results of the study were reported in this chapter, emphasising the short individual parental training program's efficacy for mother of children with attention deficit/hyperactivity disorder (ADHD). Both standardised tests and checklists created by the researcher were used in the two phases of the study pilot and main to evaluate results pertaining to child symptomatology and parenting practices.

Results from the pilot phase showed that mother's knowledge of the clinical characteristics of Attention-Deficit/Hyperactivity Disorder (ADHD) was lacking. Core symptoms like impulsivity, inattention and executive dysfunction were not well understood, despite the recognition of certain behavioural features. In spite of this,

certain parenting practices, such as less physical punishment and more consistent discipline, saw notable benefits as a result of the pilot intervention. Additionally, children oppositional behaviour, in attention, hyperactivity and general ADHD symptoms were significant decreased, confirming the intervention's initial efficacy.

Building upon the pilot study, the main phase involved a larger sample and applied a refined version of the intervention. Results revealed statistically significant improvements across all domains of parenting assessed by the Alabama Parenting Questionnaire (APQ), including increased positive involvement, enhanced supervision, and reduced use of harsh or inconsistent discipline. Likewise, children exhibited marked reductions in Attention-Deficit/Hyperactivity Disorder (ADHD) symptoms as measured by the Conners Parent Rating Scale, with large effect sizes indicating substantial clinical improvement.

The discussion highlighted how the intervention effectively addressed observable parenting behaviors and improved child outcomes. However, emotional and relational components of parenting such as deep parental involvement and cognitive reframing showed moderate progress, suggesting the need for longer-term or more intensive intervention approaches. The study also emphasized the role of family support, particularly spousal and grandparental involvement, in enhancing intervention effectiveness.

Overall, the results underscore the value of skill-based parental training in improving the management of ADHD and fostering healthier parent–child interactions.

CHAPTER IV
SUMMARY AND CONCLUSION

In Parental Training Programme, Parents are taught skills to manage challenging behaviors through different methods. This training programme helps parents to learn about effective ways to improve their child's skills, manage challenging behaviors, and support their child's growth and development. In a study done by Morgan and O'Keefe (2021) found a relationship between child behavior problems and parenting practices. So primary treatment line was behavioral parent training and result showed that there was notable improvement in parenting practices and child behavior. In another study done by Pliszka (2007) parent training intervention was focused on psycho social intervention such as cognition and behavioral. This help parents to manage with their children behavior problem in more effective way when they were aware about it.

Need and Significance

Although several studies report a reduction in children's Attention-Deficit/Hyperactivity Disorder (ADHD) symptoms following parental training programmes, other research indicates limited improvement in parenting skills among mothers, particularly in cases involving severe ADHD symptoms in children. Factors such as inconsistent attendance by mothers in the training sessions, the severity of the child's ADHD symptoms, and insufficient support from spouses and family members may contribute to this outcome. Therefore, it is essential to evaluate the effectiveness of parental training programmes in such contexts. The present study specifically focuses on implementing a parent training programme for mothers, aiming to reduce ADHD symptoms in their children. This focus is based on the premise that mothers typically spend more time with their children, and while

considerable research has addressed the severity of ADHD symptoms, comparatively fewer studies have examined improvements in parenting skills.

Research Aim

The aim of the study is to design and evaluate individual parental training programme for mothers in reducing Attention Deficit/Hyperactivity Disorder (ADHD) symptoms in their children and to assess improvement in parenting skills following the intervention.

The current titled as "DESIGNING AND EVALUATING THE BRIEF INDIVIDUAL PARENTAL TRAINING PROGRAMME FOR MOTHERS OF CHILDREN WITH ADHD"

Working Defntion

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by persistent patterns of inattention, hyperactivity, and impulsivity. These symptoms interfere with functioning or development across social, academic and occupational functioning level. According to the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM 5), ADHD symptoms must be evident before the age of 12, occur in two or more settings and cause significant impairment in daily life.

Individual parental training programme is a structured evidence-based intervention designed to enhance parenting skills through one-to-one session between trained professional and a parent. This programme focuses on teaching specific strategies to manage child cognition, emotions, behavior, academic and

social challenges in Attention Deficit Hyperactivity Disorder (ADHD) to mothers. It is done through psycho educating the mother about the condition, improving parenting skills with perceived support from family, and improving the relationship between mother and child based on tailored guidance and support given to each mother.

Parenting skills refer to a set of learned behaviors, strategies, and practices that enables parents to effectively nurture, guide and manage their child's development and behavior. These skills include consistent discipline, effective communication, emotional support, supervision, problem solving and promoting a positive parent child relationship. Strong parenting skills contribute to child's emotional, social and cognitive growth as well as the management of the same.

Research Objective

1. To assess the improvement in parenting skills among mothers after participating in the Individual Parent Training Programme.

2. To evaluate the effectiveness of an Individual Parental Training Programme for mothers in reducing ADHD symptoms in their children.

Research Question

The key research question is formulated as "How effective is an individual parental training programme for mothers in reducing ADHD symptoms in their children and improving their parenting skills?" Based on this sub questions were also formulated such as:

1. Does participation in an Individual Parental Training Programme reduce ADHD symptoms in children?

2. Does the Individual Parental Training Programme improve parenting skills among mothers of children with ADHD?

Inferences

Current study adopts an exploratory sequential mixed-methods design was employed, beginning with a qualitative phase to explore the phenomenon, followed by a quantitative phase to examine prospective outcomes through cross-sectional pre- and post-test comparisons. The research was conducted in two phases: Phase I and Main phase. Each phase differs in terms of objectives, designs and measures used and the way it has been carried out. Each phase contributed to the planning and procedure for the forthcoming phases.

Phase I consist of **Development of the intervention and Pilot study**

Development of the intervention

The individual Parental Training Programme was constructed through systematic process

- Reviewing previous models:

Foundational frameworks of Barkley's Parent Training Program were reviewed to identify core behavioral management components that consistently produce positive outcomes in families of children with ADHD. Additionally,

Ruchita's adaptation of Barkley's model was examined for its culturally sensitive modifications tailored to the Indian context

- Analysis of research in books:

An analysis of both classic and contemporary texts on behavioral parent training was conducted to extract evidence-based strategies related to skill acquisition, session sequencing, and home implementation. Research indicates that a well-balanced combination of interventions enhances short-term functioning in children with Attention-Deficit/Hyperactivity Disorder (ADHD). Among these, parent training programs have proven particularly effective, as they aim to increase parental understanding, distinguish between a child's incompetence and non-compliance, enhance parents' ability to provide clear guidance, and promote successful parent–child interactions

- Reviews of relevant literature about parent training programme:

Recent empirical studies and meta-analysis on parent training programmes for Attention-Deficit/Hyperactivity Disorder (ADHD) were synthesized to ensure the intervention. These programmes focus on equipping parents with skills to understand their child's behavior, implement consistent discipline strategies, and improve parent–child interactions. Studies consistently show that structured parent training leads to reductions in symptoms such as inattention, hyperactivity, and oppositional behavior. Furthermore, the literature emphasizes the importance of tailoring these interventions to suit the cultural and contextual needs of families, ensuring better engagement and outcomes.

- Professional recommendations for module development:

Feedback from professionals was solicited to refine session and, objective. This initial draft was then reviewed by professional experts in the field. Prior to distributing the module for expert feedback, a brief introduction was included, outlining the purpose of the module, the specific input being sought, and the expected time frame for response. The module, along with a structured questionnaire targeting suggestions regarding the training content, target population, and areas requiring improvement, was sent to experts via email at their convenience. Based on the feedback received, appropriate modifications were made to the session content. The revised and finalized version of the module was subsequently emailed to the experts for confirmation.

Pilot study

The Individual Parental Training Programme was assessed with eight mothers of children diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD), joined from the Community Development Management Rehabilitation Programme (CDMRP) at the Department of Psychology, University of Calicut. A convenient sampling method was used, and the study utilized a pre- and post-test design. Participants were carefully chosen based on clearly defined inclusion and exclusion criteria to confirm their suitability for the intervention. Initial screening procedures were applied for both the children and their mothers. For the children, the Binet-Kamat Test of Intelligence was assessed to exclude intellectual disabilities, the Child Behaviour Checklist (CBCL) was used to identify and rule out intrinsic

and extrinsic behavioral problems, and the Conners' Rating Scales–Revised (CRS-R) was used to confirm an ADHD diagnosis. The mother's psychological wellbeing was evaluated using the General health Questionnaire (GHQ), their parenting practices were assessed using the Alabama Parenting Questionnaire (APQ) and their parenting stress levels were measured using the Parenting Stress Index (PSI). Furthermore, during the pilot phase, the study's Awareness Checklist and Family Dynamics Checklist were verified. Each parent participant and the researcher had one -on one session to carry out the intervention in an individual fashion.

The eight individualised sessions of the intervention were centred on three main topics, improving the mother child bond, family dynamics and psychoeducation. In order to help mother comprehend Attention-Deficit/Hyperactivity Disorder (ADHD) its causes and management techniques, the first two sessions included psychoeducation based on an ADHD awareness checklist. In the second follow up session, the therapist went over the mother's knowledge of ADHD and examined how she understood the disorder in relation to her child. Family dynamics was the second area of emphasis and it was covered in four sessions. This component examined how the mother coped with stress; how supportive her spouse was of her in raising a kid with ADHD and how supportive her in laws and siblings were perceived to be. A checklist was given to the mother prior to the commencement of these sessions in order to gauge her sense of support from her family and to spot any emotions of loneliness. Enhancing the mother child bond was the focus of the third intervention area. In order to help the mother identify certain behavioural patterns and implement suitable behavioural management

strategies, the seventh session was devoted to improving the mother's comprehension of her child's situation. This improved comprehension facilitates more attentive and perceptive reactions to the child's demands, which in turn supports the development of adherence and teamwork abilities. The workshop also sought to assist women in improving their methods of parenting in order to make them more successful and responsive. In the eighth session, the attention moved to introducing basic strategies for improving the child's learning and skill execution, which are frequently compromised in children with ADHD. These strategies were designed to support both academic performance and daily functioning through regular and organised interventions.

Descriptive statistics indicated meaningful gains in positive parenting practices and reductions in reported ADHD symptoms, supporting the programme's promise and warranting progression to the main study.

Main phase

Based on insights gained from the pilot study, the intervention module was revised while retaining the same overall structure and procedures. The main phase was implemented with a sample of 30 mothers of children diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) was collected from Community Development Management Rehabilitation Programme(CDMRP), Psychology Department, Calicut university. Convenient sampling was used. The sample was selected based on specific inclusion and exclusion criteria and same screening tools and checklists were utilized in child and mother to ensure consistency in assessment.

In this phase main aim was to to equip parents with practical, evidence-based strategies to better understand, manage, and support their child with Attention-Deficit/Hyperactivity Disorder (ADHD). The intervention consisted of eight sessions focusing on three key areas. The first area involved providing psychoeducation to the mother. To evaluate her present knowledge, an ADHD awareness checklist was administered to assess her existing knowledge. Based on her responses, personalized psychoeducation was provided, covering the nature of ADHD, its causes, and general strategies for management. The second session served as a follow-up, during which the therapist reviewed the mother's understanding of ADHD and examine her hole on the condition as it relates to her child.

Over four sessions the attention was mainly on family pattern of intervention. This component explored the mother's coping mechanisms under stress, the level of support she received from her spouse in raising a child with Attention-Deficit/Hyperactivity Disorder (ADHD), and the perceived support from in-laws and siblings. Before starting these sessions, a checklist was given to evaluate the mother's ability of familial support and to identify any feelings of lack of social contact.

The third session was to introduce mother to designed plan of action. This was for the mother to have a more accurate and helpful thoughts rather than negative and an inaccurate one. The goal was to replace negative remarks from family members with more realistic one. This included cognitive restructuring to reduce stigma, embarrassment, and to foster acceptance of her child's condition. Guidance

was also provided on how to handle negative or insensitive remarks from family members. To address the child's early emotional and behavioral challenges, the mother was trained in basic behavior therapy techniques such as contingency management and time-out methods, aimed at improving the mother-child relationship.

The therapist followed up on these concerns in the fourth session, talking about the mother's development and any lingering difficulties. The emphasis changed to assisting the mother in educating her partner about Attention-Deficit/Hyperactivity Disorder (ADHD) starting with the fifth session. She was urged to ask for his assistance in controlling their child's behavioral and emotional problem as well as in encouraging attention enhancing activities. This work was continued in the sixth session, which also included a follow-up conversation and the introduction of the idea of democratic parenting. The mother received guidance on how to share tasks for their child with ADHD and encourage the father to be more involved in parenting.

Enhancing the mother child bond was the third component of the intervention. The goal of the seventh session was to help the mother better understand her child's condition so that she could identify particular behavior patterns and use the right behavioral management strategies. This enhanced comprehension made it easier to respond to the child's demands in a more sensitive and perceptive manner, which in turn supported the growth of cooperation and compliance abilities. The workshop also sought to assist women in improving their methods of parenting in order to make them more successful and responsive. In the

eighth session, the emphasis switched to presenting fundamental techniques for enhancing the child's ability to learn and execute skills, which are often impaired in children with Attention-Deficit/Hyperactivity Disorder (ADHD). These tactics were created to provide regular and organised interventions to enhance everyday living as well as academic achievement.

Pre Post intervention assessments were conducted to evaluated the effectiveness of the parent training program.

The results of study suggest that the Brief Individual Parental Training Programme is effective in enhancing parenting skills and managing behavioural difficulties in children with ADHD. The observed improvements indicate that structured parental interventions can play a crucial role in addressing the challenges associated with ADHD.

The study's objectives were successfully achieved, and the hypotheses regarding significant differences in parenting practices and reduction in ADHD symptoms in children following the intervention were supported.

Overall, the study concludes that empowering parents through targeted training programmes can lead to meaningful positive outcomes for both mothers and children with ADHD, highlighting the importance of parent-focused interventions in clinical and community settings.

Implication

A quick individual parental training intervention can significantly can significantly enhance family dynamics and child outcomes by teaching women how to properly manage their children's thoughts, feeling and behaviors.

CHAPTER V
RECOMMENDATION AND IMPLICAITON

The Brief Individual Parent Training Programme was created for mothers of children with Attention-Deficit/Hyperactivity Disorder (ADHD), and its efficacy was assessed in this study. The following suggestion were made for future research, and practice under the light of findings.

1. Practice Recommendations

To give parents of children with ADHD format support, the Brief Individual Parent Training Programme can be incorporated into the regular offering of child guidance clinics, school counselling centers.

This training program can be used as a structured intervention by mental health professional, such as psychiatric social works, clinical psychologist and counsellors, to improve mother child relationships, develop parenting techniques, and increase parental awareness

This training program may be modified for use in parent support groups by community-based organizations and non-governmental organizations involved in child mental health in order to raise awareness and lessen the stigma associated with Attention-Deficit/Hyperactivity Disorder (ADHD).

2. Recommendations for Future Research

To improve the findings generalizability larger and more diverse parent samples may be used in future studies

The long- term efficacy of the Brief individual parent training programme in maintaining gains in parenting techniques, family support and parental knowledge may be evaluated through longitudinal research.

In order to encourage share responsibility and comprehensive family support, future iterations the program may investigate the participation of father or other caregivers.

The efficacy of the Brief individual parent training programme in comparison to group-based parent education programs.

Clinical Implications

The findings of the present study suggest that a Brief Individual Parental Training Programme can be an effective intervention for improving parenting practices among mothers of children with Attention-Deficit/Hyperactivity Disorder (ADHD) and reducing associated difficulties in children. This highlights the importance of incorporating parent-focused interventions into routine clinical practice. Mental health professionals, including clinical psychologists and child psychiatrists, may utilize brief, structured training programmes as cost-effective and time-efficient strategies for managing ADHD-related challenges. Furthermore, such interventions can enhance parental competence, reduce stress, and promote better parent–child interactions, thereby contributing to improved overall functioning of the child.

Theoretical Implications

The study contributes to the existing body of knowledge on behavioural and cognitive-behavioural models of ADHD management by reinforcing the role of environmental and parenting factors in influencing child behaviour. The results support theories that emphasize parent-mediated interventions as critical components in the treatment of ADHD. By demonstrating measurable changes in both parenting practices and child outcomes, the study adds empirical support to social learning theory and behaviour modification principles, which posit that structured parental guidance and reinforcement strategies can lead to positive behavioural changes in children.

Methodological Implications

Methodologically, the present study demonstrates the effectiveness of a pretest–posttest design in evaluating intervention outcomes. This design provides a systematic approach to assessing changes following the implementation of structured programmes. However, the use of a sample limited to mothers of children with ADHD highlights the need for future research to include more diverse participants, such as fathers and other caregivers, to enhance the generalizability of findings.

Furthermore, the structured delivery of the Brief Individual Parental Training Programme supports the feasibility of short-term, focused interventions within clinical and community settings. Future research may strengthen methodological rigor by incorporating follow-up assessments to examine the long-term effectiveness and sustainability of intervention outcomes.

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APPENDICES

Appendix 1

CONSENT FORM

I ……..agree to participate in research, conducted by SARA RENNI for Phd work in **"Designing And Evaluating The Brief Individual Parental Training Programme For Mothers Of Children With ADHD"** under Psychology Department Prajyoti Niketan College. I have received reassurance that the information I share will remain strictly confidential. Anonymity will be assured by not using any name in any type of publication. If I have any question about conduct of research project I may contact the researcher.

I am willing to participate in this research work, and would like to undergo training programme.

Signature of the researcher Signature of the mother

Appendix 2

SOCIO DEMOGRAPHIC DATA

Name of the Mother and Child in abbreviation:

Gender of the Child :

Birth weight :

Age of the mother and child :

Any medication during gestation period : NO/YES if yes please mention it……..

Any kind of physical illness

Education of mother and child:

Annual Income status : BPL…… APL……

Religion :

Family : Joint/Neutral

Age on Delivery :

Type of Parenting style : Authoritarian / Authoritative / Permissive

No: of Siblings of the child :

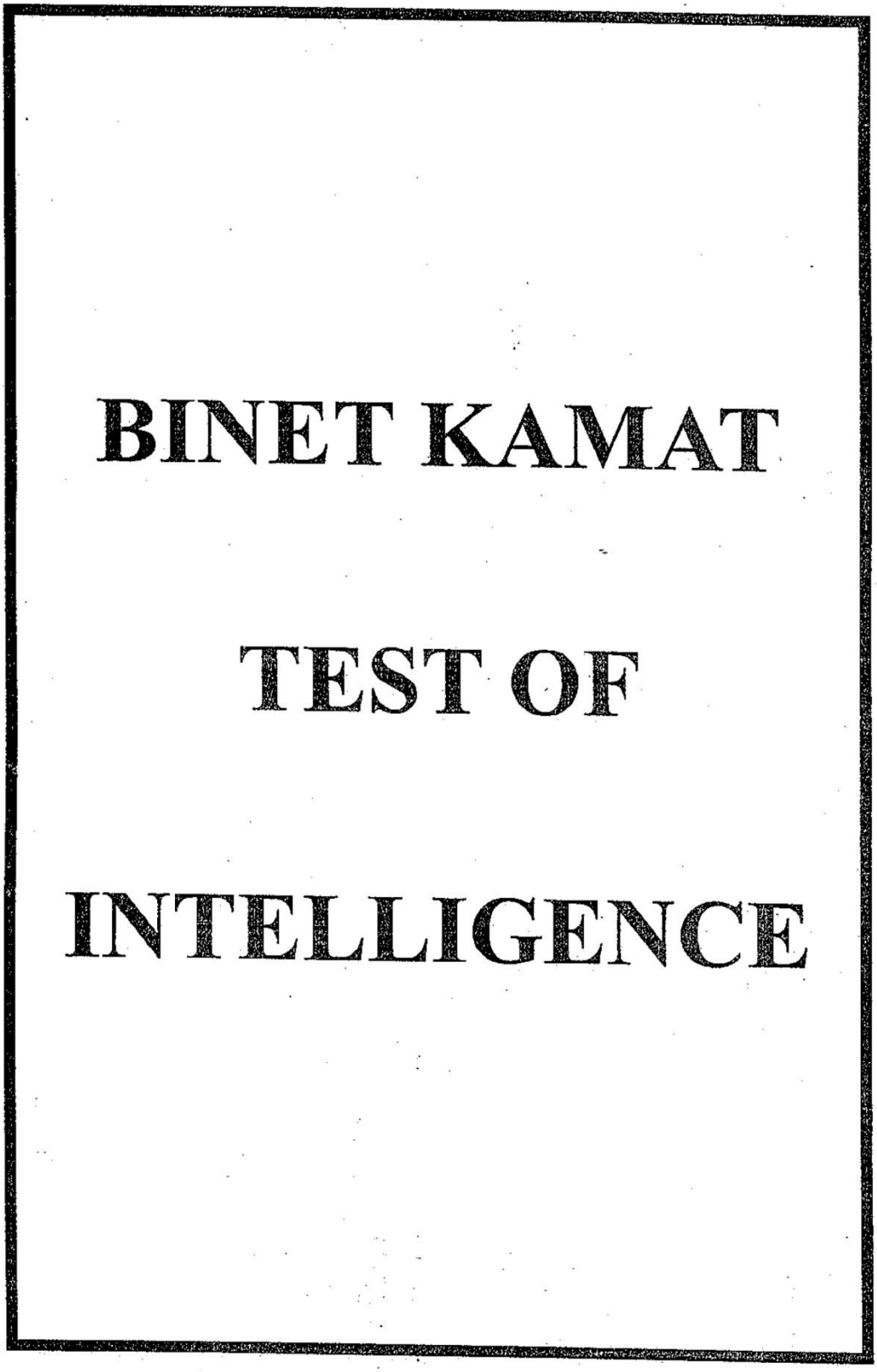
Temperament of the mother : Easy / Slow-to-warm-up / Difficult

Mother and child relationship : Secured / Ambivalent / Avoidant / Unorganized

Diagnosis :

Duration of the condition :

Appendix 3



1ST –A

TEST FOR AGE - 3

BKT

1. POINTING TO PARTS OF THE BODY (3 out of 4) [Nose, Eyes, Mouth, Hair]
2. NAMING FAMILIAR OBJECTS (3 out of 5) [Key, Coins, Penknife, Watch, Pencil]
3. REPEATING TWO DIGITS (1out of 3: one every half second) (4-2;3-7;6-4;7-2)

C - 5B

4. ENUMERATION OF OBJECTS IN A picture (at least 2 objects in any one picture.)
   [(A). Railway station (B) Reception (C) Motor accident.]
5. REPEATING 6 TO 7 SYLLABLES (1 out of 3; read 1 every half, second)
   (a) I have a little dog
   (b) The dog runs after the cat.
   (c) In summer the sun is hot.
6. COMPARISON OF LINES (3 out of 3; or 5 out of 6.)

ALTERNATIVE ITEMS

1 Giving sex
2 Giving proper names (what is your name?)

1ST - B

REPEATING DIGITS

DIGITS	AGE	ITEM, NO	
2	3	3	(1/3) {4-2; 3-7; 6-4; 7-2.}
3	4	1	(1/3) {6-4-1 ; 3-5-2 ; 8-3-7}
4	6	1	(1/3) { 4 – 7 – 3 – 9 ; 2 – 8 – 5 – 4 ;7 – 2– 6 – 1}
5 *	8	2	(1/3) {3 – 1 – 7 – 5 – 9; 4 – 2 - 3 – 8 – 5; 9 – 8 – 1 - 7 – 6 .}
6 *	12	2	(1/3) ALTERNATIVES { 3 – 7 – 4 – 8 – 5 – 9 ; 5 – 2 – 1 – 7 - 4 – 6 ; 4 – 7 – 1 – 5 – 8 - 2 }
7 *	16	6	(1/2) { 2 – 1 – 8 – 3 – 4 – 7 – 9; 9 – 7 – 2 – 8 – 4 – 6 – 5 }
8*	22	2	(1/3) { 7 – 2 – 5 – 3 – 4 – 8 – 9 – 6; 4 – 9 – 8 – 5 – 3 – 7 – 6 – 2; 8 – 3 – 7 – 9 – 5 – 4 – 2 – 6}

NOTE * Read 1 per sec., others read 1 every half – second.

2^{ND} –A

TEST FOR AGE - 4

c= 3b

1. REPEATING 3 DIGITS (1 out of 3 . read 1 every half – second) [6 – 4 – 1; 3 – 5 – 2; 8 – 3 – 7]
2. DISCRIMINATION OF FORMS (Kuhlman , 7 out of 10)
3. COMPREHENSION, FIRST DEGREE (2 out of 3).

   (a). What must you do when you are sleepy?
   (b). What ought you to do when you are cold?
   (c). What ought you to do when you are hungry?

c = 6b

4. REPEATING 12 TO 13 SYLLABLES (1 out of 3 absolutely correct or 2 with one error each)
   (a). The boy's name is john. He is a very good boy.
   (b). When the train comes you will hear the whistle blow.
   (c). We are going to have a good time in the country.

c = 7b

5. COUNTING FOUR PAISA (coins).
6. COPYING A SQUARE (1 out of 3).

ALTERNATIVE ITEM

1. COMPARISON OF TWO WEIGHT (3/3, 4/5)

2^{ND} - B

COMPREHENSION

AGE – 4 ITEM NO. 3 FIRST DEGREE (2 OUT OF 3) AFTER 20 SEC REPEAT AGAIN.

(a) What must you do when are sleepy?
(b) What ought you to do when you are cold?
c). What ought you to do when you are hungry?

AGE – 6 ITEM NO.2 SECOND DEGREE (2 out of 3. time ½ min.) after 5 to 10 seconds repeat again). what is the thing to do –

(a) If it is raining when you start for school?
(b) If you find that your house is on fire?
(c) If you are going some where & miss the train? (or car or bus)

AGE = 8 ITEM NO.3 THIRD DEGREE (2 OUT OF 3; AFTER 5 – 10 SEC READ AGAIN & THEN ALLOW 30 SECONDS MORE).

(a) What's the thing for you to do when you have broken something which belongs to someone else?
(b) What is the thing for you to do when you are on your way to school & notice that you are in danger of being late?

AGE = 12 ITEM NO. ALTERNATIVES 3 FOURTH DEGREE (2 OUT OF 3 ; TIME ½ MINUTE REPEAT AFTER 5 SEC)

(a) What ought you to say when someone asks your opinion about a person you don't know very well?
(b) What ought you to do before beginning something important?
(c) Why should we judge a person more by his actions than by his words?

3^{RD} -A

TEST FOR AGE - 5

1. AESTHETIC COMPARISON (no errors). Present the card.
c = 7b
2. DEFINITIONS IN TERMS OF USE (4 out of 6. wait for 1 min each for response)
EXAMPLE : WHAT IS A CHAIR {Chair, Spoon, Doll, Pencil, Blanket}
3. THREE COMMISSIONS (all 3 correct in proper sequences) example, put the key on table close the door, bring the toy from the chair).
4. DISTINGUISHING RIGHT AND LEFT (3 out of 3 or 4 out of 5).
(a) Show me your right hand (b) Show me your left ear (c) Show me your right eye. (d) Show me your left-hand (e) show me your right ear. (f) Show me your left eye.

c = 7b 5. Naming four coins (3 out of 4 one at a time) {50 p, Rs –1, Rs – 2, Rs – 5 }.
c = 7b 6. COUNTING 13 PAPER STRIPS OR COINS (1 out of 2 without errors).

ALTERNATIVES ITEMS:

1 FORE NOON AND AFTER NOON
Is it morning or afternoon? (in the morning)
Is it afternoon or morning? (in the afternoon)
Is it evening or morning? (in the evening)
2. GIVING FAMILY NAME (Full name)
3. GIVING AGE.

3^{RD} – B

ENUMERATION OF OBJECTS IN PICTURE

AGE – 3. ITEM NO 4 (Atleast 3 objects is any one picture).
(a) Railway station
(b) Reception
(c) Motor accident {list of person, object in detail).

DISCRIMINATION OF PICTURES

AGE – 6. ITEM NO 5 (2 out of 3 picture described time limit of 2 min for each).

Ex: what is this picture about? { action, characteristics}

INTERPRETATION OF PICTURE

AGE 12 ITEM NO 6 (3 out of 4 time limit 2 min for each picture).
Ex: what is this picture about? Or explain the picture?
a) Railway station
b) Reception
c) Motor accident
d) Domestic scene.
{Beyond what is visible: emotion or situation}.

4^{TH} – A

TEST FOR AGE - 6

C=3b

1. REPEATING 4 DIGITS (1 out of 3. read 1 every half – second).{ 4 – 7 – 3 – 9; 2 – 8 – 5 – 4 : 7 – 2 – 6 – 1}

C=4b

2.COMPREHENSION, SECOND DEGREE. (2 out of 3, time allowed ½ min). (After 5 to 10 seconds repeat again).

WHAT IS THE THING TO DO:-

(a) If it is raining when you start for school? (b) If you find that your house is on fire? (c) If you are going some where and miss the train or bus or car?

3.divided card (2 out of 3 trials . 1 min each)

4.GIVING NUMBER OF FINGER (no errors) -- one hand, two hands and then both hands

C= 5B

5.DESCRIPTION OF PICTURES (2 out of 3 or 2 min each)—Railway station, Reception at home, Motor Accident.

6.MISSING FEATURES (3 out of 4. time ½ min each).

ALTERNATIVES ITEM

A) NAMING COLOURS (no errors). Point to the colours in the order Red, Yellow, Blue & Green.

4^{TH} – B

REPEATING SYLLABLES

AGE	ITEM. NO		SYLLABLES
3	5	6-7 (1 OUT OF 3)	(a) i have a little dog. (b). The dog runs after the cat.(c). In summer the sun is hot
4	4	12 – 13 (1 out of 3 absolutely correct or 2 with 1 error each)	(A) The boys name is john. He is a very good boy. (B) When the train comes you will hear the whistle blow (C) We are going to have a good time is the country.
7	1	16 – 18 (1 out of 3 absolutely correct or 2 with 1 error each)	(A) We will go out for a long walk. Please give me my pretty straw hat. (B) We are having a fine time .we found a little mouse in the trap. (C) Walter had a fine time on his holiday. He went fishing every day.
10	2	20 – 22 (1 out of 3 absolutely correct or 2 with 1 error each)	(A) The apple tree makes a cool pleasant shade on the ground where the children are playing. (B) It is nearly half past 1 o' clock : (C) The house is very quiet & the cat has gone to sleep. (d) In summer the days are very warm & fine; in winter it snows and I am cold.
19	5	30 (1 out of 2 absolutely correct)	(a) Rama likes very much to go to his grand mother because she tells him funny stories. (b) Yesterday i saw a pretty little dog in the street. It had curly brown hair.

5^{TH} – A

TEST FOR AGE - 7

c-6b

1. REPEATING 16 – 18 SYLLABLES (1 out of 3 absolutely correct or 2 with 1 error each).
   (a) We will go out for a long walk. Please give me my pretty straw hat.
   (b) We are having a fine time .we found a little mouse in the trap.
   (c) Walter had a fine time on his holiday. He went fishing every day.
2. COPYING A DIAMOND (2 out of 3).

c= 9b

3. REPEATING 3 DIGITS REVERSED (1 out of 3 read 1 per second) {2 – 8 - 3; 4 – 2 – 7; 9 – 5 – 8}
4. NAMING DAYS OF WEEK (order correct, 15 sec, 2 out of 3 correct).
   (a). What day comes before Tuesday?
   (b) What day comes before Thursday?
   (C) What day comes before Friday?
5. COUNTING BACKWARDS 20 TO 1 (40 seconds. 1 errors allowed).

c=9b

6. GIVING DIFFERENCES FROM MEMORY (2 out of 3 ; 1 min each) (a) Fly – Butterfly (b) Stone – Potato (c) Wood – Glass

ALTERNATIVE ITEM

1. GIVING DAY OF WEEK & DATE OF THE MONTH. (Both correct. the second within 3 days of the actual date).

(a) What day of the week is today? (b) What day of the month is today?

5^{TH} – B

COMPARISON OF WEIGHTS

AGE	ITEM. NO.	COMPARISON OF 2 WEIGHTS (3 OUT OF 3 OR 4 OUT OF 5).
4	ALTERNATIVE – I	{3 – 15; 15 – 3 ; 3 – 15; 15 – 3; 3 – 15 }.
10	1	ARRANGING OF 5 WEIGHTS (2 out of 3).
		COUNTING PAPER STRIPS OR SIMILAR COINS
4	5	COUNTING 4 PAPER STRIPS OR COINS (Counting & tallying = total).
5	6	COUNTING 13 PAPER STRIPS OR COINS (1 out of 2 without error).
		NAMING THE VALUE OF COINS
5	5	NAMING 4 COINS (3 out of 4) { 50 Np, Rs 1, Rs 2, Rs 5 , (Give one at a time)
8	1	FINDING VALUES OF COINS (15 sec) + total?
8	5	Coins and total? naming 6 coins (no error) { 5o Np, Rs 1, Rs 2, Rs 5, Rs 10, Rs 20.}

6^{TH} – A

TEST FOR AGE – 8
c=7b 1. FINDING VALUES OF COINS (15 sec) + total. Coins and total)? c=3b 2 . REPEATING 5 DIGITS (1 out of 3, read 1 per second). {3 – 1- 7 – 5 – 9; 4 – 2 – 3 – 8 – 5; 9 – 8 – 1 – 7 – 6}. c= 4b 3.COMPREHENSION, THIRD DEGREE (2 out of 3. read once. after 5 – 10 sec read second time & allow 30 seconds more) WHAT IS THE THING FOR YOU TO DO: – (a) When you have broken something which belongs to some one else? (b) When you are on your way to school and notice that you are in danger of being late? (c) What would you do if a playmate hits you without meaning to do so? c= 8b 4. DEFINITION – SUPERIOR USE (2 out of 4, 1 min each). { Balloon, Tiger, Soldier, Football} c= 7b 5. NAMING 6 COINS (No error) { 5o Np, Rs 1, Rs 2, Rs 5, Rs 10, Rs 20.} c= 8b 6. READING & REPORT: (2 facts ; 10 errors ; 2 min} ALTERNATIVES ITEMS : (1) TYING A SLIPKNOT (model kept before the child: (2-min) (2). Ball & Field (Inferior plan) circle of 6 cms.

6^{TH} – B

DEFINITION OF WORDS		
AGE	ITEM. NO	DEFINITION IN TERMS OF USE (4 OUT OF 6. WAIT FOR 1 MIN FOR REPLY)
4	2	{Chair, Horse, Spoon, Doll, Pencil, Blanket}. (Action / Functional use)
8	4	DEFINITION – SUPERIOR USE (2 out of 4, 1 min each) {Balloon, Tiger, Soldier, Police, boll, / Football} (description of Shape, Size, Colour, action, characteristics etc.,}
12	3	DEFINING ABSTRACT WORDS (3 out of 5, 1 min to start definition). {Pitty, Revenge, Charity, Envy, Injustice}
READ AND REPORT		
8	6	(2 facts, 10 errors, 2 min)
9	5	(6 FACTS, 5 ERROR, 1 MIN)
10	6	(8 FACTS, 2 ERRORS, 40 SECONDS)

7^{TH} – A

TEST FOR AGE - 9

c-9b

1. REPEATING 4 DIGITS REVERSED (1 out of 3, read 1 per second)
   { 6- 5 – 2- 8; 4 – 9 – 3 – 7 ; 3 – 6 – 2 – 9}.
2. MAKING CHANGE (2 out of 3 correct. 15 sec each. read only once again. if required)
   (a) Rs 4 worth: Rs 10 given. How much do you get back?
   (b) Rs 12 worth : 15 given
   (c) Rs 11 worth, Rs 20 given. How much should we get back?

c-9b

3. GIVEN SIMILARITIES – 2 THINGS (2 out of 4. 1 min each).
   (a) Mango – Banana (b) Iron – Silver (c) Steamship Tanga (d) wood – coal.
4. using 3 words is a sentence (2 out of 3.1 min each repeat once . if required)
   (a) Boy, Ball, River (b) Work, money, men. (c) Trees, Rivers, Lakes.

c- 8b

5. READING AND REPORT : (6 facts 5 errors : 1 min)

c-10 b

6. FREE ASSOCIATION – 35 WORDS IN 3 MIN. (record every ½ min score separately). c=10b

ALTERNATIVE ITEMS

(1) VOCABULARY – 20 WORDS.

7^{TH} – B

AGE	ITEM NO.	DIGITS	REPEATING DIGIST REVERSED
7	3	3	{2 – 8 – 3 ; 4 – 2 – 7; 9 – 5 – 8} (1 out of 3)
9	1	4	{ 6 – 5 – 2 – 8; 4 – 9 – 3 – 7; 3 – 6 – 2 – 9} (1 out of 3)
12	4	5	{ 3 – 1 – 8 – 7 – 9 ; 6- 9 – 4 – 8 – 2 ; 5 – 2 – 9 – 6 – 1} (1 out of 3)
16	4	6	{ 4 – 7 – 1 – 9 – 5 – 2 ; 5 – 8 – 3 – 2 – 4 ; 7 – 5 – 2 – 6 – 3 – 8} (1 out of 3)
AGE	ITEM NO		DIFFERENCES (2 OUT OF 3 ; 1 MIN EACH)
7	6		(a) Fly – Butter fly (b) stone- potato (c) wood – glass
16	3		(a) President –& PM or Governor & CM (2 difference)
9	3		SIMILARITIES – 2 THINGS (2 out of 4) (a) Mango – Banana (b) Iron – Silver (c) Bus – Auto or steamship / Tanga (d) wooden and charcoal
14	5		SIMILARITIES – 3 THINGS (3 out of 5, 1 min each) (a) Wool, cotton, silk, (b) snake – cow, sparrow (c) book, teacher, newspaper (d) Scissor, Paisa, Piece of wire (e) Rose, Potato, Tree.

8^{TH} – A

TEST FOR AGE - 10

C-7B

1. ARRANGING 5 WEIGHTS (2 correct out of 3, trails) { 15, 12, 9, 6, 3 }.
2. REPEATING 20 – 22 SYLLABLES (1 out of 3 or 2 with 1 error each).

(a) The apple tree makes a cool pleasant shade on the ground where the children are playing.
(b) It is nearly half – past 1 0' clock, the house is very quiet and the cat has gone to sleep.
(a) In summer the days are very warm & fine in winter it snows and i am cold.

3. NAMING THE MONTHS (20 seconds : 1 error in naming , 2 checks out of 3 correct)
   Name all the months of the year, what month comes before April, before July, before November.
4. DRAWING DESIGNS FROM MEMORY (1 correct & 1- half correct, expose 10seconds).
5. FINDING RHYMES (3 rhymes for each word , 1 min for each, 2 out of 3 correct).

c-8b

6. READING AND REPORT (8 facts : 2 errors: 40 seconds).

c= 10 b ALTERNATIVES ITEMS

(1)VOCABULARY – 25 words (2) GIVING MONTH & YEAR (both correct).

8^{TH} – B

VOCABULARY		
AGE	ITEM NO	NO OF WORDS
9	ALTERNATIVE - 1	20
10	ALTERNATIVE - 1	25
12	ALTERNATIVE - 1	30
14	ALTERNATIVE - 1	40
16	ALTERNATIVE - 1	45

FREE ASSOCIATION			
AGE	ITEM NO	WORDS	TIME
9	6	35	in 3min (Record every ½ sec score separately).
16	ALTERNATIVE - 2	60	60 in 3min

9^{TH} – A

TEST FOR AGE - 12

C-12B

1. DETECTING ABSURDITIES (3 out of 5 – ½ min each . after 5 seconds read a second time).
2. CONSTRUCTION PUZZLE (Healy 2 Fernald. 3 times in 5 minutes).

C-8B

3. DEFINING ABSTRACT WORDS (3 out of 5. 1 min each to start the definition)
{Pity, revenge, charity, envy, injustice}.

C-9B

4. REPEATING 5 DIGITS REVERSED (1 out of 3. read 1 per second).
{ 3 –1 – 8 – 7 – 9; 6 – 9 – 4 – 8 – 2 ; 5 – 2 – 9 – 6 – 1}
5. INTERPRETATION OF FABLES (4 marks, 2 correct or the equivalent).

in half credits, each fable correctly interpreted carrying 2 marks. time limit 2 min after final query is put

(a) Hercules and the Wagoner (b) "The Milkmaid and her plans" (c) the fox and the crow
(b) "The farmer and the stork". (e) "The miller, his son, and the donkey".

c-5b

6. INTERPRETATION OF PICTURES (3 out of 4. time limit 2 min for each picture). {Railway station, reception, motor accident, and domestic scene}.

c-10

ALTERNATIVE ITEMS

(1)VOCABULARY – 30 WORDS

c-3b

(1) REPEATING 6 DIGITS, (3 – 7 – 4 – 8 – 5 – 9; 5 – 2 – 1 – 7 – 4 – 6; 4 – 7 – 1 – 5 – 8 – 2).
(2) COMPREHENSION 4^{TH} DEGREE QUESTIONS? (card no 4 B)

9^{TH} – B

AGE – 12 ITEM NO – 1 DETECTING ABSURDITIES (3 OUT OF 5. ½ MIN FOR EACH)

(a) 'A man said; " I know a road from my house to the town, which is down hill all the way to the town & down hill all the way back home'.

(b) 'An engine driver said that the more carriages he had on his train, the faster he could go'.

(c) 'Yesterday the police found the body of a girl cut into eighteen pieces they believe that she killed herself'.

(d) There was a railway accident yesterday but it was not very serious. Only 48 people were killed.

(E) 'A bicycle rider being thrown from his bicycle in an accident, struck his head against a stone and was instantly killed. They picked him up and carried him to the hospital and they do not think he will get well again'.

10^{TH} – A

TEST FOR AGE - 14

1. INDUCTION TEST – FINDING A RULE. (Get rule by 6^{th} folding, unfold & show the paper to the child after he gives his answer to each cutting). {1 – 2, 2 – 2, 3- 4, 5 – 16, 6 – 32}.
2. DISSECTED SENTENCES (2 out of 3, 1 min each).
3. ARITHMETICAL REASONING (2 out of 3, 1 min each).
   - (a) If 2 pebbles cost Rs 5, how many pebbles can you by for 50?
   - (b) if a man's salary is Rs 20 a week and he spends Rs 14 a week, how long will it take him to save Rs 300?
   - (c) At Rs 15 a yard, how much will 7 feet of cloth cost?

4. PROBLEM OF ENCLOSED BOXES (3 out of 4. ½ min for each problem).
   One large box containing.
   - (a) 2 smaller, (1 inside of each).
   - (b) 2 smaller , 2 inside of each
   - (c) 3 smaller , 3 inside of each
   - (d) 4 smaller, 4 inside of each.

   ANSWER {5,7,13,21}.

10^{TH} –B

C-9B

5. GIVING SIMILARITIES – 3 THINGS (3 out of 5, i min each).
   - (a) Wool, cotton, silk.
   - (b) Snake, cow, sparrow.
   - (c) Book, teacher, newspaper.
   - (d) scissors, coin, piece of wire
   - (e) Rose, potato, tree.

6. BALL – FIELD, SUPERIOR PLAN.

ALTERNATIVE ITEMS:

C-10B

1. VOCABULARY 40 WORDS FROM VERNACULAR LIST.

11^{TH} – A

TEST FOR AGE – 16

1. INTERPRETATION OF FABBLES (8 MARKS)
   (A) Hercules and the Wagoner (b) "the milkmaid and her plans" (c) the fox and the crow (d) the farmer and the stork (e) the miller, his son, and the donkey.

2.REVERSING HANDS OF CLOCK (2 OUT OF 3, ERROR –MUST NOT EXCEED 3 MINUTES, TIME LIMIT 1/2 MIN FOR EACH).

(A) " Suppose it is 6.22 'o' clock, that is twenty – two minutes. After 6 can you see in your mind where the large hand would be and where the small hand would be"?

(b) "Now suppose that the two hands were to change, so that the large hand takes the place of the small hand, and the small hand takes the place of the large hand. What time would it then be? similarity with 11:10., 2:46,

ANSWER – {4:30 TO 4:35; 1:53 TO 1:58; 9:10 TO 9:15}.

C=9B.

3, GIVING DIFFERENCE BETWEEN PRESIDENT AND PM OR GOVERNOR & CM.
(2 out of 4 in any forms)

C=9B

4. REPEATING 6 DIGITS REVERSED (1 out of 3 read 1 per second)
{4- 7 – 1 – 9 – 5 – 2; 5 – 8 – 3 – 2 – 9 – 4; 7 – 5 – 2 – 6 – 3 – 8}.

11^{TH} – B

5. PROBLEM QUESTIONS (2 out of 3, query on (a) & (b) read a second time after second. time limit 1 min to begin reply).

(a) 'A man who was walking in the wood of outside this town stopped suddenly, very much frightened, and then ran to the nearest policeman, saying that he had just seen hanging from the limb of a tree a ... a what?

(b) 'My neighbour has been having strange visitors. First a doctor came to his house, then a lawyer, then a clergyman (or priest) what to do you think happened there?

(c) 'A villager who had came to town for the first time in his life saw a man riding along a street. As the man rode by the villager said: "this man is lazy; he walks sitting down! What was that man riding on that caused the villager to say". He walks sitting down".

C=3B

6.REPEATING 7 DIGITS (1 out of 2 read 1 per sec) { 2 – 1 – 8 – 3 – 4 – 7 – 9 ; 9 – 7 – 2 – 8 – 4 – 6 - 5}.

ALTERNATIVE ITEMS:

C=10B (1) VOCABULARY 45 WORDS (2) FREE ASSOCIATION – 60 WORDS IN 3 MIN.

12TH

TEST FOR AGE - 19

1. USING A CODE (vernacular code to be used, 2 errors, 6 min)
2. INGENUITY TEST (2 out of 3, 5 min each).
   (a). A mother sent her boy to the river to get 7 pints of water. She gave him a 3 – pint vessel and a 5 – pint vessel. Show how the boy measures 7- pints? Begin with 5 – pint vessel?
   (b). 5 and 7 – pint vessels to get 8. Begin with 5 – pint vessel.
   (c). 4 and 9 – pint vessels to get 7. Begin with 4 – pint vessel.
3. DIFFERENCES IN ABSTRACT TERMS. (3 out of 4)
   (a) Laziness and idleness.
   (b) Pride and vanity.
   (c) Poverty and misery.
   (d) Dishonour and disrepute.
4. BINET'S PAPER CUTTING TEST.(same before XIV,I, drawn on piece of paper) 2 min. c-6b
5. REPEATING 30 SYLLABLES (1 out of 2)
6. REVERSING TRIANGLE IN IMAGINATION (2 min)

ALTERNATIVE 1.
VOCABULARY 55 WORDS.

13TH

TEST FOR AGE - 22 (VERY SUPERIOR ADULT)

1. COMPREHENSION OF PHYSICAL RELATION. (2 out of 3)
   (a). Problem regarding the path of cannon ball,
   (b). Problem regarding the weight of a fish in water,
   (c). Difficulty of hitting a distant mark.
2. REPEATING EIGHT DIGITS (1 OUT OF 3)
   7 – 2 – 5 – 3 – 4 – 8 – 9 – 6; 4 – 9 – 8 – 5 – 3 – 7 – 6 – 2; 8 – 3 – 7 – 9 – 5 – 4 – 2 – 6;
3. REPEATING THOUGHT OF PASSAGE HEARD.
   "Many opinions have been given on the value of life. Some call it good, others call it bad. it would be more nearly correct to say that it is mediocre. For on the hand our happiness is never as great as we should like, and on the other hand our misfortunes are never as great as our enemies would wish for us. it is this mediocrity of life which prevents it from being radically unjust".
4. REVERSING TRIANGLE IN IMAGINATION (BINET'S FORM) (time limit 2 minutes to complete to diagram).
5. REPEATING SEVEN DIGITS REVERSED (1 out of 3)
   {4 – 1 – 6 – 2 – 5 – 9 – 3; 3 – 8 – 2 – 6 – 4 – 7 – 5; 9 – 4 – 5 – 2 – 8 – 3 – 7)
6. FREE ASSOCIATION OF WORDS (80 words in 3 minutes)

ALTERNATIVE ITEM 1. VOCABULARY 60 WORDS.

14TH

(A) HERCULES AND THE WAGONER'.

'A man was driving along a country road, when the wheels suddenly sank in a deep rut. The man did nothing but look at the wagon and call loudly to Hercules to come and help him. Hercules came up, looked at the man, and said: " put your shoulder to the wheel, my man, and whip up your oxen." then he went away and left the driver.

(B) 'THE MILKMAID AND HER PLANS'.

' A milkmaid was carrying her pail of milk on her head, and was thinking to herself: the money for this milk will buy four hens; the hens will lay at least 100 eggs; the eggs will produce at least 75 chicks; and with the money which the chicks will bring i can buy a new dress to wear instead of the ragged one i have on. at this moment she looked down at herself, trying to think how she would look in her new dress, but as she did so, the pail of milk slipped from her head and dashed upon the ground. Thus all her imaginary schemes perished in a moment.

15TH

(C) THE FOX AND THE CROW'.

' A crow, having stolen a bit of meat, perched in a tree and held it in her beak. a fox, seeing her, wished to secure the meat, and spoke to the crow: " how handsome you are and i have heard that the beauty of your voice is equal to that of your form and feathers. Will you not sing for me, so that i may judge whether this is true? The crow was so pleased that she opened her mouth to sing and dropped the meat which the fox immediately ate'.

(D) 'THE FORMER AND THE STORK'.

'A farmer set some traps to catch cranes, which had been eating his seed. With them he caught a stork. The stork which had not really been stealing, begged the farmer to spare his life, saying that he was a bird of excellent character, that he was not at all like the cranes and that the farmer should have pity on him. But the farmer said, "I have caught you with these robbers the cranes, and you have got to die with them."

16TH

(E) THE MILLER, HIS SON, AND THE DONKEY'.

'A miller and his son were driving their donkey to a neighbouring town to sell him. They had not gone far when a child saw them and cried our, "what fools those fellows are to be trudging along on foot when one of them might be riding!" the old man, hearing this, made his son get on the donkey, while he himself walked. Soon they came upon some men "Look". Said one of them, " see that lazy boy riding while his old father has to walk," on hearing this the miller made his son get off, and he climbed upon the donkey himself. Further on they met a company of women, who shouted out, "why you lazy old fellow to ride along so comfortably while your poor boy there can hardly keep pace by the side of you! And so the good –natured miller took his boy up behind him and both of them rode. As they came to the town a citizen said to them, "why, you cruel fellows! You two are better able to carry the poor little donkey than he is to carry you." "Very well, "said the miller, "we will try." so both of them jumped to the ground, got some ropes, tied the donkey's legs to a pole, and tried to carry him. But as they crossed the bridge the donkey became frightened, kicked loose and fell into the stream.'

Domain- wise classification of items adapted to BKT*

(*Lezak,M.D.(1983), Neuropsychological Assessment(2nd Ed.) Oxford University Press, P 288-291)

Domains →	LANGUAGE	MEMORY		REASONING			CONCEPTUAL THINKING	VISUO MOTOR	SOCIAL INTELLIGENCE
		Meaningful	Non Meaningful	Non Verbal	Verbal	Numerical			
22	6, A1	3	2,5	1,4					
19	A1	5		6	1	2	3	4	
16	A1,2		4,6	2	5		1,3		
14	2,A1			6		1,3,4	5		
12	3,A1		4,A2	2	1		5		6,A3
10	5,A1	2,6	4	1					3,A2
9	4,6,A1	5	1			2	3		
8	4	6	2	A2		1		A1	3,5
7		1	3	3,6		5	6	2	4,A1
6	A1		1			4			2,5
5	2	3		2,A1		6			1,5,5,A1,2,3
4		4	1	6		5		6	3
3	1,2	5	3						4,A1,2
↑ Age		Meaningful	Non Meaningful	Non Verbal	Verbal	Numerical			
	LANGUAGE	MEMORY		REASONING			CONCEPTUAL THINKING	VISUO MOTOR	SOCIAL INTELLIGENCE

BINET-KAMAT TEST OF INTELLIGENCE
(RECORDING SHEET)

Name of Client:	**Date of Testing :** / / 20....
Gender:	**Client Registration No:** .....
Date of Birth: / /20....	**Name & Address of the Parent/Guardian**
Age: Yrs Months	.....
School: ..... **Class:**	.....
Socio-eonomic Status:	.....
Language(s) Spoken:	.....

Item No	AGE LEVELS										
	III	IV	V	VI	VII	VIII	IX	X	XII	XIV	XVI
1.											
2.											
3.											
4.											
5.											
6.											
Alt #1											
Alt #2											
Alt#3											

Basal Age (BA): ..... (in months)

Terminal Age (TA): ..... (in months)

Mental Age (MA): ..... (in months)

IQ: {MA/TA X 100} .....

Behavioural Observations:

Diagnostic Impression & Reccomendation(s)

(Name of the Psychologist/Tester)
Reg. No: .....

Signature & Date

BINET KAMAT

TEST OF

INTELLIGENCE

BINET KAMAT TEST OF INTELLIGENCE

CHAPTER TEN

TESTS FOR YEAR I I I

I I I. 1. Pointing to parts of the body (3 out of 4)

TEXT AND PROCEDURE

'Show me your nose.'
'Put your finger on your nose.'
Same with eyes mouth and hand.

If two or three repetitions fail to bring a response, overcome timidly by pointing to chin or ear and questioned.
'Is this your nose?'
Answer is by winking, opening the mouth, etc., should be counted as satisfactory.

Remarks: Three correct responses out of four are required. This test is much easier than the next one – 'naming objects'. At this stage the association between the name of an object and the object itself is made, but the association between this pair and the muscular movements of the vocal organization is not yet made. This illustrates beautifully the way in which our psychological organization is slowly built up into more and more complex wholes.

1. In what follows, the text of the tests and the procedure in detail are given in English. The tests and test procedure in the two Indian languages, Kannada and Marathi, are published separately by Purohit and Purohit, Poona. The English version is given only for English readers and for comparison between this revision and previous revisions. It should, however, never be used with Indian children. With them the Indian language version which is their mother-tongue and the school language should only be used.
2. This test is passed by nearly all the children who are just 2 years old. Being the first of the third year it should naturally be passed by nearly all children who have completed 2 years and have not yet completed 3 years.

Really at this beginning of the scale we require smaller fractions of age than one year. It would be proper, for example, to take children between 2 years and 2 years 2 months and require 50 per cent of these to pass this test. This would be the most scientific way of fixing this lower end. Similarly for III, 2 we should take children between 2 years 2 months and 2 years 4 months and so on more complex wholes. Further there is the question whether the child explores and studies its own body first or that of a doll or another person - its mother, brother, sister or servant. Probably explores those limbs of its own which are visible to it, then those of a second person, then compares and generalizes in its own way and thus finally attains the concept of a nose, a mouth and a hand and so on.

III. 2. Naming Familiar Objects. (3 out of 5)

TEXT AND PROCEDURE

Use (1) a key; (2) a paisa; (3) a closed penknife; (4) a watch; and (5) an ordinary lead pencil (taking care to use things in common use).
'What is this?' or
'Tell me what this is.'

1

Remarks. This test is harder than the previous one as is evident from the percentage of children who pass it. The previous test requires the association of auditory images of the names of things and visual images. This test requires over and above this the association of kinesthetic and muscular movement images with the previous group. Hence it is more advantaged. It is interesting to note that the most common objects from the everyday experience of little children of this age selected by Binet hold good in such a different environment as the Indian. In scoring this test baby talk should be allowed. Children of this age pronounce the words in a strange way, or they use abbreviated forms of the names. It is doubtful, however, if onomatopoeic words should be allowed. Thus they call a clock or a watch a 'tick-tick'. This may mean that onomatopoeic words come earlier than that the proper names. On the contrary some children indulge in such talk and their parents encourage it out of endearment even after their vocabulary is sufficiently enlarged. If such is the case the test should be scored plus; otherwise minus.

III. 3. Repeating Two Digits (1 pot of 3. Order correct. Read 1 every half second)

TEXT AND PROCEDURE

Listen: Say 4- 2' (Practice Series)
Now say: 3-7; 6-4; 7-2.

Remarks. With little children the series should be given rather rapidly. Terman prescribes an interval of one second between two digits. The interval is found to be too long with very little children, who begin to utter a digit before the next digit comes. Hence one has to give the digits rather rapidly, about one every half second. This test is in Binet's original test; but is omitted by Terman probably because he finds it too easy for year III. Burt has it in year III. With little children below the 1-year level it is very difficult to secure their attention. Hence the trial series and even the first series may be spoiled and may have to be repeated more than once, before attention is secured and silence broken. Then give the second and third series uttering them only once. There is very great divergence in the location of the repetition of 'digit' tests by the various workers. This difference is due mostly to want of uniformity in the procedure; some give the digits every half-second, other every second. Some will have done with the whole hierarch of digits, one after the other. Others will give them in their; appropriate places in the several age groups. In particular, Burt's location of the test appears strange. His result must be due to the fact that he gives the whole hierarchy at once. On the one hand this means that, especially with the later tests, there has been much recent practice in the repetition of digits; on the other hand it might lead to fatigue towards the end. On the whole it appears that this procedure makes the tests more easy.

In the present revision the tests are meant to be given only in their appropriate places in the several age-groups. The location of the several series by different workers is given below:

	Binet	Terman	Burt	Present revision
2 digits	III	--------	III	III
3 digits	IV	III	IV	IV
4 digits	--	VI	V	VI
5 digits	VIII	VII	VI	VIII
6 digits	---	X(1 of 2)	VIII	XII
7 digits	XV	XIV (1 of 2)	XI	XVI (1 of 2)
8 digits	--	XIX	--	XXII

It will be seen the location of the test in the present revision agrees best with Binet's.

III. 4. Enumeration of Objects in a Picture. (At least two objects in a one Picture. At least two objects in any one picture are satisfactory for this test.)

TEXT AND PROCEDURE

A) Railway Station. 1
B) Reception. 2
C) Motor accident. 3
Say,

'Now I am going to show you a pretty picture. Tell me what you see in this picture.'
'Look at the picture and tell me everything you can see in it.'
'Show me the ----------'. (Only one such question is permissible)
'That is fine; now tell me everything that you see in the picture.'
'And what else?'

Remarks. Present these pictures before the child in the order shown above. In order to pass this test the child must name at least *two* objects in any *one* picture *spontaneously*. This test is more difficult than naming actual objects. This additional difficulty here appears to be the transformation of pictures of two dimensions to actual objects of three dimensions. Of course, the pictures cast on the retina in any case are of two dimensions and a skillful artist draws his pictures in perspective, but however skillful the artist the reality of the actual things is wanting in these pictures. Thus the front of the motor-car in picture No. 3 above is perceived by several children as a writing stage though the same children would never make the mistake with the actual motor car. This stage in the mental development of children is called by Binet 'the identification stage. Terman called it 'the enumeration stage.' Then comes the stage of description about the sixth year of age and finally the stage of interpretation about the twelfth year. What is required for description is the grasping of the properties or actions of individual things; for interpretation what is required is the grasping of the relation of all the things or object and finding only one meaning for the whole picture. This test requires the highest type of conceptual process requiring analysis and synthesis. These pictures are selected from among a large number and are found to give the best results.

III. 5. Repeating six to seven syllables. (1 out of 3)

TEXT AND PROCEDURE

'Can you say, "mamma"
'Now say, "nice kitty,"
So much is for practice or to overcome shyness. Then continue asking the child to say,
a. 'I have a little dog."
b. The dog runs after the cat."
c. In summer the sun is hot.'

Remarks. For a plus in this test any one of the three sentences must be correctly repeated after only one reading. There should be no transposition or omission of any of the words. Indistinct talk owing to baby pronunciation should be ignored; for example, many children of this age cannot pronounce as 'r' or a 'k'. In Kannada or Marathi script each letter written is a complete syllables, but in the Roman script each syllable usually requires two or more letters'. So although the number of written letters is less in the Indian scripts, ability to repeat speech depends only on sound, that is, only on the number of syllables. In this test the syllables to be repeated are syllables having sense and not non-sense syllables he number of syllables repeated would be much less. If the syllables are sense syllables somehow the associations of the meaning of words come to help of children. Besides familiar speech sounds require a number of muscular and vocal co-ordination in which the child must have already had practice.

III. 6. Comparison of Lines. (3 out of 3: or 5 out of 6)

TEXT AND PROCEDURE

Put the card before the child with the lines in a horizontal position. Say, 'Here are two lines. This is one and this is another. Look closely and tell me which one is longer. Put your finger on the longest one.'
Reverse the position of lines and say,
'Now show me the longest.'
Turn the card, make a third presentation and repeat the same formula.

Remarks. The greatest difficulty with children of the third and fourth years is to secure their attention. The children are very fidgety; after securing a child's attention, although you may place the card before him, he casts a casual glance at it and turns it over and looks at other side. This is only one instance of the great *curiosity* of children in looking at things from different sides and of their pleasure in *doing* things and turning and turning them and analyzing them. In order to fix attention better and make the formula more acceptable we have added the words- 'This is one and this is another.' The original formula, 'See these lines,' is found to be too bald and unsuited to children of this age. They never wait to observe the lines very closely but turn over the cards. At this age we have to repeat the formula again and again until attention is secured. So the original formula will have to be repeated several times until this object is attended. With the new formula attention is secured more quickly and hence it is better to use the new formula but it is does not seem to make the test easier in any way. Terman used the superlative form of 'long' also in the alternative formula. But in the Indian languages there are no single words for superlative and roundabout way of signifying the superlative are of no use. Hence one formula is enough. The child must point definitely to one of the two lines. If the child points to the wrong line never make a suggestion by look of displeasure or by any kind of sound; accept any kind of answer with equal coolness and encouragement. According to Binet, success in this test depends more on comprehension of direction than on actual discrimination of lengths.

III. Alternative I. Giving Sex.

TEXT AND PROCEDURE

To a boy: 'Are you a boy or girl?'
To a girl: 'Are you a girl or a boy?'
If there be no answer, say,
'Are you a girl?' (If a boy), 'Are you a boy?' (If a girl).
'Well what are you? Are you a boy or a girl?' (or vise versa)

Remarks. Note that with boy we end the questions with 'a girl' and with girls we end it with 'a boy'. The reason is that children have a tendency to repeat the later alternative without thinking. This is form of automatism. The word 'little' in Terman's formula of 'a little boy' is omitted as is does not in any way improve the comprehension of the formula; one of the contrary there is a tendency of contrast 'little' with 'big' as if the word 'little' were emphasized. Real sex consciousness is not required in answering this question; for children seem to make distinctions between boys and girls mostly by their dresses and costumes and by the way they are address in terms of pronouns. In giving the formula the words 'boy' or 'girl' should be clearly emphasized.

III. Alternative 2. Giving Proper Name.

TEXT AND PROCEDURE

'What is your name?'
How do people call you?'

Remarks. This is a new test: Binet's test is to give the family name. It is not usual however with Indian children to be called by their family name nor does the family name of their parents occur so often in daily household talk. Thus this test if it is to be retained at all goes to the fifth year. As the family name test was found to be unsuitable for this age, the proper name was tried and was found to give fairly good results. The test has, therefore, been put down as an alternative test for this year, as all the other proper tests of this year are better than this one.

Note on Location of Tests of Year III. In strict mathematical conformity the tests of this year must be arranged in order of difficulty in such a way that test 1 should be passed by about 50 percent of children between 2 years and 2 years 2 months; test 2 should be passed by about 50 percent of children between 2 years 2 months and 2 years 4 months; test 3 by 50 percent of children between 2 years 4 months and 2 years 6 months and so on. The fractions of mental age to be determined for this year are very small and very significant and hence the scale is required to be more sensitive. The following table gives the percentage of passes for several groups of children considered from this point of view. It should be noted, however, that the number of children in each such group is very small and hence too much importance should not be attached to the discrepancies that are found.

In the table given below, III, I, III, 2 etc., are the first, second and so on tests of year III. The number of children examined for each age group and each test is shown in brackets. Thus there were 9 children examined of chronological age 2 years 0 month to 2 years 2 months. All these passed the first test of year III: hence the percentage of passes for this group is 100 and the number of children is shown in brackets, as (9). Similarly 4 children were examined in the group 2 years 6 months to 2 years 8 months chronological age. Of these 3 passed the test III, 6; hence the percentage of passing this test is 75 and the number of children examined is shown in brackets below this as (4).

Percentage of passes with number of children examined.

Age group Of children Yr.	M.	III, 1	III, 2	III, 3	III, 4	III, 5	III, 6	III, Alt. 1	III, Alt. 2
2	0 to	100%	33%	33%	22%	13%	0%	0%	25%
2	2	(9)	(9)	(9)	(9)	(8)	(4)	(8)	(4)
2	2 to	100%	50%	68%	39%	25%	25%	13%	66%
2	4	(8)	(8)	(6)	(8)	(8)	(4)	(8)	(3)
2	4 to	100%	25%	33%	25%	0%	50%	0%	50%
2	6	(4)	(4)	(3)	(4)	(3)	(2)	(4)	(2)
2	6 to	100%	75%	100%	50%	75%	75%	50%	66%
2	8	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(3)
2	8 to	100%	66%	100%	33%	66%	66%	33%	100%
2	10	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(2)
2	10 to	100%	100%	100%	84%	70%	70%	56%	75%
3	0	(7)	(7)	(6)	(7)	(7)	(7)	(7)	(4)

CHAPTER ELEVEN

TESTS FOR YEAR IV

IV. 1. Repeating Three Digits. (1 out of 3. Order correct. Read 1 every half-second)

TEXTS AND PROCEDURE

'Listen: say 7-3.' (Practice series)
"Now say: 6-4-1; 3-5-2; 8-3-7.

Remarks. See remarks under III, 3. If the examination of a child is to begin with this year does there in with this test. Begin with the next test. 'Discrimination of form: or the next after that. 'Comprehensive first

Shyness is overcome. If the child is self-without shows differences, coax him and say, 'I hence on can repeat them till that. "Very often the practice series will have to be repeated several times until silence is broken Always observe the rule however, that only there attempts by a child are allowed and plus should be scored if any one attempt is correct after the series is given only once by the examiner.

IV. 2. Discrimination of Forms. (Kuhlman. 7 out of 10)

TEXT AND PROCEDURE

Use the double set of geometrical figures supplied in the packet of test material. One of these should be cut out so that the several geometrical figures are separated.

Place the uncut card before the child, put the cut out figure of a circle in the position marked with a X on the uncut card and say: ('Show me one like this'. At the same time pass the finger around the circumference on the cut out circle.)

'Do you see all these things? (Simultaneously run the finger over the various forms on the uncut card.)

'And do you see this one?'
'Now, find another one just like this.'
'Take the square next, then the triangle, and then the others in any order.
Correct first error, saying, 'No, find one just like this.'

Remarks. At this level of intelligence children just begin to discriminate between different shapes of figures. This discrimination comes as a result of constant comparison and contrast of figures. The child has to see squares and circles several times and constantly compare and contrast them with one another, so that distinctive images of a square and a circle are fixed in his mind and later on he can carry in his mind these images and compare them with the actual perception of a square that is placed before him. Then only can he see the square as a square. The child who has not carried out these processes in his mind sees no difference between a square and a circle. The same thing is implied in the test of copying square assigned to this same year, IV, 6. Many children draw a round figure like a circle in copying a square. This results from the failure in to grasp the different in the shapes of two figures more than the failure practice of muscular co-ordination. * Similarly even with adults. The writer remembers how very difficult it was for him for a long time to distinguish between two brothers who looked alike. It was only after seeing the brothers several times and in different setting and observing the minute details of their respective features that he learnt to distinguish between them. Then he began to laugh at himself for having failed to distinguish between them when there were so many distinctive marks in their features. Similarly with 'children who learn to distinguish between simple figures- simple from our point of view- only after careful observation, comparison, and contrast. To distinguish between the several figures in this test it is not necessary that the child should know the names of the figures; nor is it necessary that

he should know how to draw them. It is enough for the child to be able to grasp the image of the figure shown and retain it and compare it with the figures on the child has to go back several times to the figure shown, and carry the image as many times for comparison with the figures in the card.

*It is true that the image of a figure may be in part kinesthetic and that ability to grasp difference in shape may be bound up with practice in muscular co-ordination. But in the test of drawing a square it does not appear to the writer as though kinesthetic imagery plays any important part. There is room here for further experiment.

IV. 3. Comprehension. First Degree. (2 out of 3)

TEXT AND PROCEDURE

a) 'What must you do when you are sleepy?"
b) What ought you to do when you are cold?"
c) What ought you to do when you are hungry?'

After waiting about 20 seconds for an answer the questions may be repeated more than once. It is most important at this age to secure attention and for this purpose it is frequently necessary that the questions should be repeated more than once.

Remarks. These are the simplest of the comprehension questions. They are again to be found in year VI, years VIII and year XII. It may be asked what makes the questions harder and harder. One answer is that the number of items woven into the situations are increasing, making the situations more and more complex and hence more and more difficult to imagine. Even in the question of this year, by making the children call up the image of the situation the questions are made more difficult than they would be if the children were made to meet the actual situations. In such tests the sub-tests have all to be of the same difficulty. There are so in this age, but they are not exactly so in the higher ages. In the latter case there is the danger of the score of the test being determined only by the most difficult of the sub-tests. On the whole these comprehension questions are very good in that they make children think in the abstract and such thinking is a quality only of superior intelligence. In repeating the questions the formulae may be slightly modified (as shown in brackets in the vernacular versions) because the children may not be equally familiar with the different kinds of phraseology. Questions (a) and (b) were suggested by Binet in 1990 but were not standardized. They were standardized for the first time in the Stanford revision, which also added the last one namely (c).

IV. 4. Repeating Twelve to Thirty Syllables. (1 out of 3 absolutely correct: or 2 with 1 error each).

TEXT AND PROCEDURE

'Listen, say this: "Where is Kitty?" (For practice only)
'Now say this:
a) "The boy's name is John. He is a very good boy".
b) "When the train comes you will hear the whistle blow".
c) "We are going to have a good time in the country."

Remarks. With the test of repeating syllables as also with that of repeating digits, only one reading is allowed. After securing the attention of the child the first sub-test should be given. If the child does not respond owing to timidity or crossness repeat the same formula. But this cannot be counted for success. Then the second and the third sub-test should be given once only. Defects in pronunciation should be ignored. Binet, Burt, and Bobertag standardized a sentence or sentences of 10 syllables and located the test in year V. But the statistics of the present study agree with Terman's in locating the test with 12 or 13 syllables in year IV.

IV. 5. Counting Four Paise (Coins).

TEXT AND PROCEDURE

Place the paise on the table before the child in a horizontal row.
'See these paise. Count them and tell me how many they are:
Count them with your finger this way.'
'One, - 'Now go ahead.'
'No, count them with your finger, this way.'

The test is passed only by counting tallies with the pointing.

Lastly ask, 'How many?'

Remarks. The most important thing in this test is that the child should count 'one, two, three, four; loudly, at the same time putting his finger on the paise, and that the pointing and counting should tally; and so schooling or learning to recite numbers has no effect on the ability to pass this test. It requires an intelligent interest in numbers and the child's spontaneous interest in them makes him handle things and count them. Quite a number of children who are paid great attention while being taught the numbers fail this test by not putting their finger on the paise to tally with their counting. They are slow in pointing with their finger while their lips move faster in reciting the numbers. The performance of this test requires higher mental ability than that required for mere mechanical counting of numbers. This test however does not require a full concept of the number four on the part of children. Probably what the children know at this age is that four is more than one and two and is a fairly large number. It is also very doubtful whether the child recognizes the whole group as four or calls the last paisa as 'four'. But the reply to the last question 'How many' is generally 'four'. Do not score the test plus unless the answer to this last question is correct. The procedure of this test, which is after Terman, goes a little further than Binet. Who simply say, 'Count then aloud; count them with your finger.' Terman adds, 'Count them with your finger this way- one'. Binet locates the test in year V; but Burt who follows exactly the same procedure locates it in year IV.

IV. 6. Copying a square,. (1 out of 3 pencils)

TEXT AND PROCEDURE

Put the printed model of a square before the child and say; 'You see that (point to the Square).. I want you to make one just like it. Make it right here'. (Show where it is to be drawn.) Go ahead. I know you can do it nicely.

Don't run the finger around the four sides. Give three trials, saying catch time, 'Make it exactly like this'.
After the child has drawn all three, ask;
'Which one do you like the best?'

Remarks. The model used should be the one supplied in the packet of test material. If another is used care should be taken to see that it is of the right size that is about 4 centimeter on each side. It should also be drawn in thick black lines, preferably in Indian ink. The child should be asked to drawn in pencil, as children of this age cannot handle a pen properly. Success in this test depends; it appears, more on the ability to distinguish between different kinds of forms than on the acquisition muscular co-ordination. (See remarks under IV, 2. P. 167). Children generally are found to cast a casual glance at the figure and finish off the drawing at once. Those who have not reached the mental level draw a round figure. The formation of the corner is the hardest thing in this as well as in the 'diamond' test. (VII, 2). The corner drawn by immature children in the 'diamond' test is more interesting.

Only one success out of three is enough for a pass in this test. The answers should be carefully compared with the model-scoring card before assessing. The square drawn should be recognizably a square but mathematical accuracy or anything near it is not required. Even with squares drawn by adults the perpendicular side will always be less than the horizontal side. This is one of the optical illusions. Note also

whether the child draws the square continuously or draws the opposite side together. Sometimes in the formal case one of the corners is a little rounded off. The first trial of the child is generally the best. This proves that the task is a heavy one from the point of view of the child, requiring very great effort and attention. During the second and third attempts the child, because of fatigue, cannot bring all his energy and effort to bear.

Binet requires the child to draw with pen and ink and further gives only one trial. This seems to make the test slightly more difficult. He locates it in year V. It is not however made as difficult as the unfamiliarity of the material would suggest. This proves that the more important factor for success in this test is sufficient mental development enabling discrimination between different kinds of forms.

IV, Alternative. Comparison of Two Weights. (3 out of 3: or 4 out of 5)

TEXT AND PROCEDURE

Use the two boxes of 3 grams and 15 gram in weight and present them during the trials I the following order, 3-15; 15-3; 3-15; 15-3; 3-15.

'You see these blocks. They look just alike, but one of them is heavy and one is light. Try them and tell me which one is heavier.'

If the child does not know how to proceed and simply lifts any one blindly and hands it over, say, 'No, that is not the way. You must take the boxes in your hands and try them, like this.'

Show the child the proper method of weighing the boxes in the hands by taking the boxes in your own hands one after the other. In the second trial, the weights are shuffled and their positions reversed. In the third trial, the positions are the same as in the first.

Materials. Stiff and strong cardboard pill- boxes about 4 centimeters in diameter make very good weight- boxes for this test as well as for X, 1. Five boxes of uniform size shape and color should be selected. They should be accurately weighted by stuffing them with lead foil and cotton until they weigh 3, 6,9,12 and 15 grams respectively. The lead should be exactly in the center of the boxes with cotton on both sides and should not be loose nor should it rattle. The lids should then be glued on permanently. The boxes should marked underneath with distinguishing letters such as P, S, Y, C, H so that by silently turning them over the examiner can see which is which. The child, however, should not know that they are so marked. For the test of this year use only the first and the last, i.e. 3 grammes and 15 grammes.

Remarks. If the child has reached the mental age he generally hands over the right box. Terman accept only 2 correct responses out of 3. This leaves a good deal to chance. Hence it is better to accept 3 out of 3 or 4 out of 5 since once the child understands what is required his responses are always correct. The difference in weights of these boxes is sufficiently large to be discriminated by children of this age. Backward children are always prone to hand over the box on the right (or left) hand side. This is an instance of stereotype to which backward children are generally prone. Success in this test seems to depend mainly on the ability to understand verbal instructions. The idea of making comparison and selecting one of two or many is rather difficult for children below this mental level. After the instructions are understood the requirement for reaching the goal are to be kept fixed in the mind until that goal is reached. This in itself requires a tremendous expenditure of energy in the form of sustained attention. This is like lifting a heavy weight and placing it on the table. Some may succeed in doing this while others may lift the weight three fourths of the height and then drop it through exhaustion of the strained muscles; others still may lift it to one-forth of the height; and lastly there may be some who may not be able to lift the weight from the ground at all. The test appears to lie on the border of age IV and V, and inclines more on the side of the former. It is located in year IV in the present revision.

Burt presents the boxes of 3 grammes and 12 grammes and 6 grammes and 15 grammes alternately and gives three trials. All trails are required to be correct. He located the test in year V.

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CHAPTER TWELVE

TESTS FOR YEAR V

V, 1. Aesthetic Comparison. (No errors)

TEXT AND PROCEDURE

Present the three pairs of pictures on the card before the child one at a time, hiding the other pairs from view by means of a piece of cardboard or sheet of paper. Say,
'Which of these two pictures is the prettiest?'

Remarks. The pictures for the test are the same as Binet's; but Indian costume is substituted for European. Thus the nature of the difficulty of the test is the same as that of the original. The test is found suitable for year V as was found by Terman. Binet located in the year VI. Burt located in the year IV. This test is very interesting test and children respond to it in a lively manner. It correlates highly with intelligence; which shows that aesthetic sense develops with intelligence. This throws doubt on the common supposition that artistic ability, which undoubtedly requires aesthetic sense, does not correlate with intelligence; that dull children often make good draftsman and artists. Similarly it is supposed that musical ability does not correlate with intelligence. The writer knows one or two backward children who are very good artists or singers. One boy was found in the course of testing to the backward in intelligence. His school work confirmed the same the same finding, but he had very good drawing and artistic ability. He could, for example, draw beautiful diagrams and pictures in his science paper, but his answer revealed that he had no clear grasp of scientific principles. Another case was that of a girl of about 8 or 9 years, who appeared very backward and could not talk, but could sing most beautifully. She could pick up any tune quickly and having heard it once or twice could sing it in proper notes without uttering the words. To the writer these stray instances appear only as exceptions. We are not likely to make a note of a hundred intelligent people who are good artists and singers but one or two dull or defective people who show high drawing or musical ability strike our imagination and we remember them and quote them as instances of popular beliefs, which by the way must have started in the same fashion. The real thing is that an intelligent person shows his intelligence in whatever direction his energy is directed. A few dull people finding that they cannot compete with their more cleverer follows in their class studies or the ordinary business of everyday life may have somehow developed a liking for these subjects and may have been concentrating their attention on them and thus stand out it relief against their follows; but this does not disprove the general rule.

V, 2. Definition in terms of use. (4 out of 6. Wait about one minute each time for response)

TEXT AND PROCEDURE

Use the words: chair, block (or hours), spoon doll, pencil and blanket, Say, 'You have seen a chair. You know what chair is. Tell me, what is a chair?'

If the child does not give a definition but says, 'That is the chair' or 'A chair is a chair', etc., say, Yes, but tell me, what is a chair?'

If child is too shy or cross, coax him and repeat the same formula with first word several times. But once the child response never shows by gesture or nod or word that the definition is not correct. Accept every definition with approval. But if the definition is very bad do not give the impression that is the best definition, but just leave the child alone. It is not permissible, as some who are not properly initiated into the art do, to ask, 'What do you do with a spoon?'

The second word for definition is 'horse' or 'bullock'. If the child has seen horses and knows their common uses this word is to be preferred to 'bullock'. With 'bullock' the difficulty is that the child defines it very often as 'a cow'. Then it is necessary to ask the child further;

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'A bullock is not a cow. Is it? Tell me what a bullock is'.

Remarks. Binet has included three test or definition in his scale. The first one, 'definition of familiar words in terms of use,' he locates in year VI; the second one, 'definition of familiar words in terms superior to use', he locates in year IX; and the third one, 'definition of abstract words', he locates in year XII. He has thus discovered a very ingenious way of classifying children's response according to their mental ages. The present test is a good test and there is no difficulty in determining whether the definition given by any child is superior to use. We shall discuss this question later. The objects chosen are all familiar object, so there is question of the child's not knowing the words. The test therefore examines only the child's power of definition or his power of expression. This power of expression is a sign of intelligence. Dull children know the nature of objects, but the development of abstract language necessary to give expression to their perceptual mass is not sufficiently advanced. A good deal depends also on the actual objects chosen. If the same words used in this year are used in year VIII also, for definitions superior to use, we could not say whether we would get suitable answers, or whether if we had used the words of the year VIII in year V also we would have got suitable answers for year V. It appears that some are more suitable for use definitions and others for class definitions. Terman uses different sets of words for the two years and they are standardized for those years only. We have followed Terman in this respect. It would have been better, however, if the same set of words had been used for the two ages, as was done by Binet and Burt; but the selection of the objects would require very great care. The selection of a different set of words has one great advantage, namely, that if a child starts giving use definitions, he usually continues to do so with the rest of the words. The testing can then go on with other kinds of test. At a later stage he is presented with new words, which give him the chance of attempting class definitions. Thus a second chance is given to child with words a little more difficult and he is obliged to do his best.

Failures are generally of the nature of silence or repetition of the same word or the re ply, 'I don't know'.

V, 3. Three Commissions. (All three correct in proper sequence)

TEXT AND PROCEDURE

After getting up from the chair and moving with the child to the center of the room, say, 'Now, I want you to do something for me. Here is a key. I want you to put it on that chair over there, then I want you to shut (or open) that door, then bring me the box which you see over there (pointing in turn the to the object designated). Do you understand? Be sure to get it right. First put the key on the chair, then shut (open) the door, and then bring the box (again pointing). Go ahead.'

Remarks. In giving out the formula read out the instructions slowly and clearly. Stress the important and key words such as 'key', 'door', 'first', 'then', etc. While the child is carrying out the directions do not stare at him. A casual look of approval is all that is required. Never indicate or suggest the order of action by word or look or gesture, nor say any such thing as 'What is the first thing to do?' or 'What next?' The execution of the triple command requires the holding fast in the consciousness of the three commands in their proper order and the will to carry them out as directed by the memory. If the memory of their proper order slips, either the order of performing the commands is changed or one of the commands is forgotten or the child stops in the middle of the execution. The comprehension of the serial order of things must also be a great factor in the successful performance of this test. Binet located the test in year VII in his 1911 series; but it is found quite easy for year V.

V, 4. Distinguishing Right and Left. (3 out of 3; or 5 out of 6)

TEXT AND PROCEDURE

'Show me your right hand.'
'Show me your left ear.'
'Show me your right eye.'

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If there be only one failure repeat the above formula substituting 'left for 'right' and 'right' for 'left' in them.

Remarks. In reading he formula stress the key words 'right', 'left', 'hand', 'ear' etc. Don't suggest the answer by a glance or any other gesture. Nor should the examiner repeat the question by stressing 'right' or by simply saying 'right' if the child shows the left hand (as if the one that he showed were wrong). The child first shows the wrong limb and then corrects himself spontaneously, score him correct. Generally in such cases the rule is that the second answer should be taken into account for scoring. Our statistics show that the test is easy enough for year V. Binet locates it in year VII in his 1911 series. Terman puts it in year VI and Burt also in the same year. Binet and Burt use only 'right hand' and 'left ear' and require both to e correct.

There is a good deal of discussion on the question of space orientation with children. It has been observed and experimentally proved that children distinguish between up and down, that is vertical distinction in space, more readily than right and left. What is the cause of this? Several explanation are offered, any one or more of which may be responsible for this distinction.

(1)The most important cause for this appears to the writer to be that in vertical distinctions the earth as the fixed ground serves as an object of reference. This object of reference is so large and firm that you cannot go to the other side of it. Thus whatever is away from it is up and whatever is nearer to it is down. In the case of right and left there is no such fixed object of reference, although in considering the two hands there is of course the body to serve as such an object. But the difficulty is that the hands are symmetrically placed on either side of the body. The child has; therefore, distinguished between right and left by first having to find out the special functions of the right and the left hand: for instance the wright hand is used for eating. The child does writing also with the right hand, but this comes at the later stage and many children have already learnt the distinction of right and left before they begin to write.

(2)Kinesthetic memory of sensation is another explanation given. It is said that child move objects up and down and the memory, involved in these muscular movements, is more distinct than the kinesthetic memory involved in distinguishing between objects to the right or left. In the latter case, it is suggested that no larger muscles of the body are involved in the distinction; at the most, it may be the movement of the eyes to the right or left; but on the other hand, it may be said that these right and left movement of the eyeballs are more important than the up and down movement of the same. Some psychologists give the name of *local signature* to these distinctions in space relations made by the movements of the eyeballs.

(3)The frequency with which a child make distinction between *up* and *down,* and *right* and *left* offered as one of the explanation. It is alleged that distinctions between up and down occur the more often in a child's every day life than those between right and left.

(4)Finally, the distinction may be due to the *frequency*, which a child uses or hears the *words* in the language- up and down or right and left.

If you observe little children trying to learn right and left, and up and down distinctions it appears that they do so by the following steps:

(1)This slowly distinguishes between up and down by reference to the earth or ground. Anything away from it is *up,* anything close to it is *down*, or between right and left by associating certain actions of the right hand with the right hand and those of the left with the left.

(2)Secondly they associate the conventional verbal names 'up' or 'down', 'left' or 'right' with these directions as indicated in the first step. In this process, the distinctions between the horizontal directions are certainly harder than those between the vertical and hence appear to evolve more slowly.

The first period consists of about 6 hours or two *praharas*, the second of 3 hours or one *prahara* and the third of 3 hours or one *prahara*. Scientifically it is divided into 4 parts or *praharas* each of 3 hours. Hence questions are worded in two ways as shown above – one alternative being between morning and afternoon, and the other between morning and evening. These formulae work very well. In assessing the answer, afternoon *[Mahayana (Kan). Dupar (Mar)]* may be taken his midday meal though it may not be actually 12 O' clock, Time orientation hour by hour it not develops in children of this age.

One great objections raised against this test is that gives the choice between two alternative only and answering by mere guessing or answering at random would give 50% correct answer according to the law of chance. Binet included the test in his1908 series in year VI, but omitted it in his 1911 revision. Burt puts it in year V. Our own statistics show that it is easy in for year V.

V, Alternative 2. Giving Family Name

TEXT AND PROCEDURE

'What is your name?'
'What is your Surname?'

If the child gives his proper name only, say,
'Yes, but what is your other name?'

'Mahadev what?'

'Is your name Mahadev Joshi?'

Remarks. This is generally located in III by European and American authorities. Indian children, however, are not accustomed to use their family name; neither they ever called by the family name nor to the usually hear people calling their parents by the same. The more common method of addressing people in the household is by their proper name. Hence the test is not suitable for children of India. If it is to be retained at all our statistics show that it should go up to year V, and so it is retained as an alternative test in year V. Objection can also be raised against this test that the ground that the more enlightened families in the habit of teaching their children the proper name and their family name, while in backward families even very much older children do not know their family name unless they have been sent to school and their names registered in full.

V, Alternative 3. Giving Age.

TEXT AND PROCEDURE

'How old are you?'

Remarks. This is another test that is not very suitable for Indian children, or for any children at all. In the first place the age as given by children may be either age last birthday or age next birthday. Both ways are correct; with Indian children it is more common for them to be distinguished by their age next birthday. Secondly, celebrating the birthday is not usual among Indian children. In illiterate families even adult do not know their age. Hence this test should be very sparingly used, and is retained here as an alternative test only for sake of comparison. Binet had it in his 1908 scale VI, but omitted it in his 1911 series. Many other investigators have also omitted it.

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CHAPTER THIRTEEN

TESTS FOR YEAR VI

VI, 1. Repeating Four Digits. (1 out of 3. Read one every half-second)

TEXT AND PROCEDURE

'Now, listen. I am going to say over numbers and after I am through, I want you to say exactly what I say. Listen closely and get them just right.'
'4-7-3-9; 2-8-5-4; 7-2-6-1.'

Success with a series that has been re-read should not be counted.

Remarks. See remarks for III, 3 and IV, 1. The digits should be read at the rate of one every half-second for the reason stated there. Though repeating digits appear a very simple test, actually it is far from being so. It puts a great strain on the mind and hence should not be given towards the end of the examination. It brings on fatigue very rapidly and should therefore be given as far as possible when the mind is fresh. Not should testing begin with this test as children are likely to fight shy of it.

VI, 2. Comprehension. Second Degree. (2 out of 3. Time allowed minute)

TEXT AND PROCEDURE

'What's the thing to do-
(a) If it is raining when you start for school?
(b) If you find that your house is on fire?
(c) If you are going somewhere and miss the train? (or train- car or motor-bus or ferry?)'
After 5 to 10 seconds repeat the question once more.

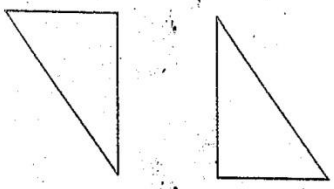
Remarks. See remarks under IV, 3. The question may be repeated a second time only. No more repetitions are allowed. Care should be taken, however, that attention is secured before the question is asked. Terman says, 'The three comprehension questions of this group were all suggested by Binet in 1905. Only one of them however, "What should you do if you were going to some place and missed your train?" was incorporated in the 1908 or 1911 series, and this was used in year X with seven others much harder.' The other two were standardized for the first time in the Stanford revision. In this test as also in some others Terman would allow the question to be repeated once or twice. As remarked elsewhere it makes a good deal of difference whether a question is repeated once, or twice, or thrice. We have therefore definitely laid down how many repetitions there should be in each case. In the present case the question may be repeated only once as directed above. The third question should be varied by using the conveyance most commonly in vogue at the place where the child is examined. Nowadays motor-buses ply between any two adjoining important towns several times during the day and two adjoining important towns several times during the night and hence this way of stating the question is very convenient. If the name of the adjoining town were put in perhaps the question would be a little easier.

VI, 3. Divided Card. (2 trials out of 3 correct. I minute each. Or better, thrice in 3 minutes.)

TEXT AND PROCEDURE

Select two stiff white cards each 5 cm. X 8 cm. Cut one of these diagonally into two triangles. Place the undivided card in front of the child with the longer side place right and left. Below this, *a little nearer the child,* place the triangles cut out of the second card in the following position:

Diagrams of two triangles is to be drawn



Then say,

'I want you to take these two pieces (touching the two triangles) and put them together so that they will look exactly like this (pointing to the uncut card).'

If the child sits silent without knowing what to do say;

'Turn these pieces round as you like and put them together so that they look exactly like this.'

After the child has finished, ask:

'Do they look like this?'

After each trial put the pieces in the position shown and repeat the short formula:

'Put these two pieces together so that they look exactly like this.'

If during the experiment the child turns over one of the two pieces, turn it over again and start again, as it is impossible to get the right construction with one of the pieces turned over upside down. The trial should be regarded as having begun from this new start.

Remarks. This test was scored both ways (i) by giving one minute for each performance and requiring only 2 correct performances out of 3, and (ii) by giving 3 minutes for 3 performances. The scoring was exactly the same in the both these ways. The latter method, that of giving altogether 3 minutes for 3 performances, has a distinct advantage in not disturbing the child when he is in a contemplative mood and trying to put the pieces right. This method is similar to that of Healy and Fernald's 'construction puzzle' test which gives a total of 5 minutes for 3 performances. (See XII, 2.) It is always better therefore to take the test in this way.

The test is similar to Ebbhinghaus's 'completion' test. The child has first of all to form a clear idea of the goal to be reached, and secondly, under the influence of this idea to direct his efforts to the realization of this goal. Mentally backward children fail in his test either because they cannot form a clear idea of the goal to be reached or because they fail to hold it firmly in mind until it is reached. Lastly, the child must have the power of self-criticism, by which he compares his own performance with the model and finds out whether his performance is correct. Backward children are sometimes quite satisfied with their own performance though the performance may be quite ludicrous.

Burt, strictly following Binet and Simon's instructions, presents the triangles so that the hypotenuses are at right angles, but do not face towards each other. * He says. Terman' method of presentation is easier; but it does not appear to be so. On the contrary a child may by chance move the upper triangle in Burt's position slightly to the right and find that he accomplishes the feat. Burt's supplementary instructions, 'move them about and see if you can fit them together', agree with ours. This supplementary formula is put in so that we may be sure that a child tries his best and does not remain ideal for want of inability to understand the question as it is put in one form. Burt gives only one trial and gives a half-minute to it after Bobertag.

The test is located in year V by Binet and Terman, but in year VI by Burt and Bobertag. Our own statistics agree with the latter.

VI, 4. Giving Numbers of Fingers. (No error)

TEXT AND PROCEDURE

'How many fingers have you on one hand?'

'How many on the other hand?'

16

'How many on both hands together?'
Keep an eye on the child's fingers and if he is found to count them say,

'No, don't count. Tell me without counting.' Then repeat the question as before.

Remarks. In Indian nomenclature the thumbs are included in the fingers, so difficulty of excluding the thumbs never arises. This test is harder than 'counting 13 paise' (V, 6.). It requires on the part of the child a fuller concept of numbers. Unless this concept is formed the child cannot retain the memory of these numbers. The concept of numbers required for counting is decidedly lower than this concept. A certain interest in numbers has prompted the child to count his fingers probably several times and has made him remember this number. The concept of smaller numbers such as one, two, three or four seems to have been formed earlier and it would be interesting to find out at what age the child knows that he has one nose or two eyes.

*See, however, Kite's translation, p. 199. 'Put the two triangular pieces in front of the child in such a way that the two hypotenuses are not adjacent.'

Contrary to expectation the test is found to be a good test of intelligence as is shown by the regular rise in percentages of passes and the high correlation of the test with the scale as a whole. Coaching does not affect the test to any appreciable extent. Our statistics show that the test is easy enough for year VI. Burt assigns it to year VI also. Binet (1908) and Terman have assigned it to year VII.

VI, 5. Description of Pictures. (2 of the three pictures described or better Time limit 2 minutes each)

TEXT AND PROCEDURE

Use the pictures in the following order:
1. Railway station.
2. Reception at home
3. Motor accident

'What is the picture about?'
'What is this a picture of?'
'What is represented here?'

The questions may be repeated in one or the other form twice or thrice to encourage the child to answer so long as the time limit is not exceeded Forms of questions that suggest particularly enumeration or description, or interpretation should be avoided.

Remarks. It should be carefully noted as to what constitutes enumeration (required for age III), what description (required for age VI) and what interpretation (required for age XII). Burt says, 'replies giving a mere list of persons, objects or details' constitute enumeration; 'phrases indicating actions or characteristics' constitute description; and 'replies going beyond what is actually visible in the picture, and mentioning the situation or emotion it suggests' constitute interpretation. Sometimes replies make it difficult to decide whether they constitute enumeration or description. For example: 'Here is a man', or 'He has an umbrella in his hand'. These responses should be scored minus rather than plus for this age because they show only what is present in the picture and do not tell anything about the 'action or the characteristics' of the figure of the picture. The following answer would be plus: ' The man is going with an umbrella in his hand'; 'This man has caught hold of this man.'

The picture selected for this test are taken from *Manoranjan,* a high class Marathi magazines depicting Indian life. They are selected from among a large number after careful testing as to their suitability and are used by courtesy of the proprietor, *Manoranjan* Bombay. The pictures much contain sufficient number of familiar objects, animals, and men, easily recognizable by small children; secondly, they should also show certain

action which can be easily described; and lastly, they should contain only one theme which can be properly interpreted by carefully observing the different parts of the pictures and their relation one another. The pictures selected were found to satisfy very well all these condition. Burt's or Terman's picture could not be used as the depict western life. Thus though the test is materially changed statistics of the present investigation so that they are almost of the same difficulty and serve the purpose of the three test—enumeration, description and interpretation-equally well.

This test show very well the height of Binet's genius in evaluating children's answer. After studying these answers carefully he discerned clearly that about the age of three children can only recognize and name objects in pictures; about the age of six or seven children begin to recognize objects and their relation to one another so as to understand their mere outwardly visible actions; and about the age of twelve or fifteen their associative powers area so far developed that they can put together and combine all several parts of the picture in such a way as to find the inner purport of the picture. This ability manifests the highly synthetic power of the mind. The test is located in year VII by Binet, Terman and Bobertag and in year VI by Burt.

VI, 6. Missing features. (3 out of 4. Time limit half minute).

TEXT AND PROCEDURE

'There is something wrong with face. It is not all there. Part of it is left out. Look carefully and tell me, what part of the face is not there?'

If the child speaks of parts that area not drawn in the picture such as the body or the legs, say,
'No, I am talking about the face. Look again and tell me, what is left out of the face?'

In case of failure, say,
'See, the eye is gone.'

Then with the next picture, say,
'What is left out of this face?'

With picture (d) which is different from the others, say?
'What is left out of this picture?'

Remarks. As a rule children answer the questions promptly. The time limit is set down only as a guide in the case of children who sit silent so that after the lapse of the specified time the examiner may proceed to the next question. It is interesting to note that sometimes the children say, 'the other eye', or 'the other ear'.

This is one type of 'completion' test, in which the child is required to call up before his mind an image of an object that he has already seen and with which he is quite familiar and compare it with the present picture to find out the missing part. Other examples of such tests are filling in the gaps in sentences having meaning, making up a picture out of its parts, and rearranging a disarranged sentence.

The features of the pictures in this test are all truly Binet's but they are all Indianized by giving them Indian form of hair dressing. Indian ornaments and dress. The results are therefore strictly comparable with change inevitable. Still the picture has served the purpose in hand very well.

In Marathi, unfortunately there is only one word for mouth and face. So the formula of the question becomes a little unsuitable. But this can be avoided to some extent by using both the alternative forms of the word as shown in the Marathi test.

This procedure is found to answer the purpose very well.

VI, Alternative Naming Colours. (No errors)

TEXT AND PROCEDURE

Point to the colours in the order red, yellow, blue, green.

'What is the name of that colour?'

Sometimes the blue colour is named purple and with a good deal of plausibility. In this case, have ready some purple paper and ask the child what colour it is; and then ask him the name of the blue colour. In all other cases no second attempts are allowed.

Remarks. The test of naming colours is more difficult than the test of recognizing colours. As a rule, children recognize things first and then learn to associate the name with the things. Thus pointing to parts of the body is easier than naming these parts. In the case of colours the recognizing and discriminating between colours is itself a hard task quite unlike discriminating between form of familiar objects. Thus the test is hard enough for year VI, while the test of naming familiar objects' comes in year III. The conception of colour in the abstract, apart from the objects, is very difficult. Hence children take such a long time to recognize colors.

There is a good deal of divergence in the location of this test. Binet located it in year VII in his 1911 revision, Bobertag and Saffiotti in year VIII, while Terman and Burt locate it in year V. Our statistics put it in year VI.

CHAPTER FOURTEEN

TESTS FOR YEAR VII

VII, 1. Repeating Sixteen to Eighteen Syllables. (1 out of 3 absolutely correct; or 2 with one error each).

TEXT AND PROCEDURE

'Now, listen. I am going to say something and after I am through I want you to say it over just like I do. Understand? Listen carefully and be sure to say exactly what I say.'

After this, read these sentences slowly, emphatically and so as to convey the meaning clearly:

(a) We will go out for a long walk. Please give me my pretty straw hat."
(b) We are having a fine time. We found a little mouse in the trap."
(c) Walter had a fine time on his holiday. He went fishing every day.'

After each response say, 'Did you get it right?'

Remarks. This test is one of repeating syllables having sense as distinct from nonsense syllables. The number of nonsense syllables that a child of the same age can give is much less. However, the syllables are to be given exactly in the same order and accurately. Mispronunciations due to tender age may be disregarded. Any transposition, omissions, or addition of syllables is therefore an error. Burt following Binet (1908) closely has only one sentence with 16 syllables and allows no error. Terman modifies this test by giving 3 chances with 16 to 18 syllables and requires one to be given correctly or two with one error each. The difficulty in both procedures seems to be very nearly the same. We have followed Terman. Our statistics show that the test is a little too difficult for year VI, but quite easy for year VII. We have located it in year VII. In the Indian languages the syllables are written in the form of letters. Hence we name the test as 'giving 16 to 18 letter' in the vernacular.

*In rendering these sentences into the Indian languages some changes are made in the meaning, but the requirements of the test are satisfied.

In all such memory tests the set of syllables or digits is to be read only once after securing the attention of the child. So responses obtained after second readings are invalid and should not be counted. Below the level of the sixth year of age, however, it is very difficult to secure the attention of the child. Hence re-reading was allowed with the first set, but this was not counted and later sets were given only once.

VII, 2. Copying a Diamond. (2 out of 3)

TEXT AND PROCEDURE

Place the model printed on the card before the child with the longer diagonal pointing directly towards him. If a copy is to be made by hand it should be done in Indian ink with sufficiently thick lines. The longer diagonal should be 8 centimeters and the shorter one 4 centimeters.

Give him pen, ink and paper and say,
'I want you to draw one exactly like this.'

Give three trials. As the child is drawing remind him with,
'Make it exactly like this one.' But do not pass the finger around the edge of the model.
After each drawing is finished ask the child encouragingly, 'Is it good?'

At the end ask,
'Which one is the best?'

Remarks. Score the diagram plus if it is recognizably a rhombus. The vertical diagonal must be longer than the horizontal. For guidance in scoring refer to the printed scoring card, which is made up of the actual responses of children. For a pass two of three drawing should be satisfactory. Until we actually observe children of this age making these drawings, the test appears to us to be too easy. But it is very interesting to observe children making the drawings. It is really a very heavy mental burden to children of this age. Some fail to make the angles, and instead of trying to make convex angles many of them try to make them concave or re-entrant. Some, not knowing how to make a bend at the angles, make circle and others irregular turns. Other again not being able to make the angles sufficiently bent, fail to make the last ends of the lines meet together and thus are either forced to join the gap by an additional line or to leave the gap open. The test, therefore, requires the child to form a mental image of the diagram as he would make it and then to guide his fingers under the influence of this projected image. A glance at the unsatisfactory drawings will make this clear. This is a very good test and ordinary training in schools seems to affect it but little. Binet (1911) and Burt locate it in year VI, Terman and Bobertag in year VII, and Saffiotti in year VIII. Our own statistics warrant its inclusion in year VII.

VII, 3. Repeating Three Digits Reversed. (1 out of 3. Read one per second)

TEXT AND PROCEDURE

Listen carefully I am going to read some number now, but this time I want you to say them backwards. For example, if I should say 1,2,3 you should say 3,2,1. Do you understand?
'Read now, listen carefully, and be sure to say the numbers backwards.

"2-8-3; 4-2-7; 9-5-8."

If the child repeats the digits forward instead of backwards repeat the instruction emphasizing the word 'backwards'.

Remarks. This is the first test of 'repeating digits backwards'. At this age children are often found unable to comprehend what is meant by reverse order though it is made clear by illustration. It is very interesting to find that several children give the digits in the reverse order first arranging them in the descending order. For example, the above series are given back as 8-3-2, 7-4-2 and 9-8-5. However, in later years the test of repeating digits in the reverse order works as a better test than the one of repeating digits in the forward order, because the child has to fix the order of the digits firmly in his mind and then reverse them. This requires quite a feat of intelligence. It is not known how many children retain the memory by auditory images, how many by visual images and how many by motor images. Literate and intelligent pupils are sometimes seen to make finger moments tracing the digits in an effort to remember. This method certainly comes to the aid of their auditory images. It affords us also a great lesson in educational method, showing us that we should make use whatever possible of kinesthetic imagery along with auditory and visual, and that it is also very important to establish such kinesthetic imagery.

VII. 4. Naming Days of Week. (Order correct. 15 seconds. 2 out of 3 checks correct)

TEXT AND PROCEDURE

'You know the days of the week, do you not? Name the days of the week for me.'
If the child has not comprehended what is wanted and gives irrelevant answer, say again,

'No, that is not what I mean. I want you to name the days of week.'
After the child has finished, check up by asking,

'What day comes before Tuesday?
'What day comes before Thursday?'
'What day comes before Friday?'

Remarks. This is one of the test of time orientation. It is very interesting to note how the sense of time develops in children. They begin to distinguish between different parts of the day about the fifth year (see V, alt. 1), days of the week and the month about the seventh year (see VII, 4 and VII, alt. 1), and months as parts of a year and the about the tenth year (see X, alt. 2).

The criticisms leveled against this test are that children give the names of days mechanically without having developed the necessary sense of time, and that the usual training in school or in enlightened homes makes the children learn the names of the days of the week mechanically, thus placing them in an advantageous position in comparison with other children of illiterate homes or poor surroundings. These criticisms are to a large extent removed by Terman's device of introducing checks. But it was found in the present study that children who could give the names of days of the week could also answer correctly the checks with very few exceptions. Keep a record of the time from the moment the child names the first day.

The test was located by Binet (1908) in year IX, but was dropped by him in his 1911 revision. Terman located it in year VII, Burt in year VI and Bobertag in year VIII, Burt strictly following Binet has no checks in his test, but requires the days to be given in 10 seconds.

VII,5. Counting Backwards Twenty to One. (40 seconds. 1 error allowed.)

TEXT AND PROCEDURE

'You can count the numbers from 1 to 20, can you not?
Now count them for me.'

When the child has finished, say; 'Now count them backwards, like this, 20-19-18 and so on. Now go ahead.'

If the child says he cannot count backwards encourage him and say: 'I know you can count them backwards very well. Go on.'

Remarks. Binet wants the children to count down to 0. But it appears that this was not insisted upon, for children have no idea of zero and cannot count down to zero. All subsequent investigators rightly require counting from 20 to 1 only. Terman allows a maximum of 10 seconds for this test, and we have retained this time limit. Fifty percent of children of mental age between seven and eight years pass this test, of whom about 35 percent accomplish the performance within 20 seconds. In order to make the instructions quite clear without much worry it is better to follow the procedure of Dr. Simon and make the child count forwards first and then backwards. Backward children count a few numbers backwards and then go on counting forwards. If the child has been specifically taught in school to count backward, it is better not to give him this test.

To pass the test the child is required to be familiar with the numbers and with their concepts so that each succeeding number becomes familiar to him as greater by one than the previous number. Further the child has to keep constantly before his mind the object to be achieved, namely counting backwards and at the same time keep in mind the number that is uttered and imagine the number that is to come next. This requires a good deal of abstract number imagery. If the attentive attitude becomes slack at any moment the child immediately begins to count forwards as a result of the habit of counting forwards that has become automatic with him.

VII, 6. Giving Differences from Memory. (2 out of 3. 1 minute each)

TEXT AND PROCEDURE

'What is the difference between a fly and a butterfly?'

If the child is found not to understand this, proceed:

'You know flies, do you not? You have seen flies? And you know butterflies? Now, tell me the difference between a fly, and a butterfly?'

'In what way are these different?'

'Similarly, stone and potato; wood and glass. No supplementary questions are allowed as they may serve as leading or suggestive questions.

If the child says one is bigger or harder than the other, ask, 'Which is bigger (or harder)?'

Remarks This is a very good test of intelligence. It throws the child on his own resources and mental equipment. The child has first to call up the images of the objects and then compare and contrast them in the abstract. These are the highest types of conceptual processes. We acquire and accumulate all our knowledge by means of the dual associative power of noting differences and similarities. Our classification of matter and life into species and genera is based on this principle. An intelligent child of this mental age has therefore learnt to distinguish between common things by noting the differences. Of course the faculty of noting more minute differences develops with further acquisition of knowledge and the exercise of the mind in that direction. A botanist will find in two specimens minute differences which will be quite invisible to laymen. The differences between the common objects picked out for this test can be given by normal seven year old children.

To pass this test at this age any real difference noted, however trivial, is quite sufficient. Statistics show that the power of finding similarities between common things (IX, 3) is harder than the power of finding differences (VII, 6). In assessing the answers notice the tendency on the part of children to stereotypy. Starting for example, by saying that a butterfly is white and a fly is black the child continues to give the same difference in the case of other pairs. Though the differential characteristics may be true of all the pairs such answer should be scored minus. Weak minds after finding out one kind of difference area exhausted and proceed without thinking t o apply the same difference to all the others.

Binet (1911) and Bobertag locate the test in year VIII. Our statistics agree with those of Terman and Burt in locating it in year VII.

VII, Alternative. Giving Day of Week and Day of Month. (Both correct, the second within 3 days of the actual date).

TEXT AND PROCEDURE

(a) What day of the week is today?"
(b) What day of the month is it?'

In the latter case, if the boy says he does not know, say,
'Give it roughly.'

Remarks. Before using Binet's test of 'giving day and date' it was considered whether it would be advisable to score the responses to the question on the Indian method of giving the names of months and days. But a little experience of testing with children showed that they knew the European names of months and the date better than the Indian. The Indian months are lunar months and counting of the days of the months stops at

the end of the bright half and the counting is done again in the dark half of the month, so that there are only fifteen days coming twice in a month. As this method of counting days is not used in daily transactions, children are so convenient with it. On the contrary in all transactions and in school they use the date, the name of the month and year according to the Christian calendar. Hence they were found to be quite familiar with these.

It was found, however, that the day of the week and day of the month were known much earlier than the name of the month and the year. So if all the four are lumped together the test, as we have remarked elsewhere, becomes practically a test of giving the two letter only. It was thus though advisable to split it up in to two parts- the day of the week and day of the month going in year VII and the name of the month and the year and going in year X, the test of year VII and year VIII in point of hardness.

Requiring all the four items Binet and Burt put the test in year VIII and Terman with the same item in year IX. Burt gives the order of difficulties (So that the latter once are more and more difficult) as (1) Day of the week, (2) month, (3) year and (4) day of the month. Our statistics put it as (1) day of week, (2) day of month, (3) year and (4) month.

CHAPTER FIFTEEN

TESTS FOR YEAR VIII

VIII,1. Finding Value of Coins. (15 second)

TEXT AND PROCEDURE

Arrange three one- paisa pieces and three two-paisa pieces on the table before the child thus: 1,1,1, 2,2,2. Then say,

'You know this? (Pointing to the one paisa piece)

'You know this? (Pointing to the two-paisa pieces)

'Now tell me how much is the value of all these coins?'

Remarks. This test is exactly parallel to Binet's test. The coins are similar to the French coins of *sous* and double- *sous*. American investigators have used stamps, as they have no similar coins in America. The test with stamps is harder than the one with coins. Burt uses pennies and halfpennies, but this makes the calculation fractional and may be a little harder. He assigns the test, however, to year VIII. Our statistics show that it is a little too hard for year VII, but easy enough for year VIII, and we have, therefore, assigned it to this year. This is one of the best tests. It is so easy to give and to score. It does not depend to any great extent on school instructions, nor do children of superior homes have any advantage over those of inferior homes, since all children have almost equal opportunities of handling these coins.

VIII. 2 Repeating Five Digits. (1 out of 3. Read1 per second)

TEXT AND PROCEDURE

Secure the child's attention and read the following series to the child distinctly and at a uniform speed of about one per second. Avoid sign- song ways of reading. Re- reading any of the series is not allowed above the level of seven years of age. Below the level of seven years, children are fidgety and the greatest problem is to secure their attention. Hence re- reading was allowed in their case only with the series; but such success was not counted.

3-1-7-5-9; 4-2-8-3-5; 9-8-1-7-6.

Remarks. In giving these 'digit' test the examiner should begin with the series one step below the one suited to the mental age of the child and then give the higher series. This provides just a little practice but remove the effects of fatigue. Later on as the examination continues the higher test of digits should be given as they come in among age series of tests. Burt differs in this and gives the 'digit' tests all together, and this gives the good deal of practice, but at the same time produces fatigue very quickly. It is difficult to say which of these causes influences the results most. Further, presumably if a child fails with five digits and by chance succeeds with one of the series of six digits, he would be taken as having succeeded with five. On the whole, on looking to the location of these 'digit' test by Burt and comparing it with the location of others, it appears that by his procedure the tests are rather too easy for children. Burt also gives the digits at the rate of one every second above this level. If they are given at the rate of one every second below the level of seven years the children begin to repeat the digits before the examiner finishes giving them.

Psychologically the test of giving digits lies between that of giving nonsense syllables and that of giving sense syllables. Sense syllables in sentences having meaning have a good many association and are held together in a *gestalt* by the meaning of the whole sentence. Digits have some meaning and as such can be retained better than absolute nonsense syllables. At any age roughly four times the number of sense syllables

can be given as the number of digits. In this connection it should be borne in mind that some of the digits are made of more than one syllable. This is particularly so in the Kannada language as contrasted with the Marathi. In Kannada, out of the digits from 1 to 10, two are of three syllables each an eight of two syllables each. In Marathi on the contrary, owing to the fact that the last syllables in this language is not usually emphasized, two of these become practically of two syllables each and eight of one syllables each. Thus as regard the number of syllables the Marathi digits resemble the English digits, while in Kannada the difficulty is much greater. But statistics show that the number of syllables does not much affect the number of digits given. This is one more argument in favor of our assertion that meaning of language is more important in psychological associations than the empty shell of sound syllables.

VIII. 3 Comprehension. Third Degree. (2 out of 3. Read once. After 5 to 10 seconds read a second time and then allow 30 seconds more.)

TEXT AND PROCEDURE

(a) 'What's the thing for you to do when you have broken something which belongs to someone else?"
(b) What's the thing for you to do when you are on your way to school and notice that you are in danger of being late?"
(c) What's the thing for you to do if a playmate hit you without meaning to do so?'

When repeating the question its form must not on any account be changed.

Remarks. The 'comprehension; as well as some other tests have not been properly timed, nor is the rule as to the limitation of repetition of the question scrupulously observed in some previous revisions. Terman says that question may be repeated once or twice. Burt says repeat once if necessary, and twenty second are usually allowed to elapse although the directions seem to be that one should not be too pedantic over the time limit. It is a matter of experience that a good deal of difference is made by repeating a question once or twice or three times, more particularly a comprehension question. Backward children who fail to comprehend question a read once or even twice, may begin to comprehend it when read a third time. To avoid all such vagueness the procedure is made more exact in the present revision. Only one repeating is allowed and that from five to ten second after the first reading. After the second reading a maximum of thirty seconds is allowed for the reply. A great many children, of course, answer the comprehension questions promptly, but a few dull children take too long and so the time limit helps the examiner to determine when to proceed to the next question without loss of time.

Questions (a) and (c) were included by Binet in the easy series located in year IX and question (b) is from his difficult series located by him in year X. Terman rightly grouped these three together and located them in year VIII. For reason already sufficiently explained, it is no use grouping together very easy and very difficult questions, because the score is then determined by the hardest questions, the easiest questions serving no purpose in the group, and so it is essential that the easier and the more difficult sub-test should be separated, grouped severally, and re-assigned to the proper ages.

VIII.4 Definition. Superior to Use. (2 out of 4. 1 minute each)

TEXT AND PROCEDURE

(a) What is a balloon?"
(b) What is a tiger?"
(c) What is a football (or a ball)?"
(d) Who is a soldier?'

Use the word 'ball' instead of 'football' more generally with girls, since some of them are unfamiliar with. the latter.

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Remarks. This is the hardest test to score in all Binet's series of tests. After studying the definitions of objects given by children, Binet came to the conclusion that children of the mental level of about six years define objects in terms of their use and those of about nine years define them in terms of description or genius. This classification of responses is quite good so far as broad principles go, but when we come to actual details a number of difficulties arise and different investigators have classified the different categories. We shall first of all point out the nature of the two classifications and then discuss a few examples.

A. *Definitions by use.*
Use includes (1) action or functional use; and (2) use for us.

- *Cyril Curt, Mental and Scholastic Tests. P. 42.*

Examples of (1) it goes up (for balloon); it eats us (for tiger); it bounces (for football); he carries a gun (for soldier).

Examples of (2) to sit in (for balloon); it is in a circus (for tiger); to kick (for football); he keeps watch (for soldier or policeman).

B. Definitions, superior to use.
These include (1) description of shape, size, colour, mental of which it is composed, action, etc; and (2) higher class or genius, with some kind of differentia.

Examples of (1): it is like a motor-car (for balloon); it has stripes on it (for tiger); it is of leather (for football); he carries gun, he wear a kind of cap(for soldier).
Or again: it goes high up, men sit in it (for balloon); it is the forest, its eats people(for tiger; boy kick it, it goes up (for football); he carries gun, he catches thieves(for policeman).

Example (2): it is a kind of motor –car, or, it is a car that goes up in the air (balloon), (both are correct definitions; but 'a car', particularly as it is given in the Indian language without any qualifying word, is correct): it is an animal that its people, or, it is a kind of animal(for Tiger): it is a big ball, or it is a kind of ball (for foot ball) (simply a ball' is in correct); he is a man who catches thieves (for policeman).

A number of observations required to be made on this test. In the first place Binet uses the same words for both the ages –VI and IX. Perhaps this was a better method from point of view of pure psychological investigation. Terman however, departs from this procedure and uses words which more generally evoke use definitions in year V and other words which more generally evoke description of classificatory definition in year VIII. We have generally followed Terman. Whatever the words selected when once they have been thoroughly standardized, they can be safely used. Beside, Terman's method would seem to avoid the some ambiguous responses.

Secondly, other investigators have classified definitions by actions as belonging to the lower mental level. On carefully studying the responses in the present investigation it was found that quite a larger number of intelligent children, even much above the mental level of eight years to which the higher type of responses belong, define objects in terms of more actions than just one. Hence it was thought that when an object was defined in terms of only one action, it belong to the mental level of five years, but when it was defined in terms of more than one action, it was regarded as a descriptive definition and assigned to year VIII. This later type of definition proceeds from the desire of the mind which, not being satisfied with only one action, proceeds to give more actions than one, which greatly restrict the application(the denotation) of the definition. To restrict the application of the definition to a smaller class of objects is analogous to giving the genus and then the differentia.

Thirdly, Definitions by genus without any kind of differentia or a qualifying word have been scored minus. Children even of low intelligence give definitions in terms of genus without a qualifying word. For example, they say, 'a football is a ball'. This is minus for the higher age. On the contrary if a child says 'a

football is '*a kind of ball*', he passes in the higher test. It is almost as good a definition as 'a football is a big ball'. It proceeds from the desire of the mind to restrict the application of the word 'ball' to a smaller class of objects by adding ' a kind of'.

VIII, 5. Naming six Coins. (No error. Give in order indicated five paisas. One Paise, quarter rupee, half rupee, ten paise, two paise).

TEXT AND PROCEDURE

Procedure same as in V. 5.

Remarks: Binet and Burt (following Binet closely) use nine coins and locate the test in year IX. A good many other investigators do the same and locate the test in IX or X. Terman, however, uses six coins and locates it in year VIII. Our statistics with the six Indian coins go to show that the test is suitable for year VIII. The quarter-rupee and the half-rupee may be named as such or in terms paise.

VIII.6. Reading and report. (2facts: 10 errors: 2 minutes.)

TEXT AND PROCEDURE

The following is Binet's selection as adapted by Terman. With necessary changes as required to suit local conditions:

Bombay/September5th/A fire/last night/burned/three houses/near the center/of the city/. It took some time/to put it out/ The loss was fifty thousand rupees,/and seventeen families/ lost their homes./ In saving /a girl/who was asleep/in bed/ a fireman/was burned/on the hands.

Put the above passage, printed without bars on the card contained in the packet of the test material, before the child and say:

'I want you to read this for me as nicely as you can'.

Ask the child to read aloud and help him in case he cannot read any individual words, counting these as errors.

Carefully record the number of errors made and the time taken. It is convenient to use stop-watch in all cases where time is to be carefully recorded. If one is not available have at least a watch with a seconds hand. When the child has finished say,

'Very well done. Now, I want you to tell me what you read. Being at the beginning and tell me every thing you can remember'.

If the child stops after saying a few words. Say further,

'And what else? Can you remember any more of it?

If the child misunderstands and thinks that the passage is to be given word for word, say,

'Tell me in your own words all you can remember of it'.

Do not ask any supplementary questions. Only urge him on encouraging so that he tries his utmost.

Remarks: It is essential that the child's response should be taken down verbatim. This is a different task but it can be done with a little practice if only the first letter of every word in written down as the child talks and then completed after the child has finished. In scoring for memories it is enough if the ideas are correctly reproduced. The exact words are not required. The passage as given above divided by means of bars is a great help in scoring. After the child's response is taken down underline the memories and then count It will be noticed that this test occurs in year VIII, IX, and X with different scores. So accordingly to our general rule it should be scored in the highest year, the conditions of which are satisfied by the child's responses, and should therefore not be made use of for other ages. The same thing applies to the 'vocabulary' test or the 'free

association' test. In the eighth year the child has no great mastery over reading and so he should be allowed two minutes for reading with not more than ten errors. This standard is determined from the actual responses of children. It should be observed that as the child advances mentally he makes fewer mistakes, takes less time to read and remembers more facts. It may then be asked why it is necessary to lay down all the three conditions. It is always safer to impose all these conditions, because a child of low intelligence by a good deal of coaching may learn to read well, but it is less likely that he will remember the required number of facts. If, on the contrary, the limit is not set, some children may read very slowly or even twice over and so be able to remember more facts. In fact the valuable factors both of speed and accuracy are beautifully employed in this test. This test, however, should be omitted in the case children who have not been taught reading or who have not attended school for at least two years.

Burt says that Binet purposely sets no time limit as speed of reading depends on school practice. He concurs with Binet in giving the following as the average time of reading:

At 8 years, 45 seconds
At 9 year, 40 seconds
At 10 years, 30 seconds
At 11 years, 25 seconds

It should be remembered that these are not the *average* times and time *limit* should therefore be much higher than this . Terman allows 35 seconds in year X. The passage in English contains only 68 syllables, while that in Kannada contains 134 syllables and the one Marathi 116 syllables. The number of facts is kept the same as in the original, namely 20. We have, therefore, set down the following as the time limits:

In the 8th year, 2 minutes
In the 9th year, 1 minute
In the 10th year, 40 seconds

The actual average times of reading were:
In the 8th year (i.e at average age 7 ½ years) 55 seconds
In the 9th year(i.e. at 8 ½ years) 53 seconds.
In the 10the year (i.e. at 9 ½ years), 41 seconds
In the 11th year (i.e. at 10 ½ years), 40 seconds

A few words about the psychological importance of reading are necessary here. Many critics say that children should not be unnecessarily penalized it for want of opportunities they are unable to read. There is certainly a good deal of truth in this but only up to a certain limit. Even when children have sufficient opportunities, as in the case of all children regularly attending school, it has been found by actual experiment that there is a good deal of difference between different children in their ability to read. Intelligent children certainly read much better and with better understanding.

In fact good reading does not depend merely on ability to recognize the letters, as they are inconspicuous in such continuous reading. The same is true to a lesser extent even with words. It is the ideas conveyed by the words, the meaning of the passage that is grasped by the mind. It is doubtful whether the complete images evoked by the words stand forth in every intelligence reading or hearing. But it is possible that these images remain in the background as in a subconscious world and are associated with the meaning as a whole, which runs smoothly and swiftly in the conscious word of our mind. The reading of a backward child is therefore lacking in spirit and meaningless, because the child's mental imagery is so poor that the letters or words that child reads cannot evoke any meaning in his mind. The letters and words are to the child as so many meaningless syllable. His reading would resemble the reading of nonsense syllables by an intelligent child or adult. Further Languages development means ability to think in the abstract with the aid of language signs as vehicles of thought. And this ability to think in the abstract is one of the best signs of superior intelligence. These considerations fully justify our retention of this test as a test of intelligence, with the safe guard we have provided.

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VIII Alternative 1. Tying a slip-knot. (model kept before the child. A spare thong. 2 minutes)

TEXT AND PROCEDURE

Use round leather thongs such as those used for football covers. Make the ready in advance of the experiment and show only the completed knot. The loop should be sufficiently large and the knot loose so that the turns of the thong may be easily seen. Say,

'You know what kind of knot this is, don't you? It is a slip-knot. I want you now to take this other thong and tie the same kind of knot around by wrist'.

At the same time give the other into the hands of the child and present your writs before him. The completed slipknot should be kept on the table before the child with the loop turned away from him. The child might inspect the knot by taking it in his hands. The standing part should be sufficiently long. Let the child actually try the knot. In the knot made by child, the standing part is sometimes smaller than the other end. Score this plus if the knot is otherwise all right. After the child finishes, whether the knot is correct or not, ask him,

'Is it exactly like this one?'

If it is incorrect he may correct it if the time limit is not exceeded.

Remarks: As Indian children were quite unfamiliar with the bow-knot, it was thought that the test would be found unsuitable in their case and an attempt was made to substitute a similar test familiar to them and equally difficult. The slip-knot was ultimately selected. This knot is generally used by Indians to tie copper *ghadas* to the ends of ropes used in drawing water from wells. But children of seven and eight years were actually found to be unacquainted with this knot. In doing this they sometimes took much more than two minutes, which is too long, as the maximum time allowed is only two minutes. This seemed therefore to test the real intelligence of children more than it would have done, had the children had previous acquaintance with the knot. The test showed a steady increase in the percentage of passes as the age increased, but the correlation of the test with mental age as the scale as a whole was rather low, being 0.55. This test is put down as an alternative test in year VIII.

VIII, Alternative 2. Ball and Field (Inferior Plan)

TEXT AND PROCEDURE

Draw a circle about 6 centimeters in diameter, leaving a small gap in the side next to the child. This can best be done by cutting a circle of the required size out of thick card, and passing a red or blue pencil round the margin leaving a gap of required width. The circular line drawn should be of sufficient thickness.

Then say

'Let us suppose that your playing ball has lost in this round field. You have no idea what part of the field it is in. You do not know what direction it came from, how it got there, or with what force it came. All you know is that the ball is lost somewhere in the field. Now, take this pencil and mark out a path to show me how you would hunt for the ball so as to be sure not to miss it. Begin at the gate and shown me what path you would take'.

Adhere strictly to this wording. In particular avoid using a word like 'around' which might suggest a circular path to be traced.

If the child simply points the path with his finger, say,

'No: you must mark out your path with the pencil so that I can see it plainly'

Sometimes the child stops after tracing a bit of path and might say or think the ball is there. Then say,

'But suppose you have found it yet, which direction would you go next.? This last formula will have to be repeated several times.

After the child has finished see if any plan governs his drawing. The drawing is scored for two ages the eight and the fourteenth.

Requirement of Year VIII. Some sort of plan should be evidenced in the drawing though perhaps not fully suited to serve logical purposes. If there be no sort of plan at all the performance is a failure. For example, mere random lines which may cross or re-cross one another or a single straight line or curved line, are failures. On the contrary If there be some attempt to make a search by some sort of zig-zag lines, or lines on the 'wheel plan', that is radiating from the center of the circle towards the circumference, on the 'fan plan', that is spreading out like a fan usually from the gate and so on, the attempt count plus. In all these plans, which are plus for year VIII but not for year XIV the path traced is usually not continuous and the lines are not parallel.

Requirement for Year XIV. I f the line is continuous and parallel so that no big gaps are anywhere left un searched the plan is plus for year XIV. The following are such typical plans as given by Terman:

1. A very nearly perfect spiral usually beginning at the gate or the center of the field.
2. Concentric circles. (In this case the circles need not be joined together).
3. Transverse parallel lines going from side to side joined at the ends.

The printed scoring card will be an aid in assessing the plans.

Remarks; This test is the one added by Terman in the Standford revision. One does not feel quite at case in administering the test. In the first place the children cannot realize that the map drawn is that of a very being field. They do not see the necessity of going round. They seem to think that they can stand in one place and look all round for the ball. Secondly, often it is very difficult to see if there is any plan in the drawing of the child. Sometimes even an intelligent child takes a wrong direction and fails in his plan. The first impulse of a child on seeing the map of the field is to close the gap with pencil. This is a common characteristic of the mind, which likes to complete what is left unfinished. Every gap even in acquired knowledge has to be filled in. We have placed the test as an alternative one in year VIII, and as one of the regular ones in year XIV. The correlation of the test as used for year VIII with mental age is 0.71 and as used for year XIV, it is 0.66.

CHAPTER SIXTEEN

TESTS FOR YEAR IX

IX. 1. Repeating Four Digits Reversed. (one out of 3. Read one per second)

TEXT AND PROCEDURE

The series are; 6-5-2-8: 4-9-3-7: 3-6-2-9:
Procedure same as in VII.3

IX. 2. Making change. (2 out of 3 correct. 15 second each. Read only once again if required).

TEXT AND PROCEDURE

Give the problems orally in the following order:

(a) If I were to buy 4 rupees worth of cloth, should give the shop keeper 10 rupees. How much money would I get back ?"
(b) If I bought 12 rupees worth and gave the shop-keeper 15 rupees, how much should I get back?

(c) If I bought 11 rupees worth and gave the shop-keeper 20 rupees, how much would I get back?
The problems are to be solved orally. If two answers are given the second is to be scored according to the general rule.

Remarks: Binet uses actual coins and makes the problem one of shop-keeping. This procedure makes it a little more concrete, and perhaps slightly easier. The child is made the shop-keeper and he has some boxes to sell and some cash. The cash placed before him is in definite coins. The experimenter wants to purchase one of the boxes and offers a higher coin and asks for change. The child is actually required to make up the change from amongst the coins and had it over to the experimenter. Binet places this test in year IX.. Burt, following the same procedure with English coins, places it in year VIII. We have followed Terman's method of verbal arithmetic with Indian coins and have found it easy enough for year IX and slightly too difficult for year VIII.

The test requires on the part of the child not only a knowledge of the processes of addition and subtraction, but the ability to visualize the transaction and find out which of the two operations, addition or subtraction, is to be employed in this transaction. The process of imagining a transaction from auditory sensations is really a hard one and cannot be successfully tackled by feebleminded children of very much higher age. They begin to add or sometimes even to multiply instead of subtraction.

IX, 3. Giving Similarities – two things. (2 out of 4 any real likeness is plus. 1 minute each)

TEXT AND PROCEDURE

Say to the child
'I am going to name two things which are alike in someway, and I want you to tell me how they are alike'.

(a) Mango and banana – in what way they are alike. Similarity.
(b) Iron and Silver
(c) Steam-ship and Tonga
(d) Wood and charcoal

After the first pair it is not necessary to repeat the whole formula. Simply say. 'in what say are-and–alike?

The child very often, probably not liking to lift the heavy burden of finding a solution to the problem. Say he does not know, or they are not alike. Then it necessary to say to him in a persuasive tone,

'they *are alike* in some way; you must tell me in what way they are alike'?

If a difference is given instead of similarity, say

'No I want you to tell me how they are alike. In what way are-and–alike?

Remarks: The test of giving similarities is psychologically harder than that of giving dissimilarities. While the letter is easy enough for year VII, the former even with the lenient way of scoring it, namely making two out of four enough for a plus, is hard enough for year IX. The test of giving similarities was used by Binet in 1905, but was not standardized for any age. It was standardized by Terman and located in year VIII. Feeble-minded, as well as younger, children more often give dissimilarities. Which is shown that the mind first tries to distinguish between objects by noting differences before noting similarities. This test is timed by Terman. But for reasons already explained it has been found better to time it.

XI, 4. Using three words in a sentence. (2 out of 3. Oral. 1 Minute each. Repeat formula once again, if necessary)

TEXT AND PROCEDURE

The three sets of words are:

(a) Boy, ball, river.
(b) Work, money, men.
(c) Trees, rivers, lakes.

'You know what a sentence is, of course. A sentence is made up of some words, which say something. Now, I am going to give you three words, and you must make up a sentence that has all three words in it'.

The answer must be given orally. Similarily with the other sets of words, but with these sets use the shorter formula: 'Now make up a sentence having the words...in it'.

If the instructions are not comprehended repeat them once again, but never change the formula in any way.

If it is found that the child is laboring under the misapprehension that the sentence is to be made only with these three words and that no other words are to be used, say,

'The three words must be put with some other words, so that all of them together will make up a sentence'.

If the boy thinks that the three words are to be used in three sentences, say,

'No, make only one sentence using all the three words'.

To be regarded as plus, (i) the sentence must be a simple sentence, and (ii) it must make good sense and should contain no absurdity.

Remarks: Binet's procedure is to give only one trial with the words- pairs, rivers, and fortune,. He also required a written response, and this makes the test a little harder, locating it in year X. We have followed Terman's procedure of giving three trials with three different sets of words and requiring an oral response. This

procedure is certainly better than Binet's and leaves to mere chance. With this procedure the test is well suited to year IX as was found by Terman also. In the third set of words we have replaced 'desert' by 'trees' as it was found that Indian children have generally no knowledge of deserts.

In scoring the responses, we have not met the difficulties mentioned by Terman or Burt in English construction of sentence. Terman has allowed a compound sentence with two distinct ideas as plus for year IX. Burt has allowed two distinct ideas as plus for year X. Our responses show that only one simple sentence with one idea is easy enough for year IX. With English sentences such responses would be hard enough for year X or XI. As regards the second requirement of the sentence, that is containing no absurdity, we also met with no serious difficulty in scoring. The children who gave correct responses from the point of view of sentence structure generally gave sensible sentences.

Burt says' * A set of sentences in which the thought is well coordinated into a unitary story of description, passes (that is for Year IX, which requires one idea or sentence0. "London is a big place. It has river in it. And many people come there to make money". We have distinctly disallowed this. Nor have we found necessity of scoring this plus with the formula we have used. Binet allows an absurdity in the sentences, but not Terman. We have found that it makes no difference in score since, as said above. When the first condition is satisfied the second is invariably so.

This test is a very valuable one. It is of the general type of 'completion' tests. For success in it, the association formed by children of each of theses words with other ideas must be very rich. So that when three words are uttered, children can join them into one coherent idea with the help of these performed association. A more intelligent child has always-keener observation and forms a greater number of such associations.

*.*Cyril Burt, Mental and Scholastic Tests. P.52.*

IX, 5. Reading and Report: (6 facts: 5 errors: 1minute)

TEXT AND PROCEDURE

See VIII.6

IX. 6. Free Association, 35 Words in 3 minutes. (Record every half-minutes score separately)

TEXT AND PROCEDURE

Say,
'Now, I want to see how many different words you can name in 3 minutes. When I say 'ready' you must being and name the words as fast as you can, and I will count them. Do you understand? Be sure to do your best, and remember that just any words will do, like "clouds", "dogs", "Chair", "happy", "come", "go", Ready, go ahead'

The instruction may be repeated once again if they are not understood. But generally there is no necessity to it.

Do not disconcert the child staring at him. Keep your eye away from him or on your record sheet. Record the words verbatim if possible, but if there is no assistant, this is generally not possible. It is interesting to record at least the class of words given, such as concrete objects abstracts ideas, verbs, adjectives, and so on. Repetitions should not be counted.

If the child stops altogether, wait for 15 seconds and then say,
'Go ahead as fast as you can. Any words will do'.

Keep on urging like this if the child stops for than 15 seconds.

Some children begin to give sentences or to count: then say,
'Counting (or sentences) is not allowed. You must name separate words. Go ahead'.
Proper names are not allowed; but mythological names may be allowed.

Remarks: This is a test which was found to be most deceptive in its working, particularly in the form in which Binet used it, namely, giving sixty words in three minutes. While even many normal adults could not pass in this test, with a score of sixty words, there were a few children even of nine and ten years of mental age who could give more than sixty words. From the percentage of passes, the test in Binet's form was found difficult even for the adult stage. Then the difficulty sometimes arose, whether a child who passes in this test but fails in all the tests of years XII and XIV, should be scored plus only in this test in year XVI. For these reasons the test is relegated to the class of alternative tests in year XVI. For interesting comparison, actual number of words given by all children above the level of seven years of age was recorded, and the mean and median scores of children of the several chronological ages were worked out. The table below gives the mean and median scores at the several ages:

Chronological Age (in years)	*Number of Children*	*Mean Score Score in 3m*	*Median Score in 3m.*	*Remarks*
7 to 8	22	35	35	Low score in
8 to 9	50	38	37.5	Tenth year probably
9 to 10	61	34	30	due to detained children in Primary IV
10 to 11	86	42	40	
11 to 12	75	43	40	Note that there
12 to 13	70	48	47	is practically no
13 to 14	59	55	56	rise above the
14 to 15	36	52	48	14-year level
15 to 16	26	56	53	
16 to 17	28	52	48	
17 to 18	13	54	48	
18 to 20	20	58	60	

It was thus found that the normal score for age IX was 35, and that for 'very superior adults' was 80. At these two extremes, the test is more reliable than at year XVI. Now and then a child is found who sits silently throughout the three minutes although encouraged several times to give words. Sometimes a child gives three or four words and then goes on repeating these same words several times, at the same time appearing to make an effort to find new ones. This is an interesting form of stereotype and is a symptom of weak minds.

When this widely divergent speed of association revealed by Indian children is compared with that of western children, one is inclined to believe that the very slow environment of eastern children is responsible for this. The western child is surrounded by men and objects that are moving fast and is forced constantly to think and react to these very speedily to that quick thinking, and the speedy movement of associated ideas in the minds, grow into a habit with him. On the contrary, the environment of an eastern child, particularly rural child, being very slow, there is not necessity for him to think speedily at all. The same thing is also to be seen in Indian schools. The teachers never pay regard to the cultivation of speed in work and the children go on at their own snail's pace. In the street the schoolboy lazily plods along in tune with the surrounding moving objects, the slow moving card, the leisurely cowboy and so on. Of course, in some of the larger Indian cities life is very much quicker, but the population of our cities, as compared to the general population, is less than one-fifth. So the speed of work of our general population is very much slower, and speedy work means a speedily thinking mind. The lesson we have to learn from this, for our educational system, is to be devise ways and means to cultivate speed in our school work. This need is all the more urgent on account of our slow environment. Our arithmetical problems and other pieces of schoolwork may be timed and the normal speed of accomplishing these pieces may be determined and children trained to attain this speed. Only by such methods can we hope to remedy a fundamental detect in our educational and social systems. Writer for some time tries a method of

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classroom teaching which greatly enlivened the children and was instrumental in cultivation speed in their work. When an example or piece of work was set, the children were asked to work it out and return their answer books, which were arranged on the, mater's table in order of precedence. The books were then marked in such a way that the earlier children got more marks. For example, the first boy if his work was right got 10 marks, the second and the third got 9 marks, the fourth and the fifth got 8 marks and so on. This enlivened the children very much and after a short time the children understood the value of quick working. This is mentioned only as an example of how teachers may devise simple classroom methods to attain the objects in view.

The habit of rapid thinking is certainly an important factor for success in this test. Some psychologists have thought that the surrounding objects afford clues to words and required children to close their eyes during the test. Far from helping the children, the presence of a number of objects is hindrance in the way of selecting words quickly. It was observed again and again that though a child began naming one of two surrounding objects he could not proceed. When he named a table or a cupboard he seemed to exhaust the objects around him. Nor could he see that the 'drawers' or 'handles' or 'books' (in the cupboard) were new words. After giving only one or two names of surrounding objects he usually fell back on his mental resources and began to give words from his imagination. What Binet has said about *absent* objects applies equally well to *present* objects. He says: * 'Little children exhaust an idea in naming it. They say for example, "hat" and then pass on to another word without noticing that hats differ in colour, in form, have various parts, different uses and accessories, and that in enumerating all these they could find a large number of words'. There is therefore no point in making children close their eyes which, in the case of some children, being unusual, even disconcerts them and obstructs their thought processes. The room in which children are tested may, if so desired, be as bare as possible, as Terman advises; but, even is found to be unnecessary. The fact that, though children are surrounded by a number of identical objects, some of them can name a good many and others hardly any, is an excellent illustration of the fact the same physical environment can assume various different forms according to the mental ability and equipment of the observers. Thus the sight of the same flower may excite only a vague colour sensation in a child, may present a beautiful and aesthetic shape to an artist or may appear to be made up of several important parts such as stamens or pistil to botanist.

*Quoted form Terman, *The management of Intelligence.* P. 273

The most intelligent way of tackling the problem is to give the names of objects are, parts of the objects, connected with the object that is named. For example, a child gives the word 'tree' and then names its parts such as 'branches', 'leaves', 'flowers', or gives names of objects associated with the give word, such as 'garden', creeper', and so on. Such an intelligent method is followed by very few children. Only about two or three children in the whole or our testing did this. The majority of children named an object and then gave one or two objects associated with the given word and passed on to think of objects more distinctly associated with it.

Only a very few of the children go on finding abstract words or words having abstract relationship with the given word. No doubt, only advanced children are capable of doing this; but merely from the point of view of giving the maximum number or words, such a method is not very successful one.

It is interesting to note some of the causes of failure in this test, first of all, it is the poverty of mental content and previously formed mental association that is the main cause of failure. As Terman says: 'the main factors in success are two, (1) richness and variety of previously made association with common words; and (2) the readiness of these associations to reinstate themselves'. But apart from this poverty of mental associations, there are certain other factors, which cause failure in this test even with some intelligence subjects. Some children fail owing to their very emotional nature; they are too shy or nervous. In fact, shyness plays greater role in this test than in any other. Some intelligence children get the impression that they are to give very difficult or out of the way words \. Hence they waste in finding them. A few are led away by verbal associations of similarity of sound, and begin words rhyming with the given words, although they are warned against it. This occurs more particularly when the test of finding rhymes is given before this test.

Children who are talkative succeed with this test better than thoughtful but more reticent children, although the former may be far less intelligent than the latter. Some children are given to hasty work and hasty replies. Such children fail in some other tests merely on account of their haste but they get a counterbalancing advantage in this test. From this point of view, the test deserves a place in this scale since some children who undeservedly lose in some of the other tests merely from their over-haste, justly get some advantage in this test.

The rate at which words are given does not remain constant. Usually the number of words given in the first half minute is larger and they fall off gradually towards the end of the period. The average number of words given by 10-year-old children in the successive half-minute periods is as follows:

	Half-*minute periods*					
	1st	*2nd*	*3rd*	*4th*	*5th*	*6th*
Bombay-Karnatka	10	6.2	5	4.8	4	3.8
Standford Revision	18	12.5	10.5	9	8.5	7
London Revision	19.3	13.4	10.3	8.5	7.3	6.6

Burt's figures however are obtained in a slightly different way. They are the average number of words in the successive half-minutes given by children who pass in the test. Further, the average age of Terman's group seems to be 10 years, that of Burt's group 9.5 years, while in the present study it is 9.5 years.

The corresponding average scores in the successive half-minute periods in the present revision for adolescents of fifteen and sixteen years of age are as follows:

	Half-*minute periods*					
	1st	*2nd*	*3rd*	*4th*	*5th*	*6th*
Average age of 14 ½ years	16	9	8	7	6	6
Average age of 15 ½ years	17.7	10.6	8.5	7	5.8	6.4

For comparing simply the speed of association in different half-minutes it is better to word out the percentages of words given in these half-minute periods. They are:

	1st	*2nd*	*3rd*	*4th*	*5th*	*6th*
Bombay-Karnataka	29.6	18.3	14.8	14.2	11.8	11.2
Standford revision(Terman)	27.5	19.1	16	13.7	13	10.7
London Revision (Burt)	29.5	20.5	15.7	13	11.2	10.1

It will be seen that the biggest drop in all the revision is after the first half–minute. There is no warming-up period.

Lastly, some of the very backward children give sentences instead of words, even though they have been told to give words and not sentences. This seems to suggest that the units of ideas are sentences and not words. When a child thinks of a horse, can he get an image of the horse simply, or does he imagine things in some such form as 'this horse is black'. 'a horse is yoked to a Tonga', 'I saw a horse in the bazaar'? There are very strong reasons to suppose that the latter form is the unitary form of our ideas though we may not be sufficiently trained in the use of language to express these ideas in the form of sentences. The subject is one which requires exhaustive study.

On the whole for various reasons detailed above the test of Free Association (IX, 6; XVI, Alt. 2;, XXII, 6) had better be dropped as a test of intelligence as recommended at the end of Chapter Eight. Its results are not in harmony with the results of other test in the same age-groups.

IX, Alternative. Test of Vocabulary, twenty words. (Equivalent to 7200 out of 36,000 words of Marathi language; or to 5600, out of 28,000 words of Kannada Language)

TEXT AND PROCEDURE

Place the card of printed words before the child, and say,
'I want to find out how many words you know. Listen and when I say a word, you tell me what it means'.

'What is an orange?

'What is a bonfire'?

'Roar, what does it mean'?

If the child hesitated being different about giving a proper definition, say a little encouragingly,

'You know what a bonfire is. You have seen a bonfire, Now what is bonfire?'

If the child is still silent, say further,
'Just tell me in your own words: say it any way you please.

'All I want to find out is whether you know what a bonfire is'.

If the child answers is not quite satisfactory. Or is imperfect, say,

'Explain. I don't understand. Explain what you mean'.

Adhere strictly to the above formulae. Never illustrate the use of a word in any way, such as by using it in a sentence. Rigid definitions are not expected from children. Sometimes in giving meanings even a change of a part of speech is allowed.

*1. These words are given only for the sake of illustration. The actual words of the vocabularies in the two Indian languages are given on the vocabulary cards of these versions.

Remarks: In assessing the definitions given by children great leniency needs to be shown, because the power of expression of children, particularly below the age of twelve years, is very poor. In the twelfth year they just begin to define abstract words correctly (see XII,3). Hence below this level child shows that in some way he knows the meaning of a word the definition should be scored plus. Nouns may be rendered into adjectives or verbs, or again in terms of long explanatory sentences but, so long as the correct idea is expressed, the response should be scored plus.

For scoring purpose, it is enough if the child defines the requisite number of words, for example 20 words from both cards together in this year; each card consists of 50 words. But it is interesting to find the total vocabulary of the child in every case. It is done as follows. This list consists of 100 words selected from a small Kannada dictionary containing about 28,000 words. These 100 words are representative of the 28,000 words in dictionary. Thus if a child can define only 20 words out of 100 he would be able to define 20 per cent of the whole number of words in the dictionary; that is, his total vocabulary according to the dictionary; that is, his total vocabulary according to the law of chance is 5,600 words. The Marathi dictionary from which the list is made up consists of 36,000 words, so the average Marathi vocabulary of a child of 9 years is 7,200 words. Strangely, the average number of words defined by Kannada and Marathi children in the several ages came very nearly to the same figure. So we have retained the same figure for both Kannada and Marathi children for all the ages. The following table gives the same figure for both Kannada and Marathi children for all ages. The following table gives the means and median scores of Kannada and Marathi children separately in the several

years:

	Age next birthday	*8*	*9*	*10*	*12*	*14*	*16*	*Above 16*
Kannada {	*Mean*	*20*	*23*	*25*	*31*	*37*	*45*	*52*
	Median	*20*	*23*	*25*	*30*	*38*	*46*	*52*
Marathi {	*Mean*	*14*	*20*	*25*	*31*	*49*	*49*	*50*
	Median	*13*	*19*	*25*	*27*	*48*	*46*	*51*

The vocabulary test should not be given unless the mother tongue and the language learnt by children in the school are the same. In Kannada districts quite a number of children have Marathi as their mother-tongue and learn Kannada in schools, and vice versa in Marathi districts bordering on Karnataka. In such cases, it has been standardized which of the two languages a child knows better.

Hence this test has been standardized only on children whose mother-tongue and school language coincide. Contrary to expectation the test has been found to be a very good test of intelligence. One might have thought that the test depended a good deal on schooling, but it is not so. The correlation of this test with mental age as determined by the scale as a whole is 0.89. Just as an intelligent child picks up from his environment more knowledge than a duller one of the same are, so also he picks up more words from the language. Thus wider vocabulary means wider knowledge and higher intelligence.

CHAPTER SEVENTEEN

TESTS FOR YEAR 'X'

X, 1. Arranging Five Weights. (2 trials of 3 correct)

TEXT AND PROCEDURE

Use five pill-boxes 3 centimeters or a little less in diameter, all identical in appearance and load them with lead foil or lead shot until they weigh 3, 6, 9, 12, and 15 grams respectively. The contents should be properly packed in cotton wool and should not rattle. The lead shot or foil should be as far as possible in the very center. Mark these boxes(weights) on the under surface by letters like P, S, Y, C, H, so that after the child has arranged the boxes(weights,) the examiner can silently turn them over and check the arrangement. Place these boxes(weights) on the table in an irregular fashion before the child and say.

'See these boxes, They all look alike, don't they? But they are not alike. Some them are heavy, some are not quite so heavy, and some are still lighter. No two weigh the same, Now, I want you to find the heaviest one and place it here. Then find the one that is just a little lighter and put it here. Then put the next lighter one here, and the next lighter one here, and the lightest of all at this end (pointing each time at the appropriate spot).

Do you understand?

'Remember now, that no two weights are the same. Find, the heaviest one and put it here, the next heaviest here, and lighter, lighter until you have the very lightest here. Ready, go ahead

Note that the instructions are repeated with a shorter formula. This is always necessary.

If the child still does not understand, repeat the whole of the instructions once again. No further help should be given. The child should not be shown how to weigh the boxes in his hand; finding out the correct procedure is part of the test.

Some children get the impression that the performance should be done as quickly as possible; other take longer time and check their first arrangement. For uniformity after the first arrangement, it is better to say,

'See again if you have placed them properly'.*

Remarks; Always record the order in which the child places the boxes. According to Weber's law, the case with which the differences between successive weight boxes are distinguished should be in ascending order beginning from the end of greatest weight, the hardest difference to distinguish being that between 15 and 12 grams and the easiest one that between 6 and 3 rams. On refereeing to the actual statistics we find that the percentages of passes in estimating the difference between the successive pairs are:

Difference between 15 and 12 grams	77%
Difference between 12 and 9 grams	91%
Difference between 9 and 6 grams	94%
Difference between 6 and 3 grams	86%

This is a corroboration of the truth of Weber's law. The slight fall in the last pair appears to be due to the fact that the lightest weights are so light that it is difficult even to feel their weight on the hands.

This is not merely a test of 'sensory discrimination'. If it were it would, probably, be less value as a test of intelligence; for, as has been observed already, even lower animals sometimes have greater sensory discrimination than man. Binet calls it a test of 'sensorial intelligence'.

The test requires in the first place proper comprehension of the instructions; in fact, this is an important factor in the proper solution of the problem. We have therefore always insisted on laying down accurate procedure in giving the instructions., The wording of the test should not be changed even in the slightest degree. The speed with which the instructions are given, the proper enunciation of the phonetic sound, the emphasis on keywords, the number of repetitions of the instructions, should all be carefully laid down. In comprehending the instructions, the children are required to visualize the several times of performance contained in the next instructions, keep them in mind till all the item are given, weave them together so as to form one whole, and decide upon the goal to be reached. After the goal to be reached is discovered a great effort of attention is required to keep it in mind until the several adjustment and adaptations, that are required to reach the goad, are made.

* After the formula there is sometimes the chance of a correct arrangement being spoiled, but we are unable to help this. The formula is to be given in all cases. Terman expressly disallows this step, though some other workers have allowed it.

This test is one most interesting tests from the children's points of view. It is a test, which requires some *doing* in the part of children. Children are fond of doing concrete things than of listening to things or thinking in the abstract. The test, therefore, serves, as a great relief when given after a good many other tests that require abstract thinking. If it is given at the beginning it arouses the child's interest and he takes to testing more kindly afterwards. The correlation of the test with mental age however is not very high. It is 0.57.

Note down any peculiarities in the performance. Intelligent children lift the weights and balance them by slight movement up and down in the hand, sometimes successively in the same hand, sometimes simultaneously in the two hands. The former method is the better of the two. Backward or younger children often fail is grasping the idea of arranging the weights in descending order of weight.

X, 2. Repeating Twenty to Twenty-two Syllables. (1 out of 3: or 2 with 1 Error each).

TEXT AND PROCEDURE

a) 'The apple tree makes a cool pleasant shade on the ground where the children are playing'.*
b) 'It is nearly half-past one o'clock; the house is very quite and the cat has gone to sleep'.'
c) 'In summer the days are very warm and fine; in winter it snows and I am cold'.

Procedure same as in VII.1

* The Kannada and Marathi versions are note mere translations , but the number of syllables is kept the same

Remarks: It is interesting to note how the memory for syllables increases with age. The following tables gives comparison:

Age in years	No. of Syllables given	Increase in age in years given	Increase Syllables	Increase Per year
III	7	....	....	....
IV	13	1	6	6
VII	18	3	5	1.7
X	22	3	4	1.3
XIX	30	9	8	0.9

The increase per year in the number of syllables given, steadily decreases as the child advances in years. Compare the increase in the number of digits given as age increases (see p.161)

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X, 3. Naming the Months (20 seconds: 1 error in naming. 2 checks of 3 correct.)

TEXT AND PROCEDURE

'Name all the months of the year'
'What month comes before April?'
'What month comes before July?'
'What month comes before November?'

Ask these questions straightaway and give no other help, even to start him off with any one month provided he completes the cycle.

Keep a record of the time from the moment the child names the first month. Sometimes intelligence children may not recollect the name of the first month at once and may waste a good deal of time.

Remarks: See remarks under VII, 4, on time orientation.

This test is criticized on the score that it depends a good deal on schooling or training. But it is one thing to know the months by role and quite another thing to have time orientation of this order. The checks in particular and test X, Alternative 2, go to show whether this much time orientation has appeared. On the whole the test has served its purpose well and there is not much weight in the criticism.

X, 4. Drawing Designs from Memory(1 correct, 1 half-correct, Expose 10 seconds)

TEXT AND PROCEDURE

Before exposing the card say to the child.
'This card has two drawings on it. I am going to show them to you ten seconds, then I will take the card away and let you draw from memory what you have seen. Examine both drawings carefully and remember that you have only ten seconds'.

Provide the child with paper and pencil and then expose the card for ten seconds, taking care that the card is presented to him in the right position, with the Greek key pattern to his left and the truncated pyramid to his right. After 10 seconds quickly remove the card out of sight and cover it up or insert it in the packet, so that there in no temptation o the part of the child to cast his glance in that direction. Let the child begin to draw as soon as possible after the card is removed. The drawings on the scoring card will help the examiner to mark each diagram correct, half-correct or wrong. The following hints will be found useful in scoring.

Correct: The peculiarities of the drawings as regards right angles, the different individual parts and eccentricity of the inner rectangle are all correctly reproduced. The drawing need not be neatly drawn from the artistic point of view nor the straight line perfectly drawn. One of the rectangles in the truncated pyramid diagrams may be drawn square or one of the top squares in the Greek key pattern may be turned outside. The eccentricity in the truncated pyramid may be shown in any direction. The whole diagram may be inverted if otherwise perfectly correct.

Half-correct: The drawing are generally correct, but some (only one) important peculiarity may be wrongly drawn or not drawn at all: for example eccentricity is not shown at all, both rectangle are drawn as square or vertical rectangles in the truncated pyramid; angles are rounded off instead of being drawn square; the turns in the Greek key patterns are drawn sometimes less sometimes more in number.

Failure: When the figure is incorrectly drawn as regards more than one of the essential peculiarities.

Remarks: It is difficult to lay down exactly in words what constitute a success, a half-success, or a failure. The sample drawings show on the scoring cards will be a great help. Burt has attempted to analyse the errors and lay down the method of scoring, but his scoring seems to be little too lenient. * The first two diagrams of the truncated pyramid which he shows as successful will have to be taken as half-correct according to the above instructions.

According to Binet, the chief factors required for success in this test are 'attention', 'visual imagery', and little analysis'. The child has to concentrate his attention on the drawings, fix the visual imagery in his mind, with some analysis as to how the line is placed and their relative sizes. There is another important factor which intelligent children make use of and which is not mentioned by Binet. This is the motor memory. The child as he sees the diagrams traces the lines in his mine imaging his fingers going round the diagrams. When he does this, the chances of his success are greater as his motor memory comes to his help where his visual imagery fails. According to Terman, analysis is an important factor. He points out that one of the diagrams consists of thirteen lines and other of twelve and this number is much beyond the memory span for line, unless these lines are grouped and the grouping analysed and remembered as a lesser number of units. For example he say: 'The design to the right, which is composed of twelve lines, may be reduced to four elements: 1) the outer rectangle; 2) the inner rectangle; 3) the off-centre position of the inner rectangle; and 4) the joining of the angles. Of course the child does not ordinarily make an analysis as explicit as this; but analysis of some kind, even though it be unconscious, is necessary to success. * It should be remembered also that the time of exposure in this experiment is much more than time usually allowed in tachistoscopic studies by which memory span is determined.

**'Cyril Burt, Mental and Scholastic Test. Pp. 53.-5*
**Terman, The Measurement of Intelligence, p. 261*

Binet and Burt placed the Greek key pattern to the right and found that failures on this were much more frequent than failures on the truncated pyramid pattern. This is probably due to the fact that the figure on the left hand receives our greater attention, because as a result of our reading habits it is examined first. Terman revered the position and found that the failures were almost equally divided between the two. The more difficult figure was placed to the left and secured greater attention. Our statistics agree with Terman's and show that the failures on the Greek key pattern are almost exactly equal to the failures on the truncated pyramid pattern. A good many children, however, drew the second figure first though it was placed to the right in the original. This is probably because they thought it easier and they could attempt it first.

Binet (1911), Terman and Burt all agree in placing this test in year X. Our statistics also produce the same conclusion.

X, 5. Finding Rhymes. (3 rhymes for each word. ! minute for each part. 2 out of 3 correct).

TEXT AND PROCEDURE

Say,

'you know what a rhyme is, of course, A rhyme is a word that sounds like another word. Two words rhyme if they end in the same sound, understand? Take the two words "hat" and "cat". They sound alike and so they make a rhyme. "Hat", "rat", "cat", "bat" all rhyme with one another. Now, I am going to give you a word, and you will have one minute to find as many words as you can that rhyme with it. The word is "day".

Name all the words you can think of that rhyme with "day".

If the child begins to give words without meaning , say,

'The words you give must have meaning'.

If the child fails with this, give three words that rhyme with 'day' and say,

'All these sound alike with "day", Do you understand?

Proceed further after this, or directly after the child has given correct rhymes with the first, as follows.

'Now you have another minute to name all the words you can think of that rhyme with "mill".

Similarly with the third word 'spring'.

If the child gives words that have no nasal sound, say,

'I want words with a nasal sound'.

Scoring would be done liberally taking as correct proper names and negative terms formed by adding a prefix to the given word, provided they rhyme properly.

Remarks: Binet's procedure of giving this tests, as also that of Burt, seems to be much harder than this one, which is Terman's. Binet gives only one word and requires three rhymes. In the present procedure three trials are given requiring three rhymes for each of which two have to be correct. Again Binet's word is tri-syllabic, and Burt's disyllabic, which are both consequently harder than Terman's monosyllabic words. Our words are disyllabic, but they are easy enough, perhaps easier than monosyllabic words, as monosyllabic words would be harder to give in the Indian languages than disyllabic ones. Besides, the illustration given in Terman's version are more elaborate than Binet's. This seems to be responsible for the wide divergence in the location of the test. Binet(1911) locates it in year XV, Burt in year XII, Terman in year IX, while the present revision places it in year X.

The test is found to be very good test of intelligence and it satisfies very well all the requirement of such. Its correlation with mental age as determined by the scale as a whole is 0.78, and the percentage of passes in the test from year to year show fine rising curve. Psychologically the test requires the child to fix the goal permanently in mind and under the guiding force of this goal to find other words of similar sound by a trial and error method. After a word is found, it must be compared with the given word the memory of which is also firmly retained and the child sees whether the new word satisfies the condition laid down. This is no mean task for the associative powers of the mind. A little remissness in any of these essential requirements results in failure. Backward children either fail to keep the goal fixed in mind, or to remember the given word, or to awaken their powers of memory by which the whole store of vocabulary is searched for similar words by the method of trial and error.

Thus when the word "hill" is given the child makes words like "fill", "rill", "bill", and sees which of these words are in his vocabulary. The mind of a backward child works like that of a normal child in a sleepy condition. The mind is dissociated and cannot hold together all the conditions laid in the problem. One or more of these slip out and hence the solution is incorrect.

X, 6, Reading and Report (8 facts. 2 errors: 40 seconds)

TEXT AND PROCEDURE

See VIII, 6

Remarks: Terman allows 35 seconds for reading, while we have allowed 40 seconds. But Terman's English passage contains 68 syllables, while our Kannada passage contains 134 syllables and the Marathi passage 116 syllables.

X, alternative 1. Vocabulary, Twenty-five words.

TEXT AND PROCEDURE

See IX, alternative test

X, Alternative 2. Giving Month and Year (Both Correct)

TEXT AND PROCEDURE

'What month is it?'
'What year is it?'
The name of the month must be given, and not simply the number, and the year-both according to the Christian calendar.
See VII. Alternative test.

CHAPTER EIGHTEEN

TESTS FOR YEAR XII

XII, 1. Detecting Absurdities (3 out of 5. ½ minute each. After 5 seconds read time.)

TEXT AND PROCEDURE

Secure the child's attention and say

'I am going to read a sentence which has something foolish in it. Some nonsense. I want you to listen carefully and tell me what is foolish about it'.

Then read each of the following twice, as stated above, emphasizing the key words:

(a) A man said " I know a road from my house to the town, which is downhill all the way to the town and downhill all the way back home".

What is foolish about that?

If the child answer is not clear say again,

'I am not sure that I know what you mean. Explain what you mean. Tell me what is foolish in the sentence I read?' Similarly the rest.

b) An engine driver said that the more carriages he had on his train the faster he could go'.
c) Yesterday the police found the body of a girl cut into eighteen pieces. They believed that she killed herself'.
Sometimes children say this is foolish because nobody kills herself. Then say, 'she might have been tried on life and might have thought of killing herself.'
d) There was a railway accident yesterday, but it was not very serious. Only 48 people were killed'.'
e) A bicycle rider being thrown from his bicycle in an accident, struck his head against a stone and was instantly killed. They picked him up and carried him to hospital, and they do not think he will get will again'.

Any sensible answers are correct.

Remarks: Of the five sub-tests in this three are; Binet's, namely, c), (d), and (e). The first two are substituted by Terman for Binet's two sub-tests, which are as follws:

(1) 'I have three brothers-Jack, Tom, and myself'

'What is silly in that?'

(2) ' A man once said: "If I should ever grow desperate and kill myself, I shall not choose a Friday to do it on; for Friday is an unlucky day, and would bring me bad luck'.

'What is foolish in what the man said?'*

These two appear to be slightly harder than Terman's. The difficulties in these tests pointed out by Terman do not exist in Indian languages, but we have preferred to retain Terman's selections. Terman, however, requires four to be correct out of five, while Binet would require only three out of five. The latter procedure is better, and with this procedure we found that the test is suitable for year XII; that is, about 40 percent of children between

10 and 12 years of age and 74 percent of those between 12 and 14 years pass it. With Terman's procedure, that is on the basis of four out of five, the test is found to be hard enough for year XIV in which 53 percent pass the test.

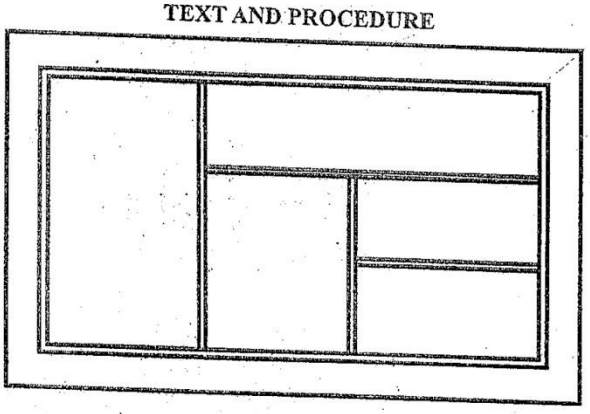
The Test is one of the series, in that it hardly requires any schooling or training and children of this age with common sense or 'mother wit' can easily pass it. It correlates very highly with mental age determined by the test as a whole, the correlation being nearly 0.9. It requires o the part of the child the ability to *visualize* the items given and find out the logical incongruity between the several items. For this of course the child must have acquired a previous knowledge of certain facts, such as the slope of a road and the appreciative mass connected with it obtained by actually walking over such roads; or the experience that a heavier vehicle is harder to pull and moves with less velocity, and so on. The greater the number of items to be reconciled and the less organized the acquisition of previous experience, the more difficult the test. The logical incongruity assumes various forms in the different sub-test. In the first the child is required to know all the properties of a sloping road, such as that walking down it is easier than walking up, water flow down such a road and not up and hence to reason that the same road cannot be downhill both ways.

*'*Cyril Burt, Mental and Scholastic Tests Pp. 56 and 57, which give Binet's tests adapted for London children.*

For the second problem, the child is required to have possessed kinesthetic memories of heavy and light carriages. The child in various ways in his childhood gets experience in pulling toy carts of other loads and preserves these memories in his nervous system connected with the muscles that are used in dragging such load. Such kinesthetic memories now help the child to reason that a heavier train can not move faster than a lighter one, In the third problem, the child has to visualize the girl's body lying cut into eighteen pieces and to bring into proximity with this his knowledge that the girl would die immediately she cut herself into two pieces and therefore could not go on cutting herself into pieces. In the fourth problem, the visualization is also very important but more difficult. The child must create a mental picture of a train that is derailed or some such thing and of forty-eight people those are dead. Then only does the child see the gravity of the situation. In the fifth, also very much same kind of visualization is necessary. The child's attention must be focused on the picture of the cyclist dying on the spot. Then only can he find the incongruity of this statement with those that follow.

XII, 2. Construction Puzzle. (Healy and Fernald. 3times in 5 minutes)

TEXT AND PROCEDURE



The above is a drawing of the dimensions of the form board with the several pieces fitted into it. It can be locally made by a careful carpenter. It is an open rectangular wooden block whose external dimension are 9.5cm X 12 cm X 1.2 cm deep, while inside the excavated hollow measures 7.5 X 9.75 X 0.6 cms deep. The wood pieces that fit into this hollow are 0.6cm in thickness and are five in number. Their dimensions are 7.5 X

3 cms, 6.75 X 2.5 Cm, 2.5 X 3.75cms.

Place the outer frame of the form-board on the table in front of the child with longer side nearest to him*. Put all the smaller pieces in a heap before him in a little further away than the frame. The smaller blocks fitted in their proper position should not be seen by the child. Then say to the child:

'I want you to fit these blocks in this frame as quickly as possible. If you do it rightly they will all fit in and there will be no space left over. Go ahead'.

For a plus he must do it three times in a total time of five minutes.

Remarks; It is very interesting to observe children performing this feat Intelligent children do it with proper understanding of space relation. Backward children cannot project their imagination even slightly, and proceed with the performance till the last move even though, obviously, success by these moves is impossible; or they put the first piece in such a away that a small gap is left at its side, where obviously no other piece could go; or again they try to insert a broad piece in a much narrower space and go on trying to force it in though it is quite clear that it cannot go in. There is always an element of trial and error in the performance of both intelligent and backward children, but in the case of intelligent children there is more *insight* and less *trial and error* while in that of the backward there is more of trial and error and less of insights.

*Terman places it with the shorter side nearest to him. Apparently both are alike in the results.

This test is quite apart from other tests in that it requires no linguistic ability and depends only on the ability of manipulation. It is therefore a very good test as a change. Terman says: 'The test has a lower correlation with intelligence than most of the other tests of the scale'. Our finding however is quite the reverse. It has a very high correlation with mental age as determined by the scale as a whole, namely 0.85 and it shows a steady rise in the percentage of passes from year to year. We have never found a very backward of a very young child succeeding in it by virtue of mere trail and error in the specified time, nor have we found any very intelligent child failing in it. On the contrary it is a test in which children take very great interest, as intelligent *doing* is always better liked by children than mere verbal reproduction or abstract thinking. Anyone who has studied Kohler's experiments on apes will easily see how even simple acts, which appear very simple to us, require very great insight and cannot possible be performed merely by the method of trial and error. *Terman says nothing of doing the performance as quickly as possible but it appears to be better to tell the child what exactly is expected of him, without making him nervous by unnecessary hurrying during the performance itself.

XII, 3. Defining Abstract Words. (3 out of 5. 1 Minute each to start defining)

TEXT AND PROCEDURE

The words are
(1) Pity, (2) Revenge, (3) Charity, (4) Envy, (5) Injustice

Say,
'What is pity?'
'What do we mean by pity?'
If the child answers in terms of the given word itself as 'pity means to pity someone', say,
'Yes, but what does it mean to pity someone?'

Logical definitions are not required. It is enough if the meaning of the word is brought out by any sort of explanation or by examples It is good to analyse what elements are required in the definition in order to score them plus'.*

**See Kohler, Mentality of Apes. pp. 130-33.*

In one instance the chimpanzee, when he was given two sticks which could be telescoped at the ends by fitting the end of one into the hollow of the other tried to reach the bananas by pushing one of these sticks outside the cage with another that he held in his hands.

Pity has the idea of (i) tender feeling or helping attitude, (ii) when another person is in difficulty or is suffering.

Revenge has the idea of (i) another person doing some kind of injury to us and (ii) our answering it with a similar or a greater injury, either in *thought* or *execution.*

Charity has the idea (i) giving something to other or showing kindness to others, (ii) when they are in need, or for *religious* purpose.

Envy has the idea of (i) feeling uneasiness or dissatisfaction, (ii) when others are in an advantageous position, have obtained some sort of materials gain or superior position.

Injustice has the idea (i) one's having done something and (ii) another person returning some sort of punishment or act for it that the first act did not deserve. Sometimes the same person (i) may do or think something and (ii) may deny having done it or thought so.

Remarks: Binet's words are 'kindness' , 'injustice', and 'charity' and requires two correct responses out of three. Terman has five words, 'pity, 'revenge', 'charity', 'envy', 'justice' and requires three correct responses out of five. We have followed Terman except that we have substituted 'injustice' for 'justice'. Terman vernacular word for 'justice' is ' *Nyaya* ". This word unfortunately is colloquially used in sense almost the opposite of justice. It is used in the sense of 'Quarrel'. Hence the word had to be discarded and the opposite word 'injustice, or *'Anyaya'*, had to be used. This word has no ambiguity about it. Binet word 'kindness' has been discarded by many subsequent investigators. The definitions of this word given by children cannot easily be scored, perhaps on account of the word being too easy and incapable of being expressed in simpler terms. "pity', 'revenge', and 'envy' have also been used by other investigations and admit of easy scoring.

The test was located by Binet (1911) in year XII, with a slightly different procedure as stated above, by Terman in year XII, by Burt in year XIV, by Kuhlmann in year XI, and by Bobertag in year XII. There is thus very great uniformity in the location of the test, which speaks well for its value.

A child's ability to define words can be analysed in the first place in to two parts; his conception of the exact connotation of the terms and his power of expression. The former depends on his logical acumen and the latter on the development of his linguistics ability. Both of these are found from various kinds of tests to grow by side with intelligence. When we examine the vocabulary of children we found that they pick up the names of the most common concrete objects first possibly those connected with their own bodies or the names of the most common objects in their environment. Thus they learn to name their mother and father first, then they name their hand, eyes, nose, etc. (III, 2); then other less familiar objects in their surrounding such as cat, dog, and so on. Here again there are two stages; the stage of recognition and the stage of expression. These two stages exist also in our acquisition of new words as we add to our vocabulary throughout life. For is it not within the experience of every person that when he meets new words in his reading he seeks to know their meaning? At this stage the person cannot use the word. Later on as he becomes more familiar with the word the associative bonds between the meaning and the system of labial and vocal muscles and the correlative system of nerves which are concerned with speech becomes so strong that as soon as the person intends to express a certain meaning those words automatically come out of his vocal organs. When a child learns the meaning of a word lie 'cat' or 'tree' he does so after a long time. First he carefully studies the things which are called 'cats'. It is by slow observation of the characteristics that are common to all cars that he comes to recognize cats. He commits several mistakes in the early stages. Perhaps he calls a puppy by the name of a 'cat'. The he is corrected and unconsciously he tries to see what further characteristics he is to add to his idea of a cat in order to exclude dogs from that denomination. Thus slowly by isolating more and more of the abstract

characteristics which are common to larger groups of the same class of objects, the child is able to learn the correct application of terms or their use. Still greater difficulties experienced with abstract terms, such as 'charity' or 'revenge'. Even here the child learns most quickly the names of those abstract terms the ideas of which come earlier within his experience. Thus a child would know the meaning of 'truth' or 'falsehood' much earlier than 'revenge' or 'charity'. The child slowly studies the various acts, which explain the abstract terms and unconsciously beings to generalize the use of the terms. The standardization of such test has brought to light various facts in connection with the development of the abilities of children and as the results of further standardization is published; our knowledge of the growth of children's abilities will become fuller and fuller.

The correlation of the test with mental age as determined by the scale as a whole is 0.88.

XII. 4. Repeating Five digits Reversed (1 out of 3. Read 1 per second)

TEXT AND PROCEDURE

The series for this year is:

3-1-8-7-9; 6-9-4-8-2; 5-2-9-6-1
Procedure same as VII, 3 and IX, 1.

XII, 5. Interpretation of Fables (4 marks). (2 correct of the equivalent in half-credits, each fables correctly interpreted carrying 2 marks. Time limit 2 minutes after final query is put).

TEXT AND PROCEDURE

Say to the child

'you know what a fable is? You have heard fables? A fable as you know is a little story, and is meant to teach us a lesson. Now I am going to read a fable to you. Listen carefully and when I am through I will ask you to tell me what lesson the fable teaches us. Ready, listen;

(a) Hercules and the Wagonor'

'A man was driving along a country road, when the wheels suddenly sank in a deep rut, the man did nothing but look at the wagon and called loudly Hercules to come and help him. Hercules came up, looked at the man, and said, "put your shoulder to the wheel, my man, and whip up your oxen". Then he went away and left the driver'.

'What lesson does that teach us?

If the child simply repeats the story as a great many do, say only again,

'What do we learn from this?'

If the child's answer is not clear, say,

'What do you mean? Or 'Explain"; I don't quite understand what you mean.

Record the answer of the child verbatim and proceed to the next fable.

'Here is another fable. Listen again and tell what lesson this fable teaches us?"

b) The Milkmaid and her plans'

'A milkmaid was carrying her pail of milk on her head, and was thinking to herself; The money for this will

buy four hens; the hens will lay least 100 eggs; the eggs will produce at least 75 chicks; and with the money which the chicks will bring I can buy a new dress to wear instead of the ragged one I have on. At this movement she looked down at herself, trying to think how she would look in her new dress, but as she did so, the pail of milk slipped from her head and dashed upon the ground. Thus all her imaginary schemes perished in a moment'.

Similarly with the rest.

c) The Fox and the Crow'

'A crow, having stolen a bit of meat, perched in a tree and held it in her beak. A fox, seeing her, wished to secure the meat, and spoke to the crow: "How handsome you are and I have heard that the beauty of your voice is equal to that of your form and features. Will you not sing for me, So that I may judge whether this true?" The crow was so pleased that she opened her mount to sing and dropped the meat which the fox immediately ate'.

d) "The Farmer and the Stork"

'A farmer set some traps to catch cranes which had been eating his seed. With them he caught a stork. The stork, which had not really stealing, begged the farmer to spare his life, saying that he was a bird of excellent character, that he was not at all like the cranes and that the farmer should have pity on hm. But farmer said, 'I have caught you with these robbers the cranes, and you have got to die with them".

e) "The Miller, his Son, and the Donkey"

'A Miller and his son were driving their donkey to a neighboring town to sell him. They had not gone far when the child saw them and cried out. "What fools those fellows are to be trudging along on foot when one of them might be riding!' The old man, hearing this, made his son get on the donkey, while he himself walked. Soon they came upon some men. " Look" said one to walk". On hearing this, the Miller made his son get off, and he climbed upon the donkey, himself". Further on they met a company of women, who shouted out. "Why, you lazy old fellow, to ride along so comfortably, while your poor boy thee can hardly keep pace by the side of you!". And so the good-natured Miller took his boy up behind him and both of them rode. As they came to the town a citizen said to them, "why, you cruel fellows! you two are better able to carry the poor little donkey than he is to carry you". "Very well", said the Miller, "we will try", so both of them jumped to the ground. Got some ropes, tied the donkey's legs to a pole, and tried to carry him. But as they crossed bridge the donkey become frightened, kicked loose and fell into the stream'.

For a correct response, which gives the correct moral of the fable in general terms give 2 marks. For responses, which give plausible but not exact answers give half credit. As Terman says, these latter responses are of two kinds: '(1) Interpretations, which are stated in general terms and are fairly plausible, but are not exactly correct, and (2) those which are perfectly correct as to substance, but are not generalized".

An example of the first kind is, 'if we pray to God in the time of difficulty, he suggests a remedy to us'.

An example of the second kind is,' He ought not sit silent calling out loudly for help. He ought to try himself'.

Remarks: This test was firs standardized by Terman in 1911. It is one of the best tests of intelligence as it requires on the part of the child a thorough comprehension of the story and *generalization* of the moral contained in it. The correlation of the test with mental age as determined by the scale as whole is 0.94. Perhaps a little schooling might be a help in showing the child what a moral is and how to draw it. Beyond that, the children are thrown entirely on their own resources. Again and again it was observed that though the children knew the story and perhaps had also read the moral, it did not help them at all. They had to put forth their best efforts anew to draw the moral and several times failed to do so.

The fable has often been used to test the delinquency of children. It is argued that a child who cannot draw the moral from a concrete situation as in the fable, would not be able to draw it from a social situation and hence would not be able to guide his conduct. Thus a test that sifts out dull people also sifts out delinquents. This proposition however is challenged by a good many investigators, who say that dullness and delinquency are by

no means concomitant. However, it seems possible that in a good many cases delinquency is due to the person's not being able to comprehend the gravity of the situation not to imagine the results of his actions, which lack of comprehension is certainly due to his mental retardation. To this extent however any test of intelligence would also be a test of delinquency. But here are also cases where delinquency is due to the environment in which the person grows up and the delinquent is helped by his intelligence to be expert delinquent rather than to cure himself of his delinquency by the width of vision which he gets on account of his intelligence

XII, 6. Interpretation of Pictures. (3 out of 4. Time limit 2 minutes for each picture)

TEXT AND PROCEDURE

The formula in this year is the same as in VI, 5. Use the pictures in the following order: (1) Railway station, (2) Re-caption at home, (3) Motor accident, and (4) Domestic scene.

Say to the boy or girl,

'What is this picture about?'

'What is this picture off?'

Generally the same formula as in VI, 5 prompts a response of the interpretation type from children of this mental age. But, if in some cases the reply is doubtful, return a second time to such pictures with the new formula:

'Explain this picture'

If the reply of the child is not clear, say,

'Explain what you mean'.

Remarks: See remarks under VI, 5 as to what constitutes of a picture. The interpretation of the picture is the meaning of the picture as a whole, generally the one the artist intends. But the interpretation given by the children need not be the same, any plausible and not inconsistent interpretation should be scored plus.

The picture we have selected agree remarkably well with Terman's pictures as to difficulty of descriptions or interpretation. Terman places the description of his pictures in year VII while we put it (for our pictures) in year VI. Terman places interpretation of his pictures in year XII, and we also placed ours in the same year. The selection of pictures is therefore a very important affair; some pictures may admit of interpretation at as high as stage as the adult one, while others may admit of the same as early as the tenth year. Hence results the great divergence in the location of the test. The form of the questions is no less important. Spontaneous interpretations such as those given by our first formula would place the test a little higher than those obtained after specific questions such as 'Explain this picture'. 'What is the meaning of this picture?' Binet locates the test in Year XV and Terman and Burt both in year XII. The correlation of the test with mental age is 0.84.

XII, Alternative 1. Vocabulary, thirty words (both Kannada & Marathi)

TEXT AND PROCEDURE

Same as in IX. Alternative test

XII. Alternative 2. Repeating Six digits. (1 out of 3. Read one per second)

TEXT AND PROCEDURE

The series for this year is:
3-7-4-8-5-9; 5-2-1-7-4-6; 4-7-1-5-8-2.

Procedure same as in the 'digit' tests of previous years.

XII. Alternative. 3. Comprehension. Fourth degree (2 out of 3 repeat questions after 5 seconds. Time ½ minutes)

TEXT AND PROCEDURE

a) What ought you to say when someone asks your opinion about a person you don't know very well?'
b) What ought you to do before beginning something very important?"
c) Why should we judge a person more by his actions than by his words?'

Procedure as in VIII, 3.

Remarks: These are the three most difficult of the Binet comprehension questions. They were separated by Terman out of the whole lot and located in year X. We found them difficult enough for year XII, even a little too difficult here. Burt places them in year XI. The correlation of the test with mental age as determined by the scale as a whole is 0.85.

CHAPTER NINETEEN

TESTS FOR YEAR XIV

XIV, 1. Induction test: Finding a rule. (Gets rule by sixth folding. Unfold and show the paper to the child after he gives his answer to each cutting)

TEXT AND PROCEDURE

Cut out small pieces from old news paper or blank sheets about 15 cm. X 20 cm. in size. Take one of these and say to the child.

'now watch what I do'

Then fold it once and in the middle of the folded edge cut out a small triangular notch with a pair of scissors. Then say,

'How many holes will there be in the paper when it is unfolded?' After the answer, whatever it may be, unfold the paper and hold it up for the subject's inspection.

Then take another piece, fold it once as before and say,

'Now, when we folded in this way and tore out a piece, you remember it made one hole in the paper. This time we will give the paper another fold. Now many holes will there be? With the third piece of paper say,

'When we folded it this way there was one hole and when we folded it this way there were two holes. Now, I am folding it again. How many holes will be it this time when I unfold it?'

Recapitulate every time, as for example with the sixth fold as follows.

'When we folded it this way there was one hole. When we folded it again there were two, when folded it again there were four, when we folded it again there were eight, When we folded it once again there were sixteen: Now tell me how many holes there will be if we fold it once more?

After the answer unfold the paper in the child's presence as usual. Take cake that in the formula the words 'once', twice', etc., as 'when we folded it once', when we folded it twice, etc., are not used as they may help and sometimes misguide the children. Leave them free to get their own rule. After the child's final correct answer to the sixth fold say,

'How did you get it? ' This question should not be asked before the sixth fold, though the previous answer may be correct.

For a pass the rule must be correctly stated.

Remarks: This test was suggested by Binet's 'paper-cutting' test and was first standardized by Terman in 1914. It is fairly good test of intelligence with a correlation of 0.61 with mental age as determined by the scale as a whole. School instruction has no effect on it. It is also a test that arouses to a high degree interest and curiosity of children. The only disadvantage in it is that it is likely to be communicated to others. It is more easily remembered than many of the other tests by the subjects that have undergone it, no doubt on account of its concrete nature and the interest that it arouses in them.

This test forces the child to use the trial and error method in an intelligent manner. The trial and error is not simply a blind trial with any numbers whatsoever but it seeks to discover a rule. The most common type of reasoning used by children in this test is: 'one'; 'two'; 'three'. He finds this incorrect and probably reasons out that the correct number four is obtained by omitting one number in the middle: thus he is led to say 'six' next and

again finds this incorrect. Intelligence children generally find the rule here: namely the next number is obtained by doubling the previous one:. but some children still go on and say 'twelve' next. After this, normal children of this age usually get the rule but there are still some who give 'twenty four' as the next number.

Very few children try the method of visualizing the folds and creases and reasoning out the number of holes by the deductive method. This deductive method is therefore not the natural method with children.

Terman places the test in year XIV. Our statistics find it a little too difficult for year XII, and easy enough for year XIV, in which year we have placed it.

XIV. 2. Dissected sentences. (2 out of 3. 1 minute each)

TEXT AND PROCEDURE

Use the cards with the following disarranged sentences on it:

(a) To asked paper my teacher correct I MY
(b) A defends dog good his bravely master
(c) For the started an we country early at hour.

Place the printed cards before the child, leaving the first sentence open and covering the remaining with a cardboard or a sheet of paper. Say to him,

'Here is a sentence that has the words all mixed up so that they don't make any sense. If the words were changed around in the right order they would make a good sentence. Look carefully and see if you can tell me how the sentence ought to read'.

If within one minute the child cannot solve the problem, simply read out the correct order to him pointing to each word as you read.

After the child gives the rearranged sentence always read out to him the sentences as he has given it and ask him finally,

'Is that right?'

If the child misunderstands and adds new words, which is, however, very rare, say to him, 'No outside words are to be added', and give him a fresh trial.

Otherwise no supplementary question of any kind or explanations are allowed. Then give the second and third sentence, each time covering the rest with a sheet of paper.

Remarks: The sentences are arranged in order of difficulty as we found them. In translating the sentences into the Indian languages we have retained the original sense as for as possible and have obtained the same number of words in each sentence as in Terman's version. Burt's translation however, differs from Terman's in the arrangement of words and in one case in the number of words also , for example, the first sentence contains eight words according to Terman's , Burt and our versions.

Our arrangements of words is very nearly the same as Terman's, but Burt's arrangements differs. The second sentence contains seven words according to Terman's, Burt's and our version, and our arrangement of words is very nearly the same as Terman's, but Burt's arrangement differs. The third sentence contains nine words according to Terman's version and ours, but only eight words according to Burt. In this sentence, however, in our version the sense had to be changed a little thus adding some new ideas in order to keep the number of words the same. Consequently the arrangement of words also is a little different from Terman's. Burt uses the word 'morning' for Terman's 'early hour'. Burt's arrangements or words is also different as in the

other sentences. The test is located in year XII by Binet(1911). Terman, Burt and Bobertag. Our statistics find it a little too hard for year XII, and so we have placed it in year XIV, as does also Saffiotti.

In assessing the answers any arrangement of words that makes good sense and is in common use is correct. In Indian languages the cases of nouns are made by inflecting the words themselves. Thus by merely looking at the nouns it is possible to pick out the subject. But children generally do not look to the grammatical forms in rearranging the words. The *meaning* is the governing principal. They concentrate on making good sense; for example, in the Marathi version of the first sentence the words *'mazya'* and *'maza'* are used indiscriminately with *'shikshakana'* and *'pareekshecha'*. We score both ways plus.

All workers agree in saying that this is one of the best tests of the series. Its correlation with mental age as determined by the scale as a whole is 0.88. The percentage of passes steadily increases with age. It is easy to give and easy to score: it does not take much time; it interests the child. It is of the type of 'completion' tests and it requires the child to rearrange the words so as to complete the sense. Certain key words serve as a clue and lay down the skeleton of the sentence. This skeleton is to be given flesh and blood n\by rearranging the words properly.

In the procedure we have laid down that the sentences as given by the child should invariably be read out to him. This is quite necessary as the exercise is oral and even intelligent children sometimes may forget what they have said. When we read it a second time we are sure that the child has done his best and not made a mistake merely out of chance.

XIV, 3. Arithmetical Reasoning (2 out of 3. 1 minute each)

TEXT AND PROCEDURE

Use the card with the following arithmetical problems printed on it.

a) If two pebbles cost 5 paise, how many pebbles can you buy for 50 paise?
b) If a man's salary is Rs. 20 a week and he spends Rs, 14 a week, how long will it take him to save Rs. 300?
c) At 15 rupees a yard, how much will 7 feet of cloth cost?

Place the card before the child and hide from view all except the first problem. Point to the first problem and say,

'Read this aloud for me'

Help him if he cannot read some of the words. After he finishes say,

'Find me an answer to this'

The subject must not use paper and pencil and the answer must be given in one minute.

For a plus, two of the three answers must be correct. Correct procedure without a correct answer is of no use. No second attempt is allowed. However, if the child corrects himself spontaneously he should be allowed to do so, provided the time limit is not exceeded.

Remarks: This is the second test in which simple arithmetical problems are used as test of intelligence, the first being IX, 2. Making change. At first sight these problems appear to be too simple for the age and many teachers whose opinions were sought agreed but when they are actually standardized this is the result. In IX, 2 the processes involved are simply addition and subtraction. In this year they are mostly multiplication and division. The figures to be manipulated are small and the problems are simple and straightforward. Such processes are often met with daily life by children and by adults who have not had much schooling. In school, children of these ages learn much more complicated processes. It is not, therefore, the processes themselves

but their application that tax the intelligence. Backward children use the process of multiplication where simple addition ought to be used and so on. Hence these tests serve as very good tests of intelligence. The present test shows a steady increase in the percentage of passes as age increases and has a correlation of 0.77 with mental age as determined by the scale as a whole.

The test was standardized by Terman. He selected the problems from Bonser's *Study of the Reasoning Ability of Children in the Fourth, Fifth, and Sixth School Grades*. Our location of the test agrees with Terman's.

XIV, 4.3 Problems of Enclosed Boxes (3 out of 4. ½ minute for each problem)

TEXT AND PROCEDURE

The problems are,

One large box containing
a) 2 smaller, 1 inside of each
b 2 smaller, 2 inside of each
c) 3 smaller, 3 inside of each, and
d) 4 smaller, 4 inside of each.

Show the child a small card board box about 8cm, by 5 cm, in height without opening the lid and say.

'You see this box; it has two smaller boxes inside of it, and each one of the smaller boxes contains a little tiny box. How many boxes are there altogether, counting the big one? First the large box, then two smaller ones, and each of the smaller ones contains a little tiny box'. The second time, say,

'Suppose now this box has two smaller boxes inside and each of the smaller boxes contains two tiny boxes, how many altogether? Remember, first the large box, then two smaller boxes, and each smaller one contains two tiny boxes'.

Similarly, the third time say,

'Three smaller boxes, each of which contains three tiny boxes'.

The fourth time say,

'Four smaller boxes, each containing four tiny boxes'.

The problem is given orally and solved by the child also orally, that is, without the aid of paper and pencil.

Remarks: This test was devised and standardized by Terman. He places it in year XVI, but our statistics show that it is easy enough for year XIV; even a good many fairly intelligent children between 10 and 12 years of age pass the test. It correlates fairly well with mental age as determined by the scale as a whole, the correlation being 0.61.

For success in it the test requires either visual or tactual imagery, or both, of a high order. It is doubtful how far verbal imagery alone would solve the problems. Mentally backward children are usable to build mental structures of a very complicated nature; the child has to comprehend the instructions and as they are being given the mental pictures is being added to and held firm until it is completed. In this respect the test differs a good deal from the other test in the scale and deserves a place in it.

XIV. 5. Giving Similarities-three things(3 out of 5. 1 minute each)

TEXT AND PROCEDURE

The following are the sets of words for this age:
a) Wool, Cotton, Silk
b) Snake, Cow, Sparrow
c) Book, Teacher, News paper
d) Scissors, Paisa, Piece of wire
e) Rose, Potato, tree

See IX, 3.
Give full formula:

'I am going to name three things, etc'. in the beginning
With the rest say,
'In what way are.....alike?'

Sometimes the child says they are not alike and does not want to make an attempt. They say,

'These three are alike. Tell me in what way they are alike'. Many children express similarity by saying.

'They are all useful'. Then say,
'In what way are they all useful'?

Any kind of real likeness is enough.

Remarks: This test is similar to IX, 3. (Which See) except that similarity between three things required instead of two. The best way of giving the similarity is to put them in the higher class by logically. But such a direct and rigid classification need not be expected from children of this age. Indirect way of classification or any method of showing resemblance is enough.

Terman sets no time limit to this test. But we are of the opinion that a time limit is a great help to this test because if for nothing else it helps the examiner to know when to proceed to the next item, and useless to wait for more than one minute for the answer. Instead of 'knife-blade, penny, piece of wire', we have used 'scissors, paisa, piece of wire'. The rendering of 'knife-blade' into the Indian language is clumsy; the use of 'knife-blade', giving only a part of an object, is undesirable. Again we have 'wool, cotton , silk' instead of Terman's 'wool, cotton, leather' as leather is not used for as many purpose in India as in west even including its use for shoes.

The test shows a steady rise in the percentage of passes from year to year and it has a high correlation with mental age. The correlation being 0.88.

XIV, 6. Ball and Field, Superior Plan.

TEXT AND PROCEDURE

Same as in VIII, Alternative 2, Which may please be seen for discussion. For help in scoring sees sample card of answers.

XIV. Alternative. Vocabulary. Forty words from vernacular lists.

TEXT AND PROCEDURE

Same as in IX. Alternative Test.

CHAPTER TWENTY

TESTS FOR YEAR XVI (AVERAGE ADULT)

XVI.1 Interpretation of fables (8 marks)

TEXT AND PROCEDURE

Same as in XII.5

XVI.2 Reversing hands of clock (2 out of 3 Error not must exceed 3 minutes. Time limit 1 minute)

TEXT AND PROCEDURE

Before giving the test see that there is no watch or clock with in the child's sight. Say 'suppose it is 6.220'o'clock, i.e. 22 minutes after 6: can you see in your mind where the large hand would be and where the small hand would be'.

'Now, suppose that the two hands were to change places so that the large hand takes the place of the small hand and the small hand takes the place of the large hand. What time would it then be?

Similarly with 11-10 and 2-46.

The range of answers for the first problem is 4-30 to 4-35. For the second 1-53 to 1-58 for the third 9-10 to 9-15.

Generally the child of this age knows how to read clocks and watches. If there by doubt, test actually by making read your watch accurately. If he happens not to know, drop the test and substitute one of the alternative test.

Remarks: The answer is generally given by children in half a minute. Terman allowed 3-2 minutes, we have allowed 1 minute and this is enough. The position 8-10 is very clumsy. If it were made 8-13 the answer would be 2-41 and not 1-42 as with 8-10. The difficulty and nature of the test would, therefore, be changed a little, and so we have changed it to 11-10, the answer to which is 1-56 and nature of the test is retained as it was, at the same time removing the clumsiness of 8-10.

The test is given by Binet in his 1905 series though vomited in those of 1908 and 1911 as the series was not an age scale, the age where this test fits in not indicated. Terman located it in year XIV. Godard and Kuhimann used only 2 of the sub tests, the (a) and (c) vomiting (b) the probably on accounts of its clumsiness as we have shown. They want both problems to correct and located it in year XV. Our statistics show that the test is a little too difficult for year XIV, and so we have placed it in year XVI.

This test is very valuable problem in constructive imagination of the visual type. It requires the child, first of all, to create a mental picture of the given position of time and then with the help of it to construct another picture with the hands changed. Both pictures do not appear to remain in attentive consciousness at one and the same time. After the first is found and the second is being constructed, the is momentarily wiped of but again reconstructed several times for comparison, attention oscillating from one to the other as many times as its is necessary to solve the problem. This is no mean feat of mental gymnastics. The test correlates high with mental age as determined by the whole scale, the correlation being 0.82. The percentages of passes rises gradually from year to year but is not very high even in the highest age. A little less then 40 percent of the children between 12-14 years of age pass this test, about 51 percent of those between 14-16 and 59 percent of those above 16 years of age.

XVI.3 Giving differences between Patil and Kulkarni. (2 out of 4 in any for.... 1 writing work, .2 Settlement of disputes or supervision of villages, .3 Power and .4 Appointment and lemurs)

(In large cities and else where if children are found to be unfamiliar with Patil and Kulkarni, this test may be omitted and one of the alternative ones substituted)

TEXT AND PROCEDURE

'You know a village Patil and you know a village Kulkarni. Now give any real main difference between them that you know of'.

If the child gives only one or two differences or some trivial differences and stops, say, ' any differences will do. Give me any differences that you know of. For success two of the following four in any form and even though mixed together are sufficient:

Village Patil	Village Kulkarni
1 Has no writing or account work	1. Has writing and account work
2 Has settlement of disputes or supervision of village	2 Has no such work
3 Is a superior officer(power)	3. Is subordinate to the Patil
4. Does not require much literacy and the post is generally Hereditary.	4. Has, as a rule, to pass a literacy test and the post not generally hereditary

There may be small differences in these items on account of local circumstances and these should be taken into account in scoring.

Remarks: The Binet test of 'giving three differences between a president and a king' is unsuitable in India. Indian children had no knowledge of a president and only indirectly of a king. We had, therefore, to substitute for it a similar test but suitable for Indian conditions. Two such were tried, : (1) 'the differences between a collector and the President of a municipality, and (2) the differences between the village Patil and village Kulkarni'. Of these, the later seemed to better as most children come into contact with the village Patil and village Kulkarni and a much smaller number with the collector and the president of the municipality. The first would give a slight advantage to town children, while the second would give the advantage to village children. As most of test in the scales give a slight advantage to town children, it was thought a slight advantage to village children in this test was desirable. The test does not depend much on schooling. There is lesson on the Patil and the Kulkarni in one of the primary reading books, but that lesson is read by children at an age when they are not expected to know the full implications of the statements made in it. The children were, therefore, found to be thrown entirely on their own resources and began to find the differences from what they knew of Patil and Kulkarni. The test is found to be fairly good test of intelligence, the correlation between it and mental age as determined by the entire scale being 0.58. There are very few children of this age in large cities who do not know about a Patil and a Kulakarni. If one is found the test may dropped and one of the alternative tests substituted in its place.

Psychologically the test is similar to other tests for finding differences and similarities, because finding similarities presupposes knowledge of dissimilarities. Compare, for example, VII.6: IX,3: XIV, 5: XIX,3.

Since the test was standardized some years ago conditions in India have changed immensely. India has become a democratic country and the post of President of the country has been instituted. It would be interesting to standardize the original test of Binet 'giving three differences between a President and a King' now. The posts of village Patil and Village Kulkarni have gone out of vogue in the changed political situation and the test would not be suitable in the changed circumstances.

XVI. 4. Repeating Six digits Reversed. (1 out of 3. Read 1 per second)

TEXT AND PROCEDURE

Use the series:

4-7-1-9-52: 5-8-3-2-9-4: 7-5-2-6-3-8:

Procedure same as in similar previous tests. See VII, 3; IX, 1: XII, 4.
Remarks : In 'digit' tests a lower series should always be tried before a higher series is given.

XVI, 5. Problem. Questions. (2 out of 3. Query on (a) and (b). Read a second time after 5 seconds. Time Limit 1 minute to begin reply.)

TEXT AND PROCEDURE

Say,

'Listen carefully, and see if you can understand what I read'. Read the following passages twice over as indicated above one after the other slowly and emphasizing the key-words so as to make the meaning clear.

(a) A man who was walking in the woods outside his town stopped suddenly, very much frightened, and then ran to the nearest policeman, saying that he had just seen hanging from the limb of a tree a.....a what?

(b) 'My neighbor has been having strange visitor. First a doctor came to his house, then a lawyer, then a clergyman(or priest). What do you think happened there?'

(c) A villager who had come to town for the first time in his life saw a man riding along a street. As the man rode by, the villager said: "This man is lazy, he walks sitting down". What was tat man riding on that caused the villager to say "He walks sitting down"?

Examples of satisfactory and Unsatisfactory answers:

(a) Satisfactory: A man who hanged himself: suicide.
Unsatisfactory. A snake: A ghost: a nest of Birds: a thief was running away after committing a theft, hanged himself on the branch of tree: a monkey: adventitious roots of a banyan tree: a bat: the tail of a monkey: a cat: a bag: a honeycomb: a tiger: a bundle of cloths hung in the dark: some wonderful thing: a fallen trunk of a tree: a thief about to jump down: a bird: a fruit: Mangoes.

(b) Satisfactory: Illness resulting in death- doctor to give medicine, lawyer to settle money-matters, priest to perform religious rites. Somebody is dead –doctor to see if he is dead. Lawyer to settle disputes about division of property, and priest to perform funeral rites. Somebody is ill and the doctor comes: then he is about to die and lawyer comes to make a will: finally he dies and the priest comes to perform the funeral rites. Murder-doctor for post-mortem, lawyer to note down facts of the case, and priest for funeral rites. Some accident – doctor to examine the dead man, lawyer in order to conduct case, and the priest for funeral rites.

Somebody is poisoned – doctor for medical examination, lawyer to note down the law-points and priest for the funeral rites. Somebody recovers after serious illness – doctor to give medicine, lawyer to take the patient's signature and the priest for test after recovery. Somebody is ill and then dies-doctor for treatment, lawyer for management of property, and priest for purification of the household (praya-schitta) and for receiving charity.

Unsatisfactory: Doctor for illness, pleader for some business, priest for some ceremony. Doctor for illness-they might have come for a feast. Murder-no explanation. Doctor for illness, lawyer for quarrel, and priest for marriage.

© Satisfactory/Bicycle.
Unsatisfactory: A horse, A cart, a motor car: a palanquin: a tonga: on foot: carrying another person. On the ground: a bullock: a small animal; a lame man was seated on the ground and propelling himself along; a monkey; a calf.

Remarks: The first two problems are Binet's the third is added by Terman. In the first problem Binet's uses the name of a forecast near the town where the subject is being examined. Terman omits this. Binet's form is better as it helps the child to visualize the events and makes the problem more concrete and definite. Binet required the answers to both problems correct: while Terman requires two out of three to be correct. Thus Binet's form of test is harder than Terman's. Binet located this test in year XV of his 1911 scale. Burt with the identical form of test in year XIII, and Terman with the amended procedure in year XIV. Our statistics requiring two out of three problems correct would place the test in year XVI. The test is very fairly good test though many children hazard an answer by mere guessing. The correlation of the test with mental ages as determined by the entire scale is 0.80.

The test requires the child to visualize elements and discover a situation where all these elements will fit in. It is thus psychologically a form of the completion test of the abstract type. It is interesting how many children answers reveal the strong power of perceptual associations, which children are powerless to inhibit. and are unable to find out a proper solution by reasoning. Thus in the first problem a great many answers give 'a bat'. Children have seen these bats hanging from the branches of trees and as soon as they try to visualize anything hanging from the branch of a tree, the previous association formed brings up the image of a bat. Similarly in the third problem when we translated 'a white man' by 'a European' in the Indian language the answer invariably was ' a motor car' because Indian children have usually seen Europeans 'riding' in a motor-car, and when the words 'European' and 'riding' are given, the association brings in 'a motor-car'. After a little trial we were obliged on this account to change the phrase ' a European' into simple 'a man'. These instances exemplify the great power of perceptual images to occupy the mind and inhibit thinking, which is necessary in finding out a situation in which the given elements will fit. The fixity of the imagery is thus sign of low intelligence. Higher intelligence can construct and destroy imagery very rapidly. In good many cases a plausible answer is first given and then some sort of explanation is manufactured, particularly in (b).

Binet and Terman did not time the problem, nor did they lay down many times the problems should be re-read. The greater the number of times the passages are read, the greater the chances of backward subjects finding an answer. Similarly we cannot by indefinitely waiting for a reply, and so we have for the sake of uniformity thought fit to time the test and lay down the procedure accurately.

If the test is scored on the basis of two out of two(both Binet's i.e. the first two) after Binet it is harder still and would be suitable for the Superior Adult Group according to our statistics.

XVI.6. Repeating Seven Digits(1 out of 2. Read 1 per second)

TEXT AND PROCEDURE

This series is : 2-1-8-3-4-7-9: 9-7-2-8-4-6-5:

Procedure sane as in previous 'digit' tests.

Remarks: If the test is scored on the basis of 1 out of 3, it is slightly easier and is suitable for year XIV. Terman has the same digit, namely 3, twice in the first series and 7 twice in the second series. This sometimes disconcerts the child and diverts his attention. He sometimes interrupts and says the digits occurs a second time, and so the test is spoiled. We have changed this.

XVI. Alternatives 1. Vocabulary. Forty Five Words.

TEXT AND PROCEDURE

Same as IX, Alternative test.

XVI. Alternative 2. Free association. Sixty words in three minutes

Same as in IX, 6. **TEXT AND PROCEDURE**

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CHAPTER TWENTY ONE

TESTS FOR YEAR XIX (SUPERIOR ADULT)

XIX. 1. Using a code: (Vernacular code to be used. 2. Errors -6 minutes. Inverting numbers or writing one of the numbers or writing one of the numbers of a letter count half error. But if all the numbers are inverted and the message is otherwise correct no errors are to be counted).

TEXT AND PROCEDURE

Place before the subject the card on which the code is printed and say: 'say this secret code. You will see from this that you can write any syllable in the same way. Now examine the method of writing syllable carefully. To illustrate, first the word "go to school"(in Kannada) are written herein ordinary script and same again in the secret code. The first syllable (in the Kannada script) is the seventh of the class of consonants beginning with ..... Therefore, we write the first consonant.....and the number seven beneath it. Thus.....means....Further, the first syllable.....is the second in order in the series of the syllables..... therefore we write the number 2 above. Thus.....means the first syllable .....similarly, the last syllable, etc,

"Now I will give half a minute. In that time you must study this carefully without speaking a word. Then, I will take away the card and ask you to write something for me in this secret code. Now look at this"

After the half minute say:

Now you must write something for me. Remember how you are to write it. When you have to write a syllable look at the class of consonants to which it belongs. Then write down the first of these and *below* that put the serial (belonging to the series) number of the required consonant in that class; then write the number of required syllables in the series of the syllable *above* the letter". Then remove the card from the sight of the subject and say,

"now write the word.....in this code".

Remarks. The English code test was devised by Healy and Fernald and appears in their *Test for practical mental classification.* Published in 'Psychological Review monograph' (1911). It was standardized and located in year XV by Dr. Godard and then by Terman in his Standford revision and located in year XVI(Average adult). As the Indian script are quite different a new code test had to be devised for this script.

The result of this test, therefore, cannot be compared with those of the English code since there is very little in common between them except the name. The code appears to be simple at first sight but when actually put to the test it is found to be too difficult for the adult group but is suitable for the Superior adult group. Psychologically it requires the subject to put into use the highest conceptual processes of analysis and synthesis. The power of complementing verbal statement is also a great factor . The directions are rather long, but the instinct of curiosity keeps up the interest of the subject.

In the direction we have stated that if the subject inverts all the digits 'No' error is to be counted. The reason is that it is natural for you not to remember without much drilling which of to alternative is correct, just as children find it very hard to remember 'right' and 'left' without drilling. Hence if the subject follows on of the alternative to the logical end, no error is to be counted.

The consonant in the Indian languages are classified has 'gutterals', 'dental', 'labials', etc. These are called the *Vargas* (classes). There are certain other which are grouped together in a heterogeneous mass and are called the *Avargiyas,* the un-classed group, but for simplicity in giving direction we have called this group the average which is really an inaccuracy, but excusable for the sake of convenience.

The test shows a high correlation with mental age as determined by the scale has a whole, namely 0.89. More

han 36% of children between 14-16 year of age pass it and nearly 40% of adults i.e. subjects above 16 years of ge.

XIX. 2. Ingenuity Test (2 out of 3.5 minutes each. Directions may be repeated. If the subjects fails on the, experimenter explains it).

TEXT AND PROCEDURE

Say to the subject,

(a) A mother sent her boy to the river to get seven pints of water. She gave him a 3-pint vessel and a 5-pint vessel. Show me how the boy can measure out exactly 7 pints without guessing at the amount. Begin by filling he 5-pint vessel'.

The answer must be found orally. The subject must explain the complete solution. Tell him no marking on the vessel with chalk or by any other method is allowed. If the subject fails to give the solution within 5 minutes xplain this problem and proceed to the next.

(b) Same as above, except that 5 and 7 are given to get 8.

Begin by filling the 5-pint vessel.'

(c) Same as (a), except that 4 and 9 are given to get 7.

Begin by filling the 4-pint vessel

Remarks: The test was devised and standardized by Terman. It is rather a hard test though at first sight it does not look so. Terman says: 'Only an insignificant number pass the test below the mental age of 14 years and about two-thirds of Average Adult fail. Of our superior adults somewhat more than 75% succeed.' Our superior show that it is passed by 14% of children between 12 and 14 years of age. 32.5% of children between 4 and 16 years and 36% of those above 16 years of age. The correlation of the test with mental age is 0.65.

Psychologically the test requires a very high power of visual imagery. The vessels must be imagined and he operations of pouring water, adding, subtracting, etc. must be done with these imaginary vessels. There is lso an element of trial and error process. The subject tries various processes and finds out which process leads o the required result.

The weakness of the test is that it is most likely to be communicated to other children. The problems can be easily remembered and being of a novel nature or something of the type of 'catch' questions that children take pleasure in asking others. When this is found to be the caws the examiner should not use the test.

XIX. 3. Differences between en Abstract Terms. (3 out of 4. Wait 1 minute for reply)

TEXT AND PROCEDURE

What is the difference between
(a) Laziness and idleness?
(b) Pride and Vanity?
(c) Poverty and misery?
(d) Dishonour and disrepute?

If the subject simply gives the definition of the two words separately without pointing out the essential ifference between the two terms, say, 'Yes but I want you to tell me the difference between .....and .....tell me only the difference'.

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Remarks: The selection of the proper pairs of words is very important here. There must be similarity of meaning and yet an essential difference between the two terms. Binet's pairs in his 1908 scale were:

(i) Pleasure and happiness
(ii) Evolution and revolution
(iii) Event and advent
(iv) Poverty and misery
(v) Pride and Pretension.

He cuts these down to three pairs in his 1911 scale:

(i) Idleness and laziness
(ii) Event and advent
(iii) Evolution and revolution

Burt, who otherwise follows Binet very closely, uses the first, second and fourth of the Binet 1908 pairs.

In selecting the pairs of words mere translation is of no use, because in the different language the subtle differences in such pairs of words vary to a very large extant. Sometimes it is very difficult to find exactly parallel pairs. Further the difficulty of the pairs may vary much in different languages. Terman uses the following four pairs:

(i) Laziness and idleness
(ii) Evolution and Revolution
(iii) Poverty and Misery
(iv) Character and reputation

We have used four pairs in the Indian Languages which are translated into English as nearly as possible as indicated above in the English version of our tests but not exactly. The fourth pair we tried at first was 'honor and reputation'. This raised some difficulties and we changed it later on into the contrary terms 'dishonor and disrepute'. In giving differences any really clear contrast should be accepted. Giving the meaning of the terms only without bringing out the contrast is of no use. The test appears in year XIII of Binet's 1908 scale and un the adult group of his 1911 scale, in the forms we have indicated above. Terman has it in year XVI (Average Adult group). Burt locates it in year XV. We have found it difficult enough for the Superior Adult group.

This test taken along with XII, 3 'defining abstract words', and demonstrates clearly how our languages ability evolves from year to year. While 'defining abstract words' is found easy enough for year XII, finding differences between abstract terms' is difficult even for the Adult group. It is suitable only for the Superior Adult group. It is passed by 26% of children between 14 and 16 years of age and by 41% of the Adult group, i.e. those above 16 years of age. It correlates well with mental age, the correlation being 0.78.

XIX.4. Binet's Paper-cutting test. (If given must come before XIV. 1. The creases must be shown in pencil and the diamond shaped holes in the middle of the two halves of one of these creases 2 minutes to complete drawing.

TEXT AND PROCEDURE

Take a piece of paper as stated in XIV.

Say,

'Watch carefully what I do. See, I fold the paper this way (folding it once over in the middle) ' then I fold it this way' (folding it again in the middle, but at right angles to the first fold) Now, I will cut out a notch right here'. So saying cut out a triangle notch in the middle of the single edge where there are no separate leaves.

Then leave this folded paper with the notch exposed to view, but pressed flat against the table. Give the

subject a pencil and another piece of paper similar to the one used and say:
'Take this piece of paper and make a drawing to show how the other sheet of paper would look if it were unfolded. Draw lines to show the creases in the paper and show what results from the cutting'.

If the paper is not square but little longer one way, the holes may be either on the longer creases or on the shorter. But their number and position in then middle of the two halves of the creases must be correct. The exact shape and size of the holes are not taken into account. The child must not fold the paper given to him before drawing.

Remarks: As Terman remarks, this test requires the power of constructive visual imagination, The child has successively to construct visual images of the piece of paper, the first folding and the creases so formed, then the second fold, the creases so formed and the holes made by the cutting. This is a highly valuable test for higher ages, for which it is very difficult to get suitable tests. The correlation of the test with mental age is 0.63. Nearly 28 percent of children between 14 and 16 pass it and only 32 percent of those above 16.

Binet located this test in year XIII in his 1908 scale and in the adult group in his 1911 series. Terman locates it in the Superior Adult group and Burt in year XV.

XIX. 5. Repeating Thirty Syllables. (1 out of 2 Absolutely correct)

TEXT AND PROCEDURE

The following are the renderings of the Marathi Passage to be given for repetition in this year

(a) Rama likes very much to go to the grandmother, because she tells him funny stories.
(b) Yesterday I saw a pretty little dog in the street. It had curly brown hair.

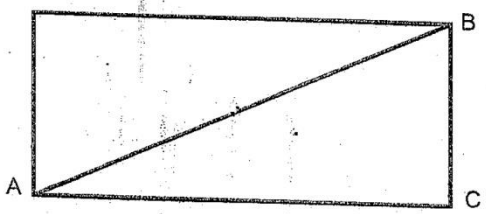
Procedure, as in previous repetition of syllables tests. Note that in this year one of the two passages must be absolutely correct.

Remarks: Binet's corresponding test is of 26 syllables and he located it in year XV in his 1911 scale. Burt located it with the same number of syllables in year XIV. Terman uses 28 syllables and places it in Year XIV or Adult group. Binet and Burt allow only one trial. While Terman gives two trials. We have used 30 syllables with two trials and find it difficult enough for the Superior Adult group. The test is passed by 25.5 percent of children between 14 and 16 years of age and by 30.5 percent of those above 16 years, that is, the Adult group.

The correlation of the test with mental ages is 0.68. But when all the tests of repeating syllables are correlated together with mental age the correlation is 0.89.

XIX. 6. Reversing Triangle in Imagination. Karnataka form. (Time to complete diagram 2 minutes)

TEXT AND PROCEDURE



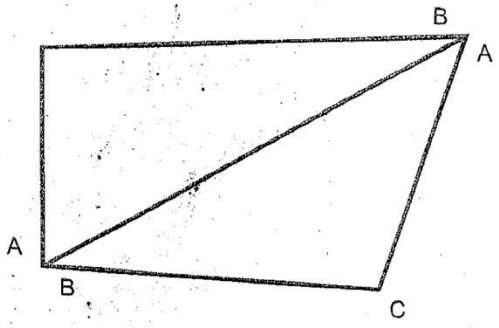
Place a stiff white card 15cm by 10cm.along the diagonal AB as in the 'divided card test' (VI, 3), before the child, with that cut edges joined together as shown in the diagram above, the side AC being towards the child(the letters A, B,. C, are not to be shown). Then say,

'look carefully at the lower piece of this card (pointing to it). Suppose I now turn it over (showing the turning movement with the hand without removing the piece) and place this corner of lower piece (pointing to B of the lower piece) touching this corner of the upper piece (pointing to A of upper piece); and this corner of lower piece (pointing to A of lower piece) touching this corner of upper piece (pointing to B of the upper piece). What would it all look like? Now I am going top take the piece away (remove at this point the lower triangle only form View). Imagine it placed as I told you: and draw its shape in the proper position. Begin by drawing the shape of a top triangle'.

The finished diagram as drawn by the subject should be as shown below.

The essential points to be remembered in scoring the diagram are – (1) the figure should be roughly symmetrical about the diagonal: (2) the ends A, B, and B, A should be congruent: (3) the angle 'C' should be roughly a right angle.

Note that(2) and (3) are included in a way in (1).



Remarks: This test was suggested while giving Binet's test of reversing triangle in imagination, which was found to be too hard even for the Adult group. Even this test was found to be too difficult for the Adult group. Statistics showed that the present test was suitable for the superior adult group and Binet's original test was hard enough was very superior Adult group. The present test is passed by 28 percent of adults and Binet's test by 4 percent of them. The correlation of the test with mental age is 0.55.

XII Alternative. Vocabulary, 55 words,

TEXT AND PROCEDURE

Same as in previous Vocabulary test

Remarks: With increase in mental age not only does the quantity of the vocabulary, i.e. number of words known, increase, but also its quantity. The definitions of words given by this class are generally accurate, even abstract words being defined accurately.

CHAPTER TWENTY TWO

TESTS FOR YEAR XXII
(VERY SUPERIOR ADULT)

XXII, 1. Comprehension of physical relations. (2 out of 3. May read a second time if necessary)

TEXT AND PROCEDURE

(a) Problem regarding the path of cannon ball.

Draw on apiece of white paper ; long horizontal line from end to end , towards the bottom of the paper. Above it a distance of about six centimeters and at the left end of the paper form the subject's side draw a short line about three centimeters long parallel to the first line.

Say to the subject, 'suppose this line is a level piece of ground and this short line is a gun which is placed horizontally parallel to the ground and is fired across this perfectly level piece of ground. Now suppose that this canon is fired off and that the ball comes to the ground at this point here (making a small mark at the farther end of the line which represents the level ground). Take this pencil and draw a line which will show what path the cannon ball will take from the time it leaves the mouth of the cannon till if strikes the found.

As Terman says the answers may be classified as follows:

1) A straight line is drawn joining the mouth of the canon and the point where the ball strikes the ground.

2) A straight line is drawn from the mouth of the canon to a point almost directly above the point where the ball strikes and then line drops suddenly to the goal.

3) The line rises gradually from the mouth of the cannon and then descends down to the goal, thus making something like a parabolic curve.

4) The lines goes horizontally from the mouth of the cannon for some distance and then descends gradually to the goal.

Of these the fourth type of answer is the only one that is satisfactory. It need not, however, be mathematically accurate.

(b) Problem about the weight of a fish in water

Say to the subject: 'You know, of course, that water holds up a fish that is placed in it. Well, here is a problem. Suppose we have a bucket which is partly full of water. I place the bucket on the scales and find that with the water in it weighs exactly 20 kilograms. Then we put a 2 kilogram fish into the bucket of water. Now, what will be the weight of the whole thing?

Even though the answer may be correct ask further.

The response is correct when the subject says (1) The weight is 22 kilograms: (2) persists with this answer after the second query, and (3) gives some sort of plausible explanation like the following: The weight is there any way; the weight of water and the weight of fish both press down the scale-pan.

(c) Difficult of hitting a distant mark. Say:

'You know, do you not, what it means when they say a gun "carries 100 meters"? It means that the bullet goes that far before it drops an appreciable amount.

'Now, suppose a man is shooting at a mark about the size of a petroleum tin. His rifle carries perfectly more than 100 meters. With such a gun is it any harder to hit the mark at 100 meters than it is at 50 meters

If the subject answers in the affirmative ask him to explain. The correct explanation is that a small deviation

from the correct direction at the start becomes larger and larger as the distance is increased. The mathematical relation of this increase of deviation to distance is not required. It is enough if the subject gives only the general principle. The subject will have to be questioned a little until he understands what exactly is required.

Remarks: One feels rather uneasy in giving this test. It is found too hard for the average adult group and even a little too hard for the superior adult group. We have, however retained it in the very Superior Adult as it is so difficult to get good tests for the highest intelligence. It is passed only by about 7% of the subjects above 14 year of age and by 10% of the adult level. Our statistics in this respects are very disappointing as compared with Terman's.

Terman says: 'At the 14 year level less than 50% pass. Of average adults from 60 to 75% are successful. Few Superior adults fail.' The correlation of the test with mental age is 0.75.

The test seems to depend a good deal on acquired information. Two of the three problems are concerned with shooting. Very free Indian Children are conversant with any kind of shooting apparatus, even toy apparatus, with the results that they have no idea of the mechanism involved or of the path of the projectile. Of course they do a good deal of stone throwing but their experiences with regard to the path of the stone are very vague, and the test is consequently found to be very difficult for them. Psychologically, no doubt, it does requires a good power of imagery but for the proper form of imagery of be roused the children must have had previous experience of the situations.

XXII, 2. Repeating Eight Digits (1 out of 3. Read one per second)

TEXT AND PROCEDURE

Give the digits with a uniform speed and without any rhyme or sing-song manner.
The series is: 7-2-5-3-4-8-9-6; 4-9-8-5-3-7-6-2; 8-3-7-9-5-4-2-6

Remarks: The test is passed by 13.3 percent of subjects between 14 and 16 years of age and by 7.2% of those above 16 years, which shows that memory for digits falls off after the sixteenth year. The lower percentage of passes in the adult level of this as well as of the three following tests seems to support the view that immediate memory fails off after the sixteenth year. (see footnote of p. 97)

XXII, 3. Repeating thought of passage heard (Read the passage only once in about ½ minute)

TEXT AND PROCEDURE

Say to the subject,

'I am going to read once only a little selection of about 6 or 8 lines. When I am through I will ask you to repeat as much of it as you can. It does not make any difference whether you remember the exact words or not, but you must listen carefully so that you can tell me everything it says'.

The subject's report should be taken down verbatim.

After securing attention the following passage should be read slowly - in about half a minute- and with expression, laying stress on the key-words.

'Many opinions have been given on the value of life. Some call it good, others call it bad. It would be more nearly correct to say that it is mediocre, for on the one hand our happiness is never as great as we should like, and one the other hand our misfortunes are never as great as our enemies would wish for us. It is this mediocrity of life which prevents it from being radically unjust'.

The subjects generally try their best to give the substance of the passage but if they stop in the middle encourage them to say as much as they can remember, in whatever words they like.

The arguments in the passage should be carefully reproduced and should contain the following three ideas: (1) Life is neither good nor bad (but medium); for (2) It (or our happiness) is not so good (or so great) as we wish it, nor (3) so bad as our enemies (or others) wish.*

Remarks: This is one of the most valuable tests in the series. It requires the subjects to comprehend the logical argument of a difficult passage, as it is being read, and to reproduce it. The selection is Hervieu's reflection on life and is excellent one. This test differs from those of repeating syllables in that, in this test, the sense of the passage is more important than the words in which it is clothed; while in the other the actual syllables are all important. Of course even in the latter the sense or meaning is a great help in retaining the syllables, since the child would be able to repeat far fewer nonsense syllables than syllables having sense. It differs from the test of reading and report in that in the latter the child him-self reads and his ability to comprehend a passage that is received through visual impression of tests, while in the former his ability to comprehend a passage received through auditory impression is tested. But from this we cannot say that comprehension of a passage received through auditory impression is more difficult than comprehension of a passage received through visual impression. For such a comprehension the passages must be of the same difficulty, but it is far from so, in the case of the present passage and the passage in IX, 5. The passage in IX, 5. is descriptive and concrete, while the present passage is reflective and abstract.

Binet assigns the test to the Adult group; Burt assigns it to XVI. Terman gives one more passage and requires one of the responses to be correct. His second passage contains a good many scientific terms and cannot be easily translated into the Indian languages. We have retained only one passage, namely the original one used by Binet, as this was found to answer the purpose very well. Terman assigns it to Superior adult group, while we think it hard enough for the Very Superior Adult group.

Abstract thinking and the ability to form rapid imagery are no doubt signs of great intelligence. Lower intelligence requires concrete objects and concrete illustrations as an to thinking. Tthis is a great lesson in education. In the earlier stages the teacher provided the child with models and diagrams, from which the child learns new things; but as the imaginative power of the child is developed, the use of such concrete objects is lessened. In later stages such model are used only when explaining the most intricate machinery.

The test is passed by 15.8% of subjects between 14 and 16 years of age and by 13.3% of those above 16. The correlation of the test with mental age is 0.82.

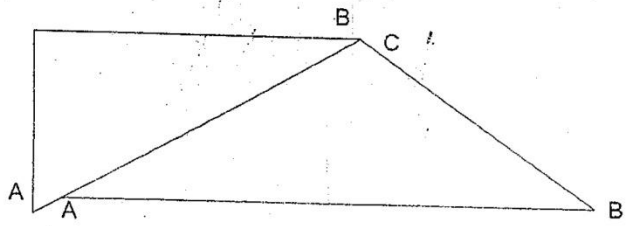
XXII, 4. Reversing Triangle is imagination. Binet's form (Time limit 2 minutes to complete the diagram).

TEXT AND PROCEDURE

Procedure similar to XIX. 6

After placing the divided card before the subject exactly as stated in XIX.6 say,
'Look carefully at the lower piece of this card. Suppose I turn it over and lay this edge (pointing to line A-C (see diagram given) without moving the card along this edge (pointing to A-B of the upper triangle) and suppose that this corner(pointing to 'C') is placed just at this point (pointing to B): What would it all look like? Now I am going to take the piece away. (Remove the lower triangle from view). Imagine it placed as I told you, and draw its shape in the proper position. Begin by drawing the shape of the top triangle'.

The finished diagram as drawn by the subject should be as follows(without the letter)



The essential points to be remembered in scoring the diagram are: 1). 'A' 'C' 'B' must be roughly a right angle. (2). 'A' 'C' must be shorter than 'A' 'B' and (3) 'B' 'C' must be the shortest of the three lines.*

Remarks: This test is one of the hardest tests in the whole series. It does require a little geometrical knowledge, the differentiation of a right angle from an acute angle, for example. The test is found surprisingly enough to be too difficult even for adults. The subject is required to form an image of the figure of the triangle, lift it in imagination, and apply it is directed. This is certainly helped by a proper knowledge of the size of the angles. It, would be of interest to see what percentage of unschooled adults would pass the test as compared with adults who have had a course of schooling. Our present statistics show that the test is passed by 9.2 percent of children between 14 and 16 years of age and by 3.3 percent of adults, i.e. those above 16 years of age. The correlation of the test with mental age is 0.83. The test is located in the Ault group by Binet (1911) and in year XV by Burt. It is dropped by Terman as an unsuitable test.

**Cyril Burt, Mental and Scholastic Tests, P.67.*

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Appendix 4

Conners' Parent Rating Scale–Revised (S)

by C. Keith Conners, Ph.D.

Child's ID: _____ **Gender:** M F (Circle One)

Birthdate: ___/___/___ (Month / Day / Year) **Age:** _____ **School Grade:** _____

Parent's ID: _____ **Today's Date:** ___/___/___ (Month / Day / Year)

Instructions: Below are a number of common problems that children have. Please rate each item according to your child's behavior in the last month. For each item, ask yourself, "How much of a problem has this been in the last month?", and circle the best answer for each one. If none, not at all, seldom, or very infrequently, you would circle 0. If very much true, or it occurs very often or frequently, you would circle 3. You would circle 1 or 2 for ratings in between. Please respond to each item.

	NOT TRUE AT ALL (Never, Seldom)	JUST A LITTLE TRUE (Occasionally)	PRETTY MUCH TRUE (Often, Quite a Bit)	VERY MUCH TRUE (Very Often, Very Frequent)
1. Inattentive, easily distracted	0	1	2	3
2. Angry and resentful	0	1	2	3
3. Difficulty doing or completing homework	0	1	2	3
4. Is always "on the go" or acts as if driven by a motor	0	1	2	3
5. Short attention span	0	1	2	3
6. Argues with adults	0	1	2	3
7. Fidgets with hands or feet or squirms in seat	0	1	2	3
8. Fails to complete assignments	0	1	2	3
9. Hard to control in malls or while grocery shopping	0	1	2	3
10. Messy or disorganized at home or school	0	1	2	3
11. Loses temper	0	1	2	3
12. Needs close supervision to get through assignments	0	1	2	3
13. Only attends if it is something he/she is very interested in	0	1	2	3
14. Runs about or climbs excessively in situations where it is inappropriate	0	1	2	3
15. Distractibility or attention span a problem	0	1	2	3
16. Irritable	0	1	2	3
17. Avoids, expresses reluctance about, or has difficulties engaging in tasks that require sustained mental effort (such as schoolwork or homework)	0	1	2	3
18. Restless in the "squirmy" sense	0	1	2	3
19. Gets distracted when given instructions to do something	0	1	2	3
20. Actively defies or refuses to comply with adults' requests	0	1	2	3
21. Has trouble concentrating in class	0	1	2	3
22. Has difficulty waiting in lines or awaiting turn in games or group situations	0	1	2	3
23. Leaves seat in classroom or in other situations in which remaining seated is expected	0	1	2	3
24. Deliberately does things that annoy other people	0	1	2	3
25. Does not follow through on instructions and fails to finish schoolwork, chores or duties in the workplace (not due to oppositional behavior or failure to understand instructions)	0	1	2	3
26. Has difficulty playing or engaging in leisure activities quietly	0	1	2	3
27. Easily frustrated in efforts	0	1	2	3

Appendix 5

Child Behaviour Checklist for Ages 6-18

Please print. Be sure to answer all items.

Below is a list of items that describe children and youths. For each item that describes your child ***now or within the past 6 months***, please circle the ***2*** if the item is ***very true or often true*** of your child. Circle the ***1*** if the item is ***somewhat or sometimes true*** of your child. If the item is ***not true*** of your child, circle the ***0***. Please answer all items as well as you can, even if some do not seem to apply to your child.

0 = Not True (as far as you know) **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

0 1 2 1. Acts too young for his/her age
0 1 2 2. Drinks alcohol without parents' approval (describe):
_____
0 1 2 3. Argues a lot
0 1 2 4. Fails to finish things he/she starts
0 1 2 5. There is very little he/she enjoys
0 1 2 6. Bowel movements outside toilet
0 1 2 7. Bragging, boasting
0 1 2 8. Can't concentrate, can't pay attention for long
0 1 2 9. Can't get his/her mind off certain thoughts; obsessions (describe):
_____
0 1 2 10. Can't sit still, restless, or hyperactive
0 1 2 11. Clings to adults or too dependent
0 1 2 12. Complains of loneliness
0 1 2 13. Confused or seems to be in a fog
0 1 2 14. Cries a lot
0 1 2 15. Cruel to animals
0 1 2 16. Cruelty, bullying, or meanness to others
0 1 2 17. Daydreams or gets lost in his/her thoughts
0 1 2 18. Deliberately harms self or attempts suicide
0 1 2 19. Demands a lot of attention
0 1 2 20. Destroys his/her own things
0 1 2 21. Destroys things belonging to his/her family or others
0 1 2 22. Disobedient at home
0 1 2 23. Disobedient at school
0 1 2 24. Doesn't eat well
0 1 2 25. Doesn't get along with other kids
0 1 2 26. Doesn't seem to feel guilty after misbehaving
0 1 2 27. Easily jealous
0 1 2 28. Breaks rules at home, school, or elsewhere
0 1 2 29. Fears certain animals, situations, or places, other than school (describe):
_____
0 1 2 30. Fears going to school
0 1 2 31. Fears he/she might think or do something bad
0 1 2 32. Feels he/she has to be perfect
0 1 2 33. Feels or complains that no one loves him/her
0 1 2 34. Feels others are out to get him/her
0 1 2 35. Feels worthless or inferior
0 1 2 36. Gets hurt a lot, accident-prone
0 1 2 37. Gets in many fights
0 1 2 38. Gets teased a lot
0 1 2 39. Hangs around with others who get in trouble
0 1 2 40. Hears sound or voices that aren't there (describe):
_____
0 1 2 41. Impulsive or acts without thinking
0 1 2 42. Would rather be alone than with others
0 1 2 43. Lying or cheating
0 1 2 44. Bites fingernails
0 1 2 45. Nervous, highstrung, or tense
0 1 2 46. Nervous movements or twitching (describe):
_____
0 1 2 47. Nightmares
0 1 2 48. Not liked by other kids
0 1 2 49. Constipated, doesn't move bowels
0 1 2 50. Too fearful or anxious
0 1 2 51. Feels dizzy or lightheaded
0 1 2 52. Feels too guilty
0 1 2 53. Overeating
0 1 2 54. Overtired without good reason
0 1 2 55. Overweight
56. Physical problems ***without know medical cause:***
0 1 2 a. Aches or pains (***not*** stomach or headaches)
0 1 2 b. Headaches
0 1 2 c. Nausea, feels sick
0 1 2 d. Problems with eyes (***not*** if corrected by glasses) (describe):
0 1 2 e. Rashes or other skin problems
0 1 2 f. Stomachaches
0 1 2 g. Vomiting, throwing up
0 1 2 h. Other (describe):
_____

Please print. Be sure to answer all items.

0 = Not True (as far as you know) **1 = Somewhat or Sometimes True** **2 = Very True or Often True**

0 1 2 57. Physically attacks people
0 1 2 58. Picks nose, skin, or other parts of body (describe):

_____

0 1 2 59. Plays with own sex parts in public
0 1 2 60. Plays with own sex parts too much
0 1 2 61. Poor school work
0 1 2 62. Poorly coordinated or clumsy
0 1 2 63. Prefers being with older kids
0 1 2 64. Prefers being with younger kids
0 1 2 65. Refuses to talk
0 1 2 66. Repeats certain acts over and over; compulsions (describe):

_____

0 1 2 67. Runs away from home
0 1 2 68. Screams a lot
0 1 2 69. Secretive, keeps things to self
0 1 2 70. Sees things that aren't there (describe):

_____

0 1 2 71. Self-conscious or easily embarrassed
0 1 2 72. Sets fires
0 1 2 73. Sexual problems (describe):

_____

0 1 2 74. Showing off or clowning
0 1 2 75. Too shy or timid
0 1 2 76. Sleeps less than most kids
0 1 2 77. Sleeps more than most kids during day and/or night (describe):):

_____

0 1 2 78. Inattentive or easily distracted
0 1 2 79. Speech problem (describe):

_____

0 1 2 80. Stares blankly
0 1 2 81. Steals at home
0 1 2 82. Steals outside the home
0 1 2 83. Stores up too many things he/she doesn't need (describe):

_____

0 1 2 84. Strange behavior (describe):

_____

0 1 2 85. Strange ideas (describe):

_____

0 1 2 86. Stubborn, sullen, or irritable
0 1 2 87. Sudden changes in mood or feelings
0 1 2 88. Sulks a lot
0 1 2 89. Suspicious
0 1 2 90. Swearing or obscene language
0 1 2 91. Talks about killing self
0 1 2 92. Talks or walks in sleep (describe):

_____

0 1 2 93. Talks too much
0 1 2 94. Teases a lot
0 1 2 95. Temper tantrums or hot temper
0 1 2 96. Thinks about sex too much
0 1 2 97. Threatens people
0 1 2 98. Thumb-sucking
0 1 2 99. Smokes, chews, or sniffs tobacco
0 1 2 100. Trouble sleeping (describe):

_____

0 1 2 101. Truancy, skips school
0 1 2 102. Underactive, slow moving, or lacks energy
0 1 2 103. Unhappy, sad, or depressed
0 1 2 104. Unusually loud
0 1 2 105. Uses drugs for nonmedical purposes (***don't*** include alcohol or tobacco) (describe):

_____

0 1 2 106. Vandalism
0 1 2 107. Wets self during the day
0 1 2 108. Wets the bed
0 1 2 109. Whining
0 1 2 110. Wishes to be of opposite sex
0 1 2 111. Withdrawn, doesn't get involved with others
0 1 2 112. Worries
113. Please write in any problems your child has that were not listed above:

0 1 2 _____
0 1 2 _____
0 1 2 _____

Appendix 6

GENERAL HEALTH QUESTIONNAIRE - 28
(David Goldberg and Hiller, 1979)

Please read this carefully.
We should like to know if you had any medical complaints, and how your health has been in general, over the past few weeks. Please answer ALL the questions on the following pages simply by underlining the answer, which you think most nearly, applies to you. Remember that we want to know about present and recent complaints, not those that you had in the past. It is important that you try to answer ALL the questions.
Thank you very much for your co-operation.

HAVE YOU RECENTLY:

A1-been felling perfectly well and in good health?	Better than usual	Same as usual	Worse than usual	Much worse than usual
A2-been feeling in need of a good tonic?	Not at all	No more than usual	Rather more than usual	Much more than usual
A3-been feeling run down and out of sorts?	Not at all	No more than usual	Rather more than usual	Much more than usual
A4-felt that you are ill?	Not at all	No more than usual	Rather more than usual	Much more than usual
A5-been getting any pains in your head?	Not at all	No more than usual	Rather more than usual	Much more than usual
A6-been getting a feeling of Tightness or pressure in your head	Not at all	No more than usual	Rather more than usual	Much more than usual
A7-been having hot or cold spells?	Not at all	No more than usual	Rather more than usual	Much more than usual
B1-lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
B2-had difficulty in staying asleep once you are off?	Not at all	No more than usual	Rather more than usual	Much more than usual
B3-felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
B4-been getting edgy and bad-tempered?	Not at all	No more than usual	Rather more than usual	Much more than usual
B5-been getting scared or panicky for no good	Not at all	No more than usual	Rather more than	Much more than usual

reason?			usual	
B6-found everything getting on top of you?	Not at all	No more than usual	Rather more than usual	Much more than usual
B7-been feeling nervous and strung-up all the time?	Not at all	No more than usual	Rather more than usual	Much more than usual
C1-been managing to keep yourself busy and occupied?	More so than usual	Same as usual	Rather less than usual	Much less than usual
C2-been taking longer over the things you do?	Quicker than usual	Same as usual	Longer than usual	Much longer than usual
C3-felt on the whole you were doing things well?	Better than usual	About the same	Less well than usual	Much less well
C4-been satisfied with the way you've carried out your task?	More satisfied	About same as usual	Less satisfied than usual	Much less satisfied
C5-felt that you are playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
C6-felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less capable
C7-been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much more than usual
D1-been thinking of yourself as a worthless person?	Not at all	No more than usual	Rather more than usual	Much more than usual
D2-felt that life is entirely hopeless?	Not at all	No more than usual	Rather more than usual	Much more than usual
D3-felt that life isn't worth living?	Not at all	No more than usual	Rather more than usual	Much more than usual
D4-thought of the possibility that you might make away with yourself?	Definitely not	I don't think so	Has crossed my mind	Definitely have
D5-found at times you couldn't do anything because your nerves were too bad?	Not at all	No more than usual	Rather more than usual	Much more than usual
D6-found yourself wishing you were dead and away from it all?	Not at all	No more than usual	Rather more than usual	Much more than usual
D7-found that the ideas of taking your own life kept coming into your mind?	Definitely not	I don't think so	Has crossed my mind	Definitely has

A	B	C	D	TOTAL

Appendix 7

The Parenting Stress Index - Standard Form

The Parenting Stress Index - Standard Form

The PSI is a parent self-report, 101-item questionnaire, designed to identify potentially dysfunctional parent-child systems. The PSI focuses intervention into high stress areas and predicts children's future psychosocial adjustment. There exists a substantial body of published research linking PSI scores to observed parent and child behaviors and to child's attachment style and social skills.

The Parenting Stress Index - Short Form

The PSI-SF consists of 36 items derived from the PSI which comprise three scales: Parental Distress, Difficult Child Characteristics, and Dysfunctional Parent-Child Interaction. It is recommended that all PSI-SF users to consider using the regular PSI given that the savings of 10-15 minutes is not worth the loss of the information from the PSI subscales, each of which have established validity. Given the range of the variables measured by the regular PSI's subscales, treatment effects are more likely to be identified and treatment planning is facilitated.

PSI Scales - Total Score	
Child Domain	**Parent Domain**
Distractibility/Hyperactivity	Competence
Adaptability	Social Isolation
Reinforces Parent	Attachment to Child
Demandingness	Health
Mood	Role Restriction
Acceptability	Depression
	Spouse

Citation: Abidin, R.R. (1995). Parenting Stress Index, Third Edition: Professional Manual. Odessa, FL: Psychological Assessment Resources, Inc. The most recent is 4th edition: Parenting Stress Index (PSI-4), Fourth Edition By Richard R. Abidin, PhD - See more at: http://www.wpspublish.com/store/p/2925/parenting-stress-index-psi-4-fourth-edition#sthash.M8v0Uzw9.dpuf The **Parenting Stress Index** (PSI-4), Fourth Edition, published by WPS for clinicians, educators and researchers, can be purchased online. **Author** Abidin, Richard R. **Purpose** "Designed to evaluate the magnitude of stress in the parent-child system."

Publication

Date 1983-2012.
Publisher Psychological Assessment Resources, Inc.
Publisher address
Psychological Assessment Resources, Inc., 16204 N. Florida Avenue, Lutz, FL 33549-8119; Telephone:
800-331-8378; FAX: 800-727-9329; E-mail: custsupp@parinc.com; Web: http://www4.parinc.com
Publisher URL
http://www4.parinc.com
Reviewed In J. F. Carlson, K. F. Geisinger, & J. L. Jonson (Eds.), The nineteenth mental measurements yearbook.

WE USED THE PARENTING STRESS INDEX (PSI) STANDARD FORM: ANSWERED BY THE PARENTS

CHILD DOMAINS

WE USED THE PARENTING STRESS INDEX (PSI) STANDARD FORM: ANSWERED BY THE PARENTS
CHILD DOMAINS

Item	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
First: Distraction/hyperactivity 1 when my child asks for something, he usually continues in his attempts to get what he wants. 2. My son (daughter) is active to the extent of overwhelming me. 3. It seems my son (daughter) is easily to get distracted. 4. If I compare my son (daughter) to most of the other kids, I find that he had difficulty focusing his attention. 5. My son (daughter) remains mostly for more than ten minutes playing with a game. 6. My son (daughter) spends a lot of time away from home more than I expected.					
7- My son (daughter) activity is much greater than I expected. 8- My son (daughter) shows upset and excessive resistance when wearing his clothes or taking a bath. 9-My son (daughter) is easily distractible away from thing he is doing.					
Second: Reinforces parent (support of the child to his parents) 10. It is rare that my son (daughter) do things to introduce pleasure or satisfaction for me. 11. I feel most of the time that my son (daughter) loves me and wants to be close to me.					

13. Smiling of my son (daughter) to me is much less than I expected. 14. When I do something for my son (daughter), I feel that my efforts are not appreciated.					
Third: Mood 15. My son (daughter)'s screaming and raves: • much less than I expected					
• Less than I expected • much as I was expecting • much more than I expected • This seems to be mostly a case going on with him 16. Which of the following describes your child's best: • mostly he/she likes to play with me • In some cases, he/she likes to play with me • usually does not like to play with me • Mostly does not like to play with me 17. It's apparent that my child's screaming and fussing is more often than most children 18. When playing, my child often do not cheer or laugh 19. My son (daughter) usually wake up from sleep in a bad mood 20. I feel that my son (my daughter) moody and it is easy to become anxious.					
Fourth: Adaptability 21. It seems my son (daughter) is a little bit different from what I expected and this is something that bothers me sometimes 22. It seems that my son (daughter) to forget what they have learned in the past in some areas and bouncing back to do special things for children younger than their age. 23. I think that my son (daughter) doesn't learn quickly unlike most children					

24 - I think that my son (daughter) is not smiling very much unlike most children 25. My son (daughter) does some things that bother me much 26. My son (daughter) does not have the ability to work as much as I had expected					
Fifth: Acceptability 27. My son (daughter) faces many difficulties in adapting to the changes that occur around him/her more than most kids 28-When something my son (daughter) doesn't like happens, he/she has a very strong reaction. 29. The presence of my son (daughter) with other people is usually a big problem 30. My son (daughter) became annoyed for the simplest things 31. My son (daughter) easily notice high sounds and bright lights, and respond to them more than necessary 32. To build a system in sleep or eating for my son (daughter) was much harder than I expected 33. My son (daughter) usually avoids playing with a new toy for some time before he/she starts to play with it. 34. It is difficult for my son (daughter) to get used to the new things and it takes him a long time. 35. My son (daughter) seems not satisfied when he meets with people who are strangers 36. When my son (daughter) is in a state of tension or distress, it is: 1. Easy to calm him down 2 - difficult to calm him down more than I expected 3. It is very difficult to calm him down 4. does not help anything I'm doing in calm him down 37. I have found that when I ask my son (daughter) to do something or					

stop doing something, this demand is: 1. more difficult than I expected 2-difficult somehow than I expected 3-difficult as I was expecting 4-a little bit easier than I expected 5-much easier than I expected **Sixth: Demandingness (The frequent claim and urgency)** 38. Your son (daughter) does some things or behaviors that bother you. Think carefully and count the number of these things or behaviors, such as that he wasted his time or hesitate to his duties, disobey orders or directions, compulsive activity, nuisance or interrupts others while talking or working, quarrel, moaning and sobbing, etc. You have to write the number of these stuff or behavior as follows: 1. 1 to 3 2. From 4 to 5 3. From 6 to 7 4. From 8 to 9 5. More than 10 39. When my son (daughter) screams, it usually takes: 1. less than two minutes. 2. From 2 to less than 5 minutes. 3. From 5 to less than 10 minutes. 4. from 10 to less than 15 minutes. 5. more than 15 minutes. 40. My son (daughter) does some things or acts that cause a lot of distress and anxiety for me. 41. My son (daughter) is exposed tp more health problems than I expected. 42. The older my son (daughter) and the more he/she becomes					

dependent on him/herself, I find myself more concerned that he/she will be exposed to harm or fall in a problem. 43. My son (daughter) became a trouble for me more than I expected. 44. It seems that care of my son (daughter) is much more difficult than most children. 45. My son (daughter) is always attached to me. 46. My son (daughter) imposes demands on me more than most of other children.					

PARENTAL DOMAINS

Item	Strongly agree	Agree	Not sure	Disagree	Strongly disagree
First: Sense of Competence 47. When my son (daughter) was diagnosed with this disease, I was in doubt about my ability to perform my duties and my obligations as a mother (or father) 48. When I became a father or (mother), this was more difficult than I thought. 49. I feel my competence when I take care of my son (daughter) 50. I can not make decisions without help 51. I has lot of problems related to raising children more than I expected 52. I feel my success most of the time when I try to make my son do something or stop doing something 53. Since I got my last son, I found myself unable to give good care for him as I thought to do, I Need Help 54-mostly I feel I cannot treat things properly 55. When given careful consideration to myself as a mother (or father), I think:					

1. I can tackle anything can happen 2. I can tackle most things sound way to some extent 3. Although in some cases, I have my doubts in my ability to tackle most things, but I find that I can tackle them without any problems 4. I have some doubts about my ability to handle stuff 5. I do not think at all that I treat things properly. 56. I feel: 1. A Very good mother (father) 2. Better than most mothers (fathers) 3.Like most mothers (fathers) 4.I face some difficulties or problems related to my role as a mother (father) 5.I'm not that good in doing my role as a mother (father) 57. What is the highest level of education you and your spouse had reached: For the mothers: 1. Primary Education 2. Elementary education 3. Secondary education or secondary technical or medium certificate 4. University education 5. After Graduate University 58. What is the highest level of education you and your spouse had reached: For the fathers: 1. Primary Education 2. Elementary education 3. Secondary education or secondary technical certificate or medium certificate 4. University education					

5. After Graduate University 59. I cannot make decisions without help 60. I have a lot of problems related to raising children more than I expected. **Second: Attachment: The emotional bond to the child** 61. To what extent is it easy for you to understand what your child wants or needs 1. Very easy 2. Easy 3. Somewhat difficult 4. Very difficult **1.** I cannot usually understand or I identify what problem he is facing 62. It takes long time from parents to have the feelings of warmth and tenderness towards their children 63. I expected to have feelings of warmth and tenderness towards my son more than I have and this is annoying me 64. Sometimes my son do things bothering me because I feel as if I'm just a way or instrument for him 65 - When I was young, I did not feel comfortable at all that I gave birth to a child with chronic disease or to take care of him 66. My son wants and needs me more than what he wants or needs from other people. 67. The number of what I now have from children is so much. **2. Third: (Role of Restricts): restrictions of parental role** 68. I spend most of my life in that joyful work for my son. **3.** 69. I find myself gave a lot of my life to meet the needs of my children more than I expected. 70. I feel like I impasse because of my responsibilities as a mother					

(father). 71. I often feel that he necessary needs for my son (daughter) controls my life. 72. Since I gave birth to my son (daughter), I became unable to do new and diverse things. 73. Since my child was diagnosed with this disease, I feel in most cases that I am unable to work on the things which I like to do. 74. It is difficult to find a place in our house where I can be alone with myself. **4. Fourth: Depression** 75. When I look at myself as a mother (father), I mostly have a sense of guilt or feeling bad about myself. 76. I'm not happy by what I bought for myself from clothes in the recent period. 77. When my son acts improperly or overly induces a state of agitation or chaos, I feel my responsibility for that. As if I did not do anything properly. 78. I feel with every time my son does something wrong, that in fact it was my fault. 79. I often feel guilty about the way I feel about my son. 80. There are a few things that make me feel worried about my life. 81. I felt sadness and depression more than I expected after knowing my son's disease. 82. I feel guilty when I get angry of my son and that's what bothers me 83. One month after my son was diagnosed with the disease, I noticed that I felt sad and depressed more than I expected. **Fifth: Relation of Spouse (the relationship between the spouses)**					

84. I've noticed that since my son was diagnosed with the disease, my husband (wife) does not give me help as much as I expected. 85. As a sequel of my son's diseases problems happened in my relationship with my husband (wife) more than I expected 86. Since my son was diagnosed with the disease, I and my husband (wife) became no longer share together in doing many things. 87. Since my son was diagnosed with the disease, I and my husband (wife) became no longer spend a lot of time with each other in contrary to what I expected. 88. I lost my interest in sex since my son s was diagnosed with the disease. 89. It seems that the problems with relatives have been rising after we got our diseased child. 90. The presence of children had increased the cost of living more than I expected. **Sixth: Social Isolation** 91. I feel lonely and without friends. 92. When I go to a party, I usually expect that I will not rejoice. 93. I no longer care of people as I used to do. 94. I feel that people who are in my age do not like my company in particular. 95. When I have problems with the care of my son I can resort to some people for help or advice. 96-since I had children, the chance to see my friends and to make new friends declined. **Seventh: parent health (the health of the parents):** 97. During the past six months, my health was more affected than usual or I had more aches and pains than I have under normal					

circumstances. 98. I feel that my health is good most of the time. 99. The existence of a child I have, led to changes in my sleep system. 100. I feel that my health is much better than before. 101. Since my son was diagnosed with the disease: 1. I became significantly ill. 2. I never felt that my health is good. 3. I didn't notice any changes in my health.					

Scoring system: the scale consisted of 101 items each item is rated on a 5- point Likert scale format, ranged from strongly agree (5) to strongly disagree (1) . The scores were summarized up and converted into percentage, then the score, were converted into qualitative variables through categorization based on a cut off point of 60%. **A-** scoring of parenting stress regarding either of the child's domains or parent's domains was considered high with scores ≥ 60% and low with scores < 60%. **B-**Total scoring of parenting stress regrading both domains together was considered high with scores ≥ 60% and low with scores < 60%

Appendix 8

Alabama Parenting Questionnaire

Instrument: Alabama Parenting Questionnaire (APQ)

Scale/Subscale Name: Alabama Parenting Questionnaire (APQ)

Developers: Frick, P. J.

Year: 1991

Target Audience(s): Parents of children 6-18 and children 6-18

Language other than English available: Chinese, Dutch, German, Spanish, Norwegian
Type: Behavior

Data collected: Quantitative

Data collection format: Self report – Pre/post

Reading Level: Unavailable

Existence of test/technical manuals, user guides, supplemental materials: Surveys and publications available at: http://fs.uno.edu/pfrick/APQ.html Includes survey items and information on the psychometrics of the survey. Additional publications may be found at http://www.psyc.uno.edu/Frick%20Lab/APQ.html
Level of training necessary for administration/scoring/interpretation: None necessary. Paper and pencil scoring with the sum of ratings used as a total scale score.

Widespread Use/Professional Endorsements: Scale has been used in multiple research articles looking at parenting behaviors. The University of New Orleans provides the tests and measures at: http://fs.uno.edu/pfrick/APQ.html Credit must be given to the developers.

Cost of Use: No cost associated with the survey. Dr. Frick requests that copies of any publications using the APQ are sent to him at pfrick@uno.edu.
Description:

- The APQ measures five dimensions of parenting that are relevant to the etiology and treatment of child externalizing problems: (1) positive involvement with children, (2) supervision and monitoring, (3) use of positive discipline techniques, (4) consistency in the use of such discipline and (5) use of corporal punishment.

- There is both a parent form and a child form.

- 42 items

Psychometrics:

Information on reliability and validity are provided below. If information on a particularpsychometric was not found, it is indicated as "no information provided." It should benoted that this is not necessarily an indication of a lack of reliability or validity within aparticular scale/instrument, but rather a lack of rigorous testing, for various reasons, bythe developers or other researchers.

Reliability: *A correlation of at least .80 is suggested for at least one type of reliability asevidence; however, standards range from .5 to .9 depending on the intended use andcontext for the instrument.*

Internal Consistency: The average reliability across the APQ scales is .68.

Inter-rater reliability: No information provided

Test-Retest: No information provided

Validity: The extent to which a measure captures what it is intended to measure.

Content/Face Validity: No information provided **Criterion Validity:** The APQ has good psychometric properties including criterion validity in differentiating clinical and nonclinical groups (Dadds, Maujean, & Fraser, 2003; Frick, Christian, &Wooton, 1999; Shelton et al., 1996). Frick et al. (1999) reported a mean $r2$ across its five scales of 0.24 for predicting child symptoms of ODD and CD. Independent investigations have also shown the APQ to be an informative assessment tool. **Construct Validity:** No information provided

Construct: Effective Parenting

Scale Name: Alabama Parenting Questionnaire (APQ)

Developers: Frick, P. J.

The University of New Orleans
Alabama Parenting Questionnaire (APQ)
(Parent Form)

Child's Name: _____ ID#: _____

Parent Completing Form(Circle one): Mother Father Other: _____

Instructions: The following are a number of statements about your family. Please rate each item as to how often it TYPICALLY occurs in your home. The possible answers are Never (1), Almost Never (2), Sometimes (3), Often (4), Always (5). PLEASE ANSWER ALL ITEMS.

	Never	Almost Never	Sometimes	Often	Always
1. You have a friendly talk with your child.	1	2	3	4	5
2. You let your child know when he/she is doing a good job with something.	1	2	3	4	5
3. You threaten to punish your child and then do not actually punish him/her.	1	2	3	4	5
4. You volunteer to help with special activities that your child is involved in (such as sports, boy/girl scouts, church youth groups).	1	2	3	4	5
5. You reward or give something extra to your child for obeying you or behaving well.	1	2	3	4	5
6. Your child fails to leave a note or to let you know where he/she is going.	1	2	3	4	5
7. You play games or do other fun things with your child.	1	2	3	4	5
8. Your child talks you out of being punished after he/she has done something wrong.	1	2	3	4	5

	Never	Almost Never	Sometimes	Often	Always
22. You let your child out of a punishment early (like lift restrictions earlier than you originally said).	1	2	3	4	5
23. Your child helps plan family activities.	1	2	3	4	5
24. You get so busy that you forget where your child is and what he/she is doing.	1	2	3	4	5
25. Your child is not punished when he/she has done something wrong.	1	2	3	4	5
26. You attend PTA meetings, parent/teacher conferences, or other meetings at your child's school.	1	2	3	4	5
27. You tell your child that you like it when he/she helps out around the house.	1	2	3	4	5
28. You don't check that your child comes home at the time she/he was supposed to.	1	2	3	4	5
29. You don't tell your child where you are going.	1	2	3	4	5
30. Your child comes home from school more than an hour past the time you expect him/her.	1	2	3	4	5
31. The punishment you give your child depends on your mood.	1	2	3	4	5
32. Your child is at home without adult supervision.	1	2	3	4	5

	Never	Almost Never	Sometimes	Often	Always
33. You spank your child with your hand when he/she has done something wrong.	1	2	3	4	5
34. You ignore your child when he/she is misbehaving.	1	2	3	4	5
35. You slap your child when he/she has done something wrong.	1	2	3	4	5
36. You take away privileges or money from your child as a punishment.	1	2	3	4	5
37. You send your child to his/her room as a punishment.	1	2	3	4	5
38. You hit your child with a belt, switch, or other object when he/she has done something wrong.	1	2	3	4	5
39. You yell or scream at your child when he/she has done something wrong.	1	2	3	4	5
40. You calmly explain to your child why his/her behavior was wrong when he/she misbehaves.	1	2	3	4	5
41. You use time out (make him/her sit or stand in a corner) as a punishment.	1	2	3	4	5
42. You give your child extra chores as a punishment.	1	2	3	4	5

Scoring for Parent Form:

- The items on the adult form are categorized into five subscales as follows:
  - Involvement: 1, 4, 7, 9, 11, 14, 15, 20, 23, 26
  - Positive Parenting: 2, 5, 13, 16, 18, 27
  - Poor Monitoring/Supervision: 6, 10, 17, 19, 21, 24, 28, 29, 30, 32
  - Inconsistent Discipline: 3, 8, 12, 22, 25, 31
  - Corporal Punishment: 33, 35, 39
- No reverse coding necessesary.
- Sum all items in the scale to obtain a total scale score (you may subtract this score by the number of items in the subscale so that the score range begins at zero).
- Other Discipline Practices is not a scale, but provides information on an item by item basis. Numbers for these items are: 34, 36, 37, 39, 40, 41, 42