CHAPTER TWO : LITERATURE REVIEW

Literature Review

The scientific studies regarding intellectual disability can be said to be started since 1905 when Binet - Simon scale for measuring intelligence was introduced. So far thousands of studies have been conducted and published at various places, national and international journals.

This chapter reviews the literature relevant to this study. Attempt has been made to mention foreign and domestic studies separately and that too the studies are grouped under:

- Researches on Specific Characteristics in Relation to Intellectual disability
- Researches on Residential and Non-Residential Institutional Intellectual disabled
- Researches on Psychological Interventions for the Intellectual disabled

2.1 Specific Characteristics In Relation To Intellectual disability

As per ICD10- Intellectual Disability is a condition of arrested or incomplete development of the mind, which is especially characterized by impairment of skills manifested during the developmental period, which contribute to the overall level of intelligence, i.e. cognitive, language, motor, and social abilities. Accordingly following are the characteristics of Intellectual Disables on which researches has been conducted.

2.1.01 General Cognitive process in Intellectual disability

Using the triarchic theory of intelligence, Sternberg (1985) explains intellectual disability as arising from several distinct loci, in the meta components, performance components and knowledge acquisition components of an individual’s internal
intellectual functioning. The loci are described as inefficiencies, inadequacies, and impairments in basic cognitive abilities. In terms of cognitive growth, the loci are evolving abilities whose progress is impeded by the intellectual disability. Although intellectual disability could result from an impairment of a single locus, Sternberg postulates that multiple loci of deficit are most likely to be present in any given individual with intellectual disability. Observed variations among individuals with intellectual disability thus reflect in the particular loci involved.

Detterman (1987) approaches the issue of intellectual functioning, and subsequent intellectual disability, from a system theory framework. Although individual components or factors that comprise intelligence are part of this model, the main emphasis is placed on the way in which the factors form a cohesive system. This view could be considered a Gestalt approach, in that the functioning of the total intellectual system is more than just the sum of the component abilities. The possibility that not only the level of abilities differ in intellectual disability, but the structure as well. Detterman and Daniel (1989) presented evidence that the intercorrelation of Wechsler subtests and the correlation between Wechsler FSIQ and various information processing measures varied by IQ level.

Casey and Jones (1988) studied 36 Down’s Syndrome children, half of whom attended mainstream primary or nursery schools and half schools for children with moderate learning difficulties, were assessed over a two-years period. Baseline and six-monthly measurements were taken of their progress in expressive language, comprehension, numeracy, verbal fluency, drawing ability and reading. Mental age was estimated at baseline and at the end of the two years. The mainstream children made
significantly greater progress in numeracy, comprehension, and mental age as compared to their progress on all other measures.

Pennington et al. (1991) found that at lower ability level sets of correlation were significantly higher than of higher ability level suggesting stronger ‘g’ loading at lower ability levels.

Raman (1981) conducted a study on the cognitive development of the educable intellectual disabled; amongst other things it was observed that intellectually disabled children of 8.6 years were equal to normal children of 6-7 years in cognitive development as determined on the basis of Cognitive Development Status Test, developed by Padmini and Nayar 1980, in the Department of Education, University of Mysore. A direct, marked relationship was also reported to be found between intelligence and cognitive development.

**2.1.02 Speech Development and Communication skills**

Among a residential school population, Schlanger (1953) found 30 percent of a group of institutionalized children to have hearing losses. Schneider and Vallon (1955) and Schlanger (1953) noted other instances of improvement in speech of the intellectually disabled following speech therapy.

Lubman (1955) reported that Mongoloid children demonstrated more rapid and permanent improvement resulting from a speech program than did a group of brain-injured children of comparable intelligence.

Mecham (1955) having developed tests to measure selected aspects of speech in intellectual disabled children, employed these instruments in an appraisal of a speech therapy program among intellectual disabled children. He found significant
improvement, independent of IQ, in articulation, auditory discrimination, memory span (auditory), and average sentence length.

Johnson and Capobianco (1957) matched two groups of severely intellectually disabled children on mental age and intelligence quotient. After one year of exposure to a special language development program, the experimental group showed no significant improvement over the control group.

After long neglect, problems of speech and language development in intellectually disabled children received attention. Schlanger and Gottsleben (1957) found no single speech syndrome peculiar to the intellectually disabled.

A qualitative analysis of vocabulary responses of intellectual disabled children reported by Papania (1957) demonstrated that even though ability to define abstractions increases with mental age, intellectually disabled groups gave more concrete definitions to Binet vocabulary cards.

In another study, Schlanger (1958) reported that varying presentations of extraneous background stimuli did not affect the performance of brain-injured children on a word-choice test. He concluded that a concomitant relationship exists between speech development and auditory word discrimination in these children, both functions being markedly delayed.

Durrell and Sullivan (1958), reporting on the language achievement of educable children, stated that many difficulties encountered in the primary and intermediate grades would be alleviated by systematic instruction in reading, speaking, and writing.

An individual-instruction group of low-grade Mongoloid children compared by Kolstoe (1958) to a non-instruction group revealed a small but significant IQ increase
as measured by the Kuhlmann test. The instruction group also demonstrated significant improvement in certain language measures and structured observations.

Summarizing research on speech and language development of intellectual disabled children, Harrison (1958) stated that effort should be made to develop diagnostic scales, evaluate therapeutic programs, and investigate speech and language development during the preschool period. Though a few studies of the effects of therapy have yielded negative results, research in general has been reassuring and indicates that speech correctional institutes should give more attention to this field.

Spreen (1965) found that intellectual disabled children are delayed in such areas as sentence length, sentence complexity, speech sound discrimination, and percentage of nouns in the vocabulary. Delays may be caused in part by delayed development of the prerequisite cognitive structures required for meaningful communication.

Cromer (1991), emphasize on reciprocal interaction between language and cognition. Language is not only limited by cognition, but cognition (especially thinking, planning, and reasoning) is also limited by language and by the interaction patterns thereby afforded. Many investigators have considered how more basic information processing factor (e.g. processing, memory, sequential processing, use of meta-cognitive strategies, rule learning, speed of processing) might affect both language and cognitive function.

2.1.03 Phonological Skills

Crosley and Dowling (1989) found that phonological skill also plays a crucial role in determining successful communicative interactions. Even children who test “normal” on a test of articulation, by virtue of being able to produce all phonemic
segments in isolated words, may have serious difficulties in intelligibility, resulting perhaps from the stresses placed on the phonological system in fast moving exchanges with long, complicated utterances.

Sudhalter et al. (1992) found that phonological difficulties are commonly reported in descriptions of the language of persons with MR, but few studies have focused on phonology, and most of those have stressed the normalcy of phonological development. There are, however, reasons to believe that phonological skill may be extremely relevant to understanding the entire language profile of the crucial factor in limiting syntactic development, either through rendering unstressed functions non-salient or, indirectly, via the role that phonology plays in short-term “phonological” memory. It may also be that what appears to be a semantic production problem may ultimately depend on well-specified phonological representations.

According to study by Leonard, McGregor, and Allen (1992), it is important to keep in mind that phonological difficulties are highly prevalent in the language-delayed population just as language problems are highly prevalent in children first diagnosed for phonological impairments.

Locke (1994) had stressed the significant role played by knowledge structures in language development, considering how limited input and a limited data base, especially during the language learning years, can result in an impoverished linguistic system.

Recognizing the complexity of phonological skill, Kent (1993) found augmenting measure of “articulation” with measures of intelligibility, defined as percentage of words that are interpretable to a listener.
Mattie, H. (2001) studied three adults with moderate to severe intellectual disability were taught conversation skills using task analysis and cognitive strategies training procedures results show that the participants generalized the conversation skills learned under the cognitive strategies and that the cognitive strategy training allowed more normalized social interaction to occur.

2.1.04 Cognitive development

According to Zigler (1967) the current understanding of early skill development may contribute to the development perspective on intellectual disability. This perspective suggests that individuals whose abilities simply reflect the low end of natural variation in intelligence should display a slowed but essentially normal course of cognitive development. Children with mild intellectual disability often display comparable achievement on measures of object oriented, problem solving skills relative to normally developing children matched on mental age.

The examination of language in persons with intellectual disability can provide a window on the intersection between language and cognition. Cromer (1974) suggested that language may be predicted upon and hence limited by, more general cognitive factors.

In the study that prompted him to introduce this “weak view” of the cognition hypothesis Cromer (1974) asked children and adolescents with intellectual disability to act according to the sentences such as ‘John is eager’ or fun to bite. Participants with mental age levels below 6.5 years consistently interpreted all verbs applying to the agent of their sentences (John is biting), consistent with the pattern of typical developing pre-schoolers. However, only a subset of those participants with mental age levels higher than 6.5 years evidenced any shift toward the adult like patterns of
attending to adjectives specific control properties. Guided by these data, which suggest that a shift in language performance coincident with achievement of concrete operations, Cromer argued that the development of cognitive concepts are essential for establishing those meanings which can be encoded in language, but only if the child also possesses the specific linguistic capabilities to do so.

Jordon (1976), found more formal estimates of the coincidence of language and cognitive deficits are out-dated and woefully flawed by wide variation in measures used and in the ages sampled, they suggest that somewhere between half and all children with intellectual disability also present significant language delay. Language delay disproportionate to the level of cognitive delay is observed even in persons with intellectual disability, as are often found in Down’s syndrome. Language delay disproportionate to the level of cognitive delay is observed in persons who are only mildly intellectual disabled especially beyond the Mental age level of 5 years.

A more comprehensive test of the cognition hypothesis was undertaken by Miller, Chapman and Bedrosian (1978), who evaluated 78 children (CA-1-14 years, MA- 0-7 years), for possible intellectual disability. Of these, only eight children were identified whose performance on at least one of the many language dimensions surpassed their cognitive level by at least one year; six of these were functioning in the preoperational period (MA 5 or 6), but were relatively advanced in syntactic production, comprehension, and/ or phonological production. All eight exceptions displayed receptive vocabulary knowledge (PPVT-R, Dunn and Dunn, 1981) well in advance of what would be predicted on the basis of general cognitive measures.
Miller et al. (1978) concluded that the “Cognitive Status of the child regardless of delays relative to chronological age, provided a unidirectional limitation on language performance in 90% of their subjects”.

Kamhi and Johnston (1982) excluded from the intellectually disabled sample any child who qualified for speech language therapy or who showed evidence of organically based intellectual disability. These data overall suggest that certain general cognitive structures are necessary if not sufficient, for language development to proceed.

In addition to role that phonology plays in memory, there are a number of reasons to think phonological variation also contributes to individual differences in syntactic skill. For one thing, consistent with Gleitman and Wanner’s (1982) phonological salience hypothesis, the very markers that are most often omitted in immature speech, and about which agreement relations must be inferred, are just those that are acoustically non salient.

However, research by Weiss, Wisz and Bremfield, (1986) on more basic information processing abilities has yielded results suggesting that children with mild intellectual disability often display deficits on measures of information processing, compared to non-delayed children matched for mental age.

Recent observations about memory derived from an in-depth study of children with moderate levels of MR (n = 55 with DS, n = 55 without DS) suggest striking parallels between memory development and Morphosyntactic development. In that study by MacKenzie and Hulme (1987), digit span (like morphosyntax in other studies) was only modestly correlated with MA in the group with DS ($r = .41$) and in the group
without DS ($r = .43$). There was a significantly higher correlation between MA and STM ($r = .71$) in typically developing children (CA 4 to 8 years) of comparable MA (6 years). In both groups, digit span (like language) was generally, though not always, below MA expectations. As MA increased, so did the lag between MA and memory span; MA increased over time, but there were only minimal gains made in typically developing children. In the group with DS followed over time ($n = 8$), the digit span began at 3.1; five years later, when subjects were aged 14 to 19 years, the mean span had increased only to 3.6, with only two subjects able to reliably recall 4 digits in order. MA scores in the mixed etiology group ($n = 8$) increased at the same rate as in the group with DS, with mean MA increasing by 16 months over 5 years. In that group, mean span increased from 3.5 to 4.1 digits; one subject finished with a span of 6 digits, 3 with a span of 4 digits, and the remaining 4 could recall 3 digits. In short, as is true for morphosyntax relatively few cases of moderate to severe intellectual disability exist in the presence of comparative well-preserved short-term memory performance.

The significant transition that occur in early social and cognitive development especially in the second year of life, have often been conceptualized in terms of the acquisition and consolidation of skills which was studied by Mandler (1988).

2.1.05 Learning And Other Characteristics Of Persons With Intellectual Disability

‘Learning has been neglected’ was evidenced by McPherson's first review (1948), which located only 14 articles between 1904 and 1948 involving learning in the intellectually disabled. Her second summary (1958) listed 14 additional studies up to 1958. Recent activity reveals increased productivity, improved methodology, and a shift in orientation. Two approaches have been advanced: one emphasizing studies with
application to the classroom, the other oriented toward basic learning theory. Complete reconciliation of these views is doubtful, but a trend toward studies which contribute both to theory and to educational practices is indicated. Up to now, the learning-theory-oriented psychologists have outstripped the classroom-learning-oriented educators in their search for evidence. A concept which has received attention is set.

Using the four boards of the Minnesota Spatial Relations Test, Tizard and Loos (1954) found some indication that trainable progressively improves over the series of boards; however, only six subjects were used, and there was no test of significant improvement.

McCulloch, Reswick, and Roy (1955) found among mental defectives a positive relationship between intellectual disability level and word learning.

Reynolds and Stacey (1955) found normals generally superior to subnormals in mirror-drawing performance although educable were capable of vast improvement. Variability was greater among the subnormals, who "would seem to call for more versatile teachers and teaching methods if maximum learning is to take place in such a heterogeneous group." Several studies saw no positive relationship between intellectual development and learning tasks.

Plenderlith (1956) found no difference between normals and feebleminded of the same MA on discrimination learning and discrimination-reversal learning problems. Eisman (1958) compared (in terms of IQ and MA) superior, average, and intellectually disabled adolescents attending a public junior high school. She found no significant differences among the three groups in speed of learning a paired-associate
problem, in stimulus generalization, or in retention over a one-week or a one-month period. Other investigations were diverse.

In another experiment, Ellis and Sloan (1957) found pursuit-rotor performance to be related to MA. Despite possible methodological weaknesses, such comparisons were believed helpful to establish training curriculums.

Barnett and Cantor (1957) showed that a group of intellectually disabled can form "discrimination sets"; that is, as a result of prior training on a similar problem, improve performance on a visual discrimination problem involving rectilinear shapes.

Cantor and Hottel (1957) gave two groups of intellectually disabled subjects a paired-associates task involving pushing one button in response to one geometric figure, pushing a second button in response to a second form, and eliminating responses to a third button; the group, which had previously learned names for the stimuli appearing in the paired-associates task made significantly fewer errors on the transfer task than a control group which had learned names for stimuli irrelevant to the paired-associates task.

Barnett and Cantor (1957), investigating motor learning on a pursuit rotor, found that distributed practice results in superior performance as compared with massed practice, and that significantly more reminiscence followed massed practice than distributed practice.

Zeaman, House, and Orlando (1958) demonstrated that special training conditions are important in visual-discrimination learning for trainables.
Zeaman (1959) reviewed evidence as to whether the intellectually disabled have an attention deficit not attributable to motivation, emotion, memory, or understanding of the rules.

Griffith and Spitz (1958), and Griffith, Spitz, and Lipman (1959) investigated concept formation in intellectually disabled and normal subjects. Their studies utilized verbal mediators in concept formation; subjects were presented groups of words and asked to draw an abstraction (classify them) and later to give a definition for each word. They found that normals are superior to intellectually disabled subjects of the same MA; intellectually disabled subjects must be able to define approximately two-thirds of the words in a group to classify them successfully.

Bensberg (1958) studied the effect of "attention sets" on subsequent performance in a paired-associates learning situation, utilizing five groups of intellectually disabled subjects and demonstrating that attention sets, both kind and degree, established during pre-training facilitate the learning of later similar tasks. The results were interpreted as supporting the mediation hypothesis, in that response-produced cues built up during pre-training carry over to mediate in a new learning task. Harlow's concept of "learning set" stimulated research.

Ellis (1958) demonstrated the formation of discrimination learning sets in two groups of intellectually disabled, a high MA group forming more efficient sets than a low MA group.

House and Zeaman (1958) found a group of severely intellectual disabled children unable to form learning sets over a series of 60 discrimination problems although the objects within each pair differed multidimensionally.
In comparing the learning-set performances of normal and educable children, Kaufman and Peterson (1958) observed that normal children made more correct responses than intellectually disabled children on 48 object-quality problems, a significantly greater percentage of stimulus-perseveration errors being made by the intellectually disabled group (which did not include clinical types such as Mongoloids). The concept of "acquired distinctiveness of cues" received study. Essentially, this concept states that the learning of associations during pre-training (usually learning verbal labels or names for stimuli) facilitates later discrimination learning.

Cantor (1958) found no evidence to support this formulation in a group trained with stimuli relevant to the transfer task (a paired-associates task); subjects demonstrated no differences from a group pre-trained with irrelevant stimuli. His supposition was that the subjects acquired little or no habit strength for the associations despite 45 presentations of the two pairs of stimuli during pre-training. A number of studies dealt with the individual-difference variable of intelligence and its effect upon the parameters of learning laws. Hull contended that individual-difference variables would affect the empirical constants of behavioural laws (for example, rate of learning and asymptote of learning) but not the basic form of the laws. Characteristics of the individual organism, especially those having to do with capacity, will become increasingly important as behavioural science becomes able to predict more precisely. Although many of the studies previously described included MA and IQ comparisons, perhaps the most systematic and vigorous attempt to investigate individual difference variables has been made by Ellis and his colleagues. Most of the investigations have demonstrated a positive relationship between intellectual development and learning ability.
Barnett, Ellis, and Pryer (1959) obtained evidence supporting the acquired distinctiveness of cues; a group of intellectually disabled subjects who had learned distinctive names for two stimuli performed significantly better in the "test phase" than did subjects who during pre-training had been required merely to discriminate between stimuli.

Ellis and Sloan (1959) found that performance on oddity problems (one stimulus different from four similar ones) is somewhat dependent on intellectual development.

Barnett (1959) found no difference between intellectually disabled subjects and normals on a measure of stimulus generalization, both groups showing a typical generalization gradient.

2.1.06 Attention Deficits

Significant difference between groups were found by Follini, Sitkowski, and Stayton (1969) among the four comparisons in which undifferentiated groups of persons with intellectual disability were compared to CA-matched groups of persons with undifferentiated intellectual disability, the non-handicapped persons demonstrated an impaired ability to concentrate on auditory information in the presence of distracters and were likely to exhibit a greater degree of off-task glancing and slower response time to target. Thus deficient selective attention was consistently found when groups of persons with undifferentiated intellectual disability were compared to CA-matched persons of average intelligence.

Hagen and Huntsman (1971) in another comparison an institutionalized group of persons with undifferentiated intellectual disability was more distracted by irrelevant information than an MA matched group of persons of average intelligence. This finding
is consistent with the notion that performance deficits on attention and other cognitive tasks may, in part, be linked to extra cognitive factors that are unique to institutionalized persons with intellectually disabled.

In the 1960s Zeaman and colleagues argued that attentional deficiencies were inherently related to intellectual disability.

Zeaman and House (1979) found that many intellectually disabled individuals have trouble attending to relevant cues while performing tasks. They do not appear to differentiate the more significant aspects of the situation from those that are less useful. Intellectually disabled individuals have a narrower breadth of attention. They do not simultaneously attend to as many dimensions of a given task as normal individuals do. Intellectually disabled learners require more frequent and lengthier opportunities to practice a task before they can master it. Once a task is mastered, however, intellectually disabled persons can perform it at a rate similar to that of non-intellectually disabled persons.

Zeaman and House (1979) suggest that discrimination problem can be reduced through (1) using three-dimensional objects, (2) sequencing of tasks from the easy to the more difficult; (3) emphasizing the relevant aspects of tasks; (4) increasing the novelty of the negative and positive stimuli; (5) avoiding failure; and (6) establishing a “set” to attend to relevant dimensions, e.g. providing opportunity to practice attending to specific dimensions so that when confronted with task situations, the learner will discriminate relevant versus irrelevant stimuli prior to attempting to complete task.

Weiss, Weiszand Bromfield (1986) compared persons with intellectual disability, to individuals without intellectual disability of the same chronological age
However persons with and without intellectual disability of the same CA, by definition, differ significantly on general level of cognitive development. Therefore, it is not surprising that higher-functioning individuals perform better on cognitive tasks than do individuals of lower cognitive ability. Although MA matching is considerably less precise than CA matching, it provides general baseline measures against which levels of functioning is specific domains can be compared.

Burack (1994) conducted nine studies in which visual and auditory filtering performance were compared in different groups of persons with intellectual disability and non-handicapped persons matched on MA or CA. Overall the filtering performance of persons with familial intellectual disability are able to use cues to improve filtering efficiency, effectively ignore visual and auditory distractions and efficiently inhibit responding to irrelevant information.

Burack (1994) in five comparisons in which subjects were matched on MA typically revealed similar patterns of performance between groups with and without intellectual disability. However, one comparison indicated that person with organic intellectual disability were less able to use visual cues to improve their filtering efficiency than non-handicapped persons matched on MA.

2.1.07 Memory

Butterfield, Wambold, and Belmont (1973) found that Intellectually disabled individuals often perform poorly on nonserial short-term memory tasks such as memorizing numbers out of rote order. This problem occurs because their use of strategies is limited. For example, they may lack spontaneous rehearsal techniques and not practice unless they are specifically directed to do so.
Jensen and Fredrickson, (1973) gave lists of words or pictures to recall, Intellectually disabled individuals do not appear to cluster items according to recognizable categories. The clustering that does occur is most often idiosyncratic.

Spitz, (1973) found that many intellectually disabled individuals have trouble recognizing recurring patterns or redundancy in stimuli.

Pennington and Luszcz, (1975) demonstrated that intellectually disabled individuals retain less information in sensory storage and iconic memory (memory involving symbolic ages that have inherent meaning such as ↑ for “up” and ↓ for “down”).

Molen, Van Luit, and Jongmans (2009) investigated everyday memory and its relationship to working memory in adolescents with mild intellectual disability and compared to typically developing adolescents of the same age (CA) and younger children matched on mental age (MA). Results showed a delay on almost all memory measures for the adolescents with mild intellectual disability compared to the CA control adolescents. Compared to the MA control children, the adolescents with mild intellectual disability performed less well on a general everyday memory index. Only some significant associations were found between everyday memory and working memory for the mild intellectual disability group. These findings were interpreted to suggest that adolescents with mild intellectual disability have difficulty in making optimal use of their working memory when new or complex situations tax their abilities.

2.1.08 Motivation
O'Connor and Tizard (1956) reported several studies dealing with motivation. Trainables who were given targets to beat (based on their previous performance) exhibited superior performance on a "leg persistence test" when compared with a group given only constant verbal encouragement.

O'Connor and Thomas's report (1956) of studies by Claridge and by Walton and Begg indicated that social approval for trainables is an effective incentive. Similarly, Zigler, Hodgden, and Stevenson (1958) found that verbal support positively affects performance of normal subjects as compared to feebleminded.

Ellis and Pryer (1958) found no evidence that primary reinforcement is more efficacious than secondary reinforcement in a discrimination-learning situation. A group of intellectually disabled subjects who received candy as a reward performed no differently during either acquisition or extinction than a group who received a piece of yellow drawing paper. Also, when the primary-reward group was divided, those who were zero to three hours hungry performed at the same level as those who were three to five hours hungry.

Heber (1959), by means of a motor task, tested the hypothesis that a difference in performance exists between two groups of intellectually disabled subjects as a function of magnitude of reward; a "high-preference incentive" group performed significantly better than a "low-preference incentive" group. Also in agreement with a prediction from Hullian theory, when the high-preference incentive group was shifted to a less preferred incentive, a rapid, significant decrement in performance occurred. Conversely, the low preference incentive group, when shifted to a more preferred incentive, showed a rapid, significant increment in performance. Generally, the findings indicate: (a) intellectually disabled subjects do form learning sets, that is, "learn how to
learn." (b) Learning curves of intellectually disabled subjects approximate those of normals, but the rate of learning is slower and the level reached is not as high. (c) Children with IQ's below 50 do profit from training. (d) Intelligence, as measured by standardized tests, is a substantial predictor for learning certain laboratory tasks although many studies do not bear this out. (e) Verbal labels for stimuli facilitate the learning process. (f) Verbal praise is effective as motivation. (g) Certain classifications used in the past, for example, exogenous versus endogenous, do not appear as useful as some workers expected for differentiating groups in learning ability, and hence may not be useful for educational purposes

2.1.09 Emotional Development

One of the aspect of behavior development to be described is that complex of physiological changes, overt behavior and conscious awareness called emotion.

Can children with intellectual disability recognize simple facial expressions such as happiness, sadness, anger, and fear? Cohn et al., (1990) noted that typical children can reliably discriminate and recognize facial expressions of emotion within the first 2 years of life. This ability contributes to greater understanding in social situations with others. It seems, however, more difficult for children with intellectual disability to master such discrimination.

Few studies have been reported on emotion recognition in children with mental intellectual disability. McAlpine, Kendall, and Singh (1991) conducted a large scale study of several hundred individuals with intellectual disability including children and adults. Compared to non-intellectual disabled groups with mental ages of 7 to 16, individuals with intellectual disability did less well.
In contrast, Adams and Markham (1991) found that children and adolescents with intellectual disability did less well on an emotion recognition task compared to CA-matched controls; when compared to MA-matched controls, however, the pattern was less clear. Older children with intellectual disability did worse than the MA-matched non-intellectual disabled children, whereas the younger MA-matched groups (average MA of 7 years) were not different from one another. It is not clear why children with intellectual disability would perform similarly to MA-matched controls but adolescents and adults would perform more poorly.

Rojahn, Rabold, and Schneider (1995) also found deficits in emotion recognition in adults with intellectual disability relative to CA-matched as well as MA-matched non-intellectually disabled controls. Regardless of the amount of experience they have had observing emotion in others, adults with intellectual disability do less well on emotion recognition tasks than individuals with typical development, even when cognitive abilities are equated.

2.1.10 Pro-social behaviors

Kasari, Mundy and Sigman (1990) in a study, observed toddlers with Down syndrome while an adult cried after hurting her finder with the hammer of a pounding toy. Children’s reactions to this event were observed and contrasted with a MA-matched sample of typical children. Reactions between children with and without Down syndrome differed. Whereas typical children displayed quizzical expressions toward the adult in distress, the children with Down syndrome more often frowned or cried themselves. Few of the children initiated any help toward the adult playmate, whereas the normal children were not so sure that the adult was really hurt. Typically developing children may have been present in the room, but made little effort to help the distressed
adult. Compared to normal toddlers, then, this study suggests a heightened, though perhaps less discriminating, concern for others on the part of the children with Down syndrome.

Children’s pro-social behavior has also been examined in the context of a “pretend” tea party. Children with DS and children with intellectual disability of unknown aetiology were similar in sharing, helping, and cooperating behaviors. Thus, in this study, there was no evidence of more pro-social behavior among the children with DS; both groups of children with intellectual disability engaged in more pro-social behavior than an MA- and CA- matched group of autistic children.

Examining children as young as 18 months to 2 years of age, Zahn-Waxler and colleagues (1992) noted a number of care giving behaviors directed to others in distress. These young children comforted, hugged, or in other ways acknowledged the distress of another (e.g., offered toy).

In two studies, the pro-social initiations of children with intellectual disability were observed as they watched someone in distress.

Sigman, Kasari, Kwon, and Yirmiya, (1992) examined preschool aged children’s reactions when they saw their mother hurt her finger with a pounding toy. In this study, the reactions of children with intellectual disability were compared to children with autism. Compared to the children with autism, the intellectual disabled children paid greater attention to the mother’s distress and showed more concern. Half of the children with intellectual disability were diagnosed with Down syndrome, the other half with unknown aetiologies and comparisons were not made between the two groups.
In spite of the widely perceived ability to these children to be positive and attentive in their social interactions, pro-social behaviors are not clearly strength relative to other children with intellectual disability.

Matheson and Jahoda (2005) in a study developed new materials to investigate the emotion identification skills of 19 frequently aggressive and 15 non-aggressive adults with intellectual disability. The three tasks included photographs of faces, individuals displaying emotional expressions in context, and cartoon characters in interaction. Control tasks dealt with the intellectual demands of each condition. Emotion identification improved with increasing contextual cues across both groups. Aggressive participants had greater difficulty labeling emotions in contextually rich photographs than their non-aggressive peers and were more likely to mislabel the target character’s emotion as angry in the cartoon task. Findings have implications for models of aggression and clinical interventions.

2.1.11 Peer interaction

Schlottman and Anderson (1975) compared the peer interaction of 10-years-old children with Down syndrome to CA-, MA- and IQ-matched children with non-Down syndrome intellectual disability. With mental ages of 3 years, the children with Down syndrome displayed more positive effect, less solitary play, but more negative verbal interactions than did the children with other types of intellectual disability.

Schlottman and Anderson (1975) found that boys, but not girls, with Down syndrome smiled more than boys with non Down syndrome intellectual disability when same-sex dyads. Increases in interactive behavior over time were found for children with mild disabilities, but not for children with severe disabilities who have friends differ in some important ways from children with disabilities who do not have friends
(Field, 1984). Even though the children with and without friends did not differ from children with friends, they were more assertive in initiating, maintaining, and terminating play interactions. They also were more verbal and more affectively expressive, both negatively and positively.

Individual differences in children’s ability to sustain peer interactions, then, likely go beyond mental and chronological age, and may relate in some ways to sociability. Children who show more interest in others, and who can both initiate and respond to others, are likely more able to sustain interactions.

Sinson and Wetherick (1981) found that even in mainstreamed setting, however, interaction between typical and atypical children are rarely sustained. Though typical children can provide interactions to occur they must be mediated through direct interventions. In fact, familiarity also is not enough to enable peer interactions to improve. With intervention, however, a number of increases in social behavior have been observed in children with intellectual disability.

Crawley and Chan (1982) observed no interaction between children with mild and moderate levels of intellectual disability in the vast majority of observation intervals. Solitary play was common and social participation rare. Where all of the children have social models, segregated settings are limited in their usefulness for increasing peer social behaviors.

Field (1984) found that young children with disabilities demonstrate a number of interactive deficits relative to normal MA-matched children. Children with delays are less socially interactive. More often they engage in solitary and parallel play rather than
cooperative play and show little development change in peer interaction over the preschool years.

Guralnick (1984), the deficits observed in the peer interactions of children with developmental delays are more marked than what would be predicted based on mental age alone.

Parker, Rubin, Price, and DeRosier (1995) found that children with intellectual disability have difficulty forming friendships. The nature of the difficulty, however, may vary among children with different intellectual disability aetiologies. Therefore, two major issues concern how the unique developmental conditions of children with intellectual disability affect their ability to form friendships, and whether friendships, once formed, are the same or different from those among typical children. In considering these issues, evidence of the construction, function, and context of friendship among children with intellectual disability will be examined.

2.1.12 Friendship Construction and Functions.

Strain (1984) has thoroughly investigated the construction or functions of friendship in children with intellectual disability. Field (1984) found that 7 out of 16 children with various disabilities had close friends in mainstream situations (integrated only for play sessions). Of these children, only one had a typical friend and another had both a typical and a friend with disability. The difference between the children with disabilities who had a mixed (atypical, typical friendship versus a non-mixed friendship (both typical) was not addressed in the study.

Field (1984) has demonstrated that preschoolers with disabilities who had friends were more expressive and verbal compared to preschoolers with disabilities who
did not have friends. Both groups, however, were similar in terms of chronological age and developmental level.

Hartup and Sancilio (1986) that found friends tend to choose children who are similar to them in gender, age, and developmental level. Children with intellectual disability also engage in more unique friendships, including more adult and relative friends, as well as showing a greater tendency to have opposite-gender friends.

Stability and intimacy of friendship have been examined in one qualitative study of mildly impaired adolescents. Zetlin and Mrutaugh (1988) found that, compared to typical adolescents, the friendships of adolescents with mild impairments (mild intellectual disability and learning disabled) were less stable, and some of their friends were relatives, a unique pattern not found in the typical sample. In terms of intimacy, all of the adolescents defined friendship as an intimate relationship (e.g. sharing, feelings, telling secrets). However, higher percentages of typical adolescents were intimate with their friends (75% versus 52% respectively). Qualitative differences in the construct of intimacy were also found. The adolescents with mild impairments were less discreet. They disclosed to friends, classmates, and teachers; they also disclosed very limited and more superficial topics such as acquiring possessions. Indeed, among the adolescents with disabilities who had intimate friends, nearly one-third actually fabricated intimate disclosures in order to look more “typical.” The lack of discretion and honesty questionable in the adolescents with mild impairment, or at the very least suggests a less mature understanding of intimacy.

Buysse (1993) have found that the closer the atypical child is to “typical” – in terms of social skills, overall developmental level, and especially linguistic abilities – the better able the child is to have friendships with typical or atypical peers.
Siperstein and Bak (1989) demonstrated a link between high cognitive abilities and more mutual friendships among adolescents with intellectual disability in a special education setting. In contrast, Strain (1984) found that preschoolers with intellectual disability had the least mutual friendships and children with speech and language needs had the most mutual friendships (mostly mixed friendships). These data suggest that similarity in ability is important in friendships between typically and atypically developing children. In particular, it is often the less impaired child who is most likely to have friendships with typical or atypical children. When friendships between typical and atypical children occur, the typical children generally are similar or less skilled in developmental abilities relative to the children with disabilities.

2.1.13 Outer-directedness

Declines in outer directedness with development are found much less consistently in intellectual disabled compared to normal children. Whether or not declines are reported among children with intellectual disability appears to be dependent in part on institutional status. For institutionalized children with intellectual disability, Balla, Butterfield, Zigler (1974) finds a decline in out directedness with development.

Baybee, Ennis, Zigler (1989) studies report no changes with development and for one measure, an increase with development in outer-directedness. Taken together, these studies indicate that outer-directedness does not decline with development institutionalized children with intellectual disability.

Baybee, Ennis, Zigler (1989) found for non-institutionalized intellectual disabled individuals, most studies report evidence of a decline in outer-directedness with development. The effect seems to be highly dependent, however, on which
measure of outer-directedness is considered. Outer-directedness on glancing tasks shows the most consistent decline with development.

Baybee, LeDuc, Zigler (1993) studied whether outer-directedness on the sticker game declines or remains the same with age. Age-related increases in outer-directedness are found on the preference-for-faces tasks.

2.1.14 Social Development

Although as roadway, Louttit and others (1957) have shown intellectual maturity indicated by M.A. is closely related to maturity in groups of unselected school children it cannot be held that this is the only factor of significance. For example, Lurie and co-workers believed that among a group of problem children those with low I.Q.’s tended to compensate by the development of higher social competence. Physical limitations, environmental restrictions, parental relations and personality deviation may all be operative as well as intelligence, in affecting the development of social behavior skills.

In recent research, Guralnick and is colleagues (1996) found that preschool children with mild disabilities displayed more frequent social interaction and higher levels of social play when they were in a play group with typically developing children than when they participated in a specialized group that included only children with disabilities. Bronson and her colleagues found that preschool children with disabilities displayed clear benefits in the quality of their social interactions with peers when they were enrolled in classrooms that were most similar to early childhood settings designed for children without disabilities. Children in more inclusive settings engaged in more and higher levels of peer interaction and were more independent and less controlled by adults. Relationships between classroom structure and social competence remained
significant even after accounting for the child’s intellectual abilities. Similar results have been reported for older children, and for children with more severe disabilities.

2.2 Research On Residential And Non-Residential Institutional Intellectually disabled

2.2.01 Psychological test scores

Goldfarb’s (1955) study of children who spent their early infancy in an institution. In his study, 15 children who had been institutionalized at the average age 4.5 months and transferred to foster homes at approximately 37 months were compared to 15 children who had experienced foster-home placement from early infancy. The occupational status of the mothers of the institutional children tended to be higher than that of the mothers of foster-home group; both were equal in educational achievement. The foster home to which the institutional children were subsequently sent seemed to have more favourable advantages for a child than the foster homes of the control group. When both groups were given psychological tests at 34 and 43 months of age, the institutional children received significantly lower test scores, showed immature speech development, and in general presented many more indications of maladjustive behavior.

Goldfarb (1947) when conducted similar study with older age groups who also differed in regard to early institutional experience the incidence of feeblemindedness was markedly greater in the institutional group. Their behavior was characterized by aimlessness; impulsivity; inability to achieve or maintain personal relationships, respond to the needs of others, or express personal feeling.

Quaytman (1953) found that social maturity tended to be greater than expected for mental age – a difference of about 1 year – for his sample of clinic-referred children
with Down’s syndrome living at home rather than in institutional settings. Although most children had IQs in moderate range of intellectual disability, most had social quotients (SQ) in the mild or borderline range. This finding suggested that persons with Down’s syndrome had the potential to develop higher-level skills than was conventionally believed at the time, and that they benefited from being reared at home, as shown by higher IQs and social quotients than were found in institutionally reared children.

Mundy (1957) in a study done in Britain supplied evidence that the stimulation provided by community living resulted in more intellectual gain than residence in institutions for the intellectually disabled.

Kirk (1958) reported on the beneficial effects of community programs on the functioning of intellectually disabled children as opposed to placement in institution. Provence and Lipton (1962) presented data which indicates that the development quotient of the institutionalized infants decreased over the year e.g. the mean quotient between 14-26 weeks was 101, between 27-29 weeks it was 87, and between 40-52 weeks was 85. It is also of interest that for the same periods the range of developmental quotients was 83-125, 72-107, and 72-92. Provence and Lipton compared their orphanage infants with a group of 75 foster-home infants who had always lived in a family setting. They found that the decline in scores was significantly greater for the institutional infants.

A study by Cornwell and Birch (1969) found that social quotients of 44 children with Down’s syndrome aged 4-17 years remained consistently higher than IQs
over observations two years apart in a cross-sectional study of 217 non-institutionalized children with Down’s syndrome.

2.2.02 Motivational Variables and Social Responsibility

In the early 1960’s Zigler published studies demonstrating the role of motivational variables and social responsibility in improving performance of institutionalized individuals with intellectual disability.

In his first study, Zigler (1961) found that institutionalized familial intellectual disabled experienced a great among of pre-institutional social deprivation and that their performance on certain tasks varied as a function of the amount of social deprivation experienced. It was Zigler’s hypothesis that social deprivation results in a heightened motivation to maintain interaction with a normal adult and to secure approval from him through compliance and persistence.

In a second study using all available subjects from the first study three years earlier, Zigler and Williams (1963) investigated the proposition ‘that some systematic change in the effectiveness of social reinforcement occurs with longer institutionalization. The following were the major findings:

1. The result of the original testing clearly supported the view that the effectiveness of adult attention and approval is related to the degree of social deprivation experienced prior to institutionalization.

2. Children with better pre-institutional histories show a much greater increase between the two testings than do children with the poorer histories. This finding points to the error of conceptualizing institutional living as if it affected all children in the same manner. The present study suggests that for children who have suffered
the greater amount of social deprivation prior to being institutionalized; institutional living adds relatively little to the already high motivation for social reinforcer.

2.2.03 Environment of the home and institution

In a study by Thormahlen, (1964), the statement of problem was to investigate the ward environment in a state institution for the intellectual disabled relative to what is done by the ward staff to formally train children in the skills and behaviors included in a Caine-Levine Social Competency Scale. The Conclusions were: (1) The ward programs tend to emphasize physical care and there is little opportunity for exposure, training, and practice in the skills and behaviors defined by the Caine-Levine Social Competency Scale. (2) the marked emphasis of the ward personnel on promoting dependent behavior in trainable, intellectual disabled children is in direct conflict with the stated goals and objectives of the institution and its formal school program. (3) If the orientation of the institution does, in fact, include the objective of developing socially contributory behaviors in trainable intellectual disabled children, the present in service training program for psychiatric technicians appears to be inadequate for meeting the above objectives.

Butterfield and Zigler (1965a) describe two experiments utilizing the marble-in-the-hole game. In the first experiment four groups of familiar intellectual disabled (two group from each of the two institutions) were run under support and non-support conditions. They found a clear difference in that children in Institution B (Considered a less supportive climate than Institution A) played the game longer than children in Institution A, a result in keeping with the hypothesis that the more depriving the climate the greater the need to receive social reinforcement from the experimenter. Because in this first experiment the experimenters were aware of the differences in the climate of
the two institutions and of the hypothesized effects, a second study was done with naïve experimenters.

Butterfield and Zigler (1965b) have demonstrated that two institutions for the intellectually disabled within the same state system may act in distinctly different ways upon mildly intellectually disabled children—one institution apparently satisfying the social needs of its residents much better than another. Through extending social reinforcement techniques to tasks relevant to severely intellectually disabled children and adults, the researchers were able to assess the social reinforcement value of various institutions. The findings are particularly interesting because they include collection of behavioural measures of aide behavior, which is presumably one of the primary social-reinforcement agents.

Skeels (1966), traced the developmental course of a sample of infants and young children who originally tested as intellectually disabled or on the borderline of intellectual disability. When placed in environments much more stimulating than in which they were being reared, buttressed by normal home environmental experiences, the long term developmental outcome of these engineered cumulative environmental experiences appeared to reverse the initial intellectual disability.

Mitchell and Smeriglio (1970) on the basis of their study concluded that moderately and severely intellectually disabled children, when institutionalized in an environment providing only routine nursing care, failed to make any noticeable progress in overall absolute level of social competence during the first three years of institutionalization. They did not lose skills they brought from home but failed to learn any new eating and dressing routines and they did not develop in constructive play, work habit, social cooperativeness, and communication skills. They found that
cognitive development proceeded at the appropriate rate in the institutionalized intellectually disabled. They concluded that institutionalization of the intellectually disabled should be recommended only when it is certain that specialized training programs, administered by non-attendant personnel will actually be received by the child from the moment he is admitted to the institution.

Nihira et al., (1980) studied 268 families of educable and trainable intellectually disabled living at home using numerous measures of the home environment, family adjustment and child characteristics. The results indicated that family adjustment and functioning were related not only to the severity of the child’s intellectual disability and degree of maladjustive behaviour but to family-intellectual disabled child system as the parents’ feelings of the impact were related to the intellectual disabled children’s lack of adaptive competency and the children’s adaptive competency was related to the parents’ successful coping with the problem of intellectual disability. The study suggested both the difficulties these families face as well as the variability of this impact within group of families with intellectually disabled children.

Nihira et al., (1980) studied the relationships between home environment, family adjustment and the social competency of intellectually disabled children. The subjects were one hundred and fourteen (114) Trainable Intellectually disabled children and one hundred and fifty two (152) Educable Intellectually disabled children. The subjects (about half male and half female in each group) had a mean I.Q. of 42.4 with the standard deviation of 9.9 for the trainable group and a mean I.Q. of 66.4 with the standard deviation of 10.0 for the educable group. All children resides in their natural homes with married parents.

The following conclusions were drawn from the results of the above study:
1. An educationally stimulating home environment is associated with adaptive competence of the children in both groups.

2. Social adjustment (Vs maladjustive behavior) of these children is related to cohesiveness and harmony (Vs disorganization and conflict) at home.

3. An educationally stimulating home environment for the TMR children depends primarily upon the quality of parenting and child rearing practices.

4. An educationally stimulating home environment for the EMR children involves psycho-social climate of home as well as culturally stimulating atmosphere and educational expectations.

5. Family harmony and quality of parenting are related to the family's ability to cope with the problem of intellectual disability.

6. The family is likely to feel that the intellectual disabled has major impact on the family especially when there are other family conflicts.

7. The feeling of impact is also related to maladaptive behavior of the child.

Crnic and his co-workers (1983) studied of processes in families with a child with MR. According to this approach, family and parental stress may have detrimental outcomes for the child with MR. These stresses, endemic to the task of being a parent of an MR Child, may be alleviated by social support, resulting in better development outcomes for the child. The meso-system, as exemplified by the social friendship circle of the parents, is assumed to influence the micro-system, which involves people who have direct contact with the child, particularly the child’s family. The micro-system in turn directly influences child development, including the development of children with MR.
Meyers, Nihira and Mink, (1984) found that variables associated with stimulation and encouragement of learning in the home were correlated with psychological adjustment in school-age children with trainable or educable MR.

Bronfenbrenner (1986) has reviewed research showing critical effects of such systems on individual child development, including effects of the environment on children with developmental problems.

Landesman and Butterfield (1987) indeed, demonstrated success of these environmentally based programs contributed to the movement of deinstitutionalization those with intellectual disability. It has encouraged mainstreaming and the formation of sheltered workshop and group home settings for this population.

In a rare cross-cultural study, Nihira, Webster, Tomiyeau, and Oshio (1988) compared Japanese and American families who had EMR children. Although there were positive correlations between opportunities for cognitive growth in the home and social competency in both cultures, the relationship among aspects of the environment that appeared to foster emotional development and psychosocial adjustment of the child were complex and differed between the two cultures.

Blessing (2004) indicated that service providers need to have a range of options available to meet the individual needs of each client.

In a study by Hall (2005), young adults with ID living in a group home benefitted from the nurturing community of friends they live with and the additional support given to them from staff.

Perry and Felce (2005) gave evidence of considerable variability in the quality of residential services and a tendency for residents’ quality of life to co-vary with
ability level. Quality of life of 154 people living in 47 small community residences was assessed using 14 subjective and objective indicators. Information on setting structure, processes, and staff working methods was collected. Factors associated with resident choice, activity, and social and community well-being were modelled using multivariate regression, which controlled for the confounding effect of ability level. Few factors associated with subjective quality of life were found. Resident ability and staff attention to residents had a strong effect across objective measures. Number of residents and staff had little explanatory power. Staff working methods had an inconsistent impact.

Abbott and McConkey (2006) discovered that moving to less restrictive living accommodations, such as supported living schemes, has increased the opportunities of social inclusion for many people with ID. Participants reported that they are given a lot of freedom and assistance through supported living and are also close to the places they want to go.

Kozma, Mansell, Beadle-Brown (2008) surveyed research from 1997 to 2007. Articles were included if the researchers based the study on original research, provided information on the participants and methodology, compared residential arrangements for adults with intellectual disability, and were published in English-language peer-reviewed journals. Sixty-eight articles were found. In 7 of 10 domains, the majority of studies show that community-based services are superior to congregate arrangements. These studies provide more evidence of the benefits of deinstitutionalization and community living and continue to indicate variability in results, suggesting that factors other than the basic model of care are important in determining outcomes.

2.2.04 Cognitive, Behavioural and Adaptive Functioning among home vs institutionalized Intellectually disabled
Felce, D., Kock, U., and Mair, T. (1986) studies demographic sample of 28 severely and profoundly mentally handicapped adults with a mental age of four years and below were assessed on Part I of Adaptive Behavior Scale (ABS) at three point 18 months apart. The subjects were resident in either a small community based home or other residential institutions. The small home group showed the greatest adaptive behavior change particularly in the areas of independent functioning, domestic skills and self direction and on the scale total.

In two British long term longitudinal studies, Carr, (1988) and Gath (1985) provided detailed information on life events that may affect developing individuals with Down syndrome (DS). Carr examined cognitive test performance and ability to adjust to the community and school in children with DS. The children were repeatedly visited from 1.5 months to 4 years old and were followed up at 11 and 16 years. At age 11, 35 of the 45 children in the study were living in their parents’ homes; the others were living in institutional or group home settings, most of them from an early age. Compared to years before study was conducted, fewer children were sent to institutions or “sub-normality hospitals.” Children with MR in this study, including children boarded out to foster families or group homes, were exposed to a wider range of services and intervention programs than previously.

The children in the study who were boarded out showed lower language ability, particularly in expressive language, than the children kept at home, but there were no major differences in other areas. Most of the children were reasonably good health and could occupy themselves on their own initiative. Most of the families expressed satisfaction at bringing up a child with DS. Preliminary data from the children at the age of 16 confirmed that these trends continued into adolescence. The study indicates that
the major variable associated with functioning of children with MR is their living environment; being in the parents’ home appear to lead to favourable outcome, and these outcomes hold for a long proportion of the families from birth to adolescence. The degree of variability among children in the home environment was smaller than between home environment and being “boarded out.” Living at home is related to decreased vulnerability and increased resilience, although it is not clear which effect is stronger.

Dykens, Leckman, Paul, and Wateson (1988) compared the cognitive, behavioural and adaptive functioning of men with fragile X (age 23 to 62) to two matched group of men with intellectual disability but without fragile X who lived in the same institution. Although the fragile X group had similar scores to the comparison groups on the cognitive, behavioural, and adaptive measures, they were more likely than comparison subjects to achieve adaptive levels commensurate with their intellectual abilities. This study suggested that adaptive development in individuals with fragile X syndrome may proceed at a similar rate to intellectual development.

Dykens et al. (1988) also found that, relative to the comparison group, institutionalized men with fragile X showed strengths as compared to communication and socialization skills, regardless of living arrangements.

Bornstein and his associates (1989) in a series of longitudinal studies, found a current and predictive relationship between maternal responsiveness and children’s cognitive development. In one analysis, maternal responsiveness to 4 month-old infants was examined in relation to the children’s cognitive competence at age 4 years. Preschoolers whose mothers were more responsive to their vocalizations, facial expressions, and movements at age 4 months were faster at solving a nonverbal
discrimination-learning problem, and they scored higher on the Wechsler Preschool and Primary Scale of Intelligence. The researchers observed that the predictive power of maternal responsiveness toward infants was sustained even after partialing out maternal noncontingent stimulation and an infant information processing measure, both of which were also predictive of cognitive competence at age 4 years.

In a study of males with fragile X, Dykens, Hodapp, Ort, and Leckman (1993) found that some adaptive skills such as socialization, communication and academic skills are more closely related to intelligence than others, such as self-help (toileting, grooming, etc.) and daily living skills (e.g. home chores, etc.). The investigators suggested that males with fragile X syndrome may show similarities between the trajectories of their intellectual abilities and their adaptive communication skills, but that other adaptive skills that are less related to intelligence may reflect a completely differently pattern of development.

Dykens et al. (1993) also found that socialization skills domain was an area of significant weakness among older subjects with fragile X (aged 10-17), whereas daily living skills emerged as an area of significant strength. Taken together, these studies indicate that individuals with fragile X, like those with autism, exhibit weakness in social and communication skills as compare to other adaptive skills; however, unlike individuals with autism, their overall levels of adaptive skills tends to be commensurate with level of intellectual development.

More recently Dykens, Hodapp, and Evans, (1994) examined the organization of adaptive behavior in children with Down syndrome aged 1 to 11.5 years and found relative weakness in the communication domain (Vineland ABS) relative to other domains, with expressive language weaker than receptive. Some studies of adaptive
Communication skills have also found a relative weakness in language/communication for adult with Down syndrome. For example, Silverstein et al. (1985) found that clarity of speech was lower in institutionalized adult with Down syndrome, compared with a control group of residents with other intellectual disability.

Blacher and Baker (1994) studied the characteristics of home and institutional environment associated with psychosocial adjustment of children with MR.

According to Tossebro, (1995) once in the institution, the degree to which the institution provides opportunities for growth and autonomy and parental involvement may be critical variable in the adjustment of the individual with MR.

2.3 Studies on Psychological Interventions for the Intellectually disabled

Gottsegen (1957) tailored experimental programs to the particular social deficiencies revealed by each child’s score on the Vineland scale. He found significant improvement in these areas as the result of the experimental treatment when classes were compared with control group.

Baer, Peterson and Sherman (1967) worked with 9-12 years old severely intellectual disabled children who evidenced no imitating whatsoever in their daily interaction with others. Furthermore, when an adult approached and engaged the children in extended play, even when asked to imitate simple responses such as clapping hand or waving these children steadfastly failed to imitate any of the responses, even though it was obvious that the responses were clearly within their ability to perform.

Training was conducted during mealtime, once or twice a day and three to five times a week. The experimenter would say “do this” and model a simple response such
as raising his arm. Any reason by the child that vaguely resembled arm raising would be rewarded by food, which was delivered as spoonful at a time. The experimenter also said “good”, just before putting the spoon into the subject’s mouth. If the child is tended to make no response, the experimenter would gently guide the child’s arm through the appropriate motion and then after that give the reward. Gradually such assistance, if necessary, was faded out. After each child demonstrated the reliable imitation of one response, they would be taught to imitate another one. For one subject, a series of 130 responses were demonstrated.

From the lengthy series of different responses demonstrated to each child, most imitation was reinforced. For some responses, however, if food was not forthcoming after an imitative response, the experimenter merely said “good” and hence demonstrated how the next would receive this treatment.

After a series of the responses were demonstrated and their imitations (even if guided) was reinforced the children tended to imitate new behaviors demonstrated by the experimenter at their first demonstration. Furthermore as long as some of the imitative responses were reinforced, the children continued to imitate essentially every new response demonstrated. At a later point in the experiment, when each child was imitating nearly every demonstrated response, the experimenter began reinforcing other responses that were not imitative. With this change in reinforcing procedure, each child’s imitation showed rapid extinction, until after a short while they were imitating almost none of the experimenter’s responses. Reinstatement of the contingency produced a rapid reacquisition of the tendency to imitate.

Lovaas and his Colleagues (1967) has utilized following procedures for the establishment of linguistic competencies in autistic children.
The therapist confronts the child, sitting directly in front of him at close quarters. This placement maximizes the likelihood that the child will attend to responses being modeled by the therapist. Continued attention is maintained by the therapist physically reorienting the child if he turns away. Episode of bizarre or self stimulatory behavior are interrupted and halted by behaviors on the part of the therapist to command, the child’s attention, a sharp work or even a slap on the thigh.

When simple imitations occur and when the child begins to show verbal responsiveness to command and request, these behaviors are typically reinforced e.g. in training competence in language skill initial task is the acquisition of words and sentences and the use of these words and sentences to label appropriate objects and actions. The use of contingent reward increases the likelihood that the child will attend imitated (accurately) and subsequently utilize the acquired language skills.

In a series of studies Butterfield and Belmont (1973) have demonstrated that when intellectually disabled facilitate rehearsal, their improvement on specific learning tasks is significant.

Ledwedge (1978) noted that it usually includes some type of self statement, such as self-instruction, and relies heavily on interval speech as a therapeutic instrument.

Glidden (1979) reviewed the various experimental approaches that have been used to improve learning. Those included labeling and item repetition, grouping of stimulus materials, caring, cumulative rehearsal, imagery information and verbal elaboration. That these approaches can be used to increase performance is a relatively undisputed supposition. Most of these approaches however have trained specific skills
related to specific tasks (subordinate training). Recently more attention has been focused on the importance of transfer and generalization of these skills to novel tasks (super ordinate training).

Gath’s (1985) data show that children with DS who receive no intervention are at risk for a variety of problems: they are vulnerable from an early age to severe medical problems, are less likely to survive, and are more likely to have conduct and emotional disturbances than are typical children. The fact that birth weight and muscle tone were predictive of later cognitive development may mean that prenatal environment, a neglected factor in research on children with DS, could be an important element in the development of children with MR.

Feldman (1986) claims that despite the genetic or biological factors that might underlie a child being gifted or talented, the realization of a child’s giftedness and the full expression of talent are often dependent upon someone providing and maintaining very purposely engineered, environmentally based opportunities for the child.

Spooner, Stem and Test (1989) taught first aid skills to moderate intellectually disabled adolescents. Three moderate intellectually disabled adolescents (aged 16–17 yrs; IQ 43–51) learned to use 4 emergency procedures (i.e., communicating an emergency, taking care of a minor injury, applying a plastic bandage, applying first aid for choking) in a systematic replication of J. L. Matson’s social modelling procedure. All subjects acquired these skills rapidly, and the effects were maintained during follow-up probes that ranged from 6 to 12 weeks after training was concluded. Monitoring skill acquisition with a multiple baseline design showed changes in behavior only occurred when the training package was introduced in each of the 4 skills areas.
McIvane (1992) demonstrated that individuals with intellectual disability can be helped to greater degrees of independence, can be taught improved language and communication skills and can acquire more socially appropriate behaviors.

Increase in IQ can be shown as a result of specifically designed intervention programs, but many of these increases are not maintained once the intervention programs end.

Carr (1992) has noted, there is some evidence that individual with Down syndrome show some increase in IQ in the adult year that seem to be a result of natural opportunities for experience and learning.

Barbara, L. (2001) assessed effects of a self-instructional package on complex problem solving skills by three adults with moderate to severe intellectual disabilities. To teach problem solving skills, problem situations were embedded in the participants’ daily routines that consisted of multiple task sequences. Effects of the training package were evaluated in a multiple probe design across participants to assess acquisition and generalization of correct problem solving responses and self verbalization across: (a) trained and untrained problem situations within the training routine and (b) untrained problem situations in novel routines and setting, employing materials and an instructor that differed from training. Results show that the training package was effective in producing generalized, complex correct problem solving in training and novel routines.

Vries et al. (2005) measured the relationships between choice stimulus modalities and three basic discriminations (visual, visual matching-to-sample, and auditory–visual) using the Assessment of Basic Learning Abilities test. Participants were 9 adults who had moderate to profound developmental disabilities. Their most and
least preferred leisure activities, identified by prior preference assessments, were presented using choice stimuli in three modalities (tangibles, pictures, and verbal descriptions) in an alternating-treatments design. For 8 of the 9 participants, discrimination skills predicted the selections of choice stimuli associated with their preferred activities. The results suggest that choice stimulus modalities in preference assessment of leisure activities need to be matched to the discrimination skills of persons with developmental disabilities.

In a study investigating the relationship between word identification instruction and pictures, Fossett and Mirenda (2006) compared paired associate learning with a print-to-text matching condition. In their investigation, two boys (aged 10 and 11 with moderate intellectual disabilities) learned to read carefully matched words in the paired associate condition or by matching a printed word with a picture representing it. In the end, the two boys were successful in learning to read the words and transferring their knowledge of the printed words learned in the picture-matching condition while they experienced limited success in learning the words in the paired associate condition.

Burns (2007) investigated the impact of two different levels of opportunities to respond during sight word learning. There was a single nine-year-old child with moderate intellectual impairments in this study. The child learned 25 new words each week for four weeks across two conditions. The first condition provided moderate opportunities to respond to the new words (6–18 repetitions, 3 rehearsals). The second condition provided high opportunities to respond to the new words (18–54 repetitions, 9 rehearsals). Both conditions provided a high ratio of known words (90%) to new words (10%). Except for differences in the number of opportunities to respond, the instruction across the two conditions was the same, and the words were carefully selected to insure
their equality. The two conditions were alternated each week, with word reading probes conducted at the beginning of each session. Across two cycles of alternating treatments in four weeks, the high-opportunities-to-respond condition led to increased retention for the words learned.

Klimas and McLaughlin (2007) evaluate the effects of an individual token economy with a young child with severe behavior disorders. Three behaviors were recorded; time to completion, the number of assignments completed, and the frequency of inappropriate behavior. These data were gathered for 30 minutes each morning. The overall outcomes indicated that the two different token systems were effective in improving the participant’s academic and social behavior. The amount of work that was required could be increased without a large decrement in academic output or increases in inappropriate behavior. The program was enjoyed by both the teaching staff and the participant. Suggestions for future research and the maintenance of treatment gains were made.

Indian Studies

Roy (1971) studied reminiscence in intellectually disabled on a paired associate task. 40 institutionalized subjects were presented with paired associate meaningful material. The learning session consisted of one familiarization trial where the eight stimulus-response pairs were presented in usual paired associate technique i.e. one reinforced anticipatory trial stimulus first and the same stimulus and a response pair next. Results indicated improvement in the reproduction of new responses. A low correlation was found between digit span and delayed recall.
Singh (1972) discussed some of the studies conducted on the impact of foster homes, home staying, special school and normal school settings on the performance of intellectually disabled children. The results reported by a large number of studies were against institutionalization of intellectually challenged children. Few studies showed positive results of foster homes: better social adjustment and those who are form adverse socio-economic background improved in performance i.e. significant improvement in IQ.

Jehan and Ansari (1980) in order to find out certain psychological characteristics of intellectually disabled children, administered Vineland Social Maturity Scale, Gessells Developmental Schedule, Seguin Form Board Test, Raven’s Coloured Progressive Matrices, Alenxander’s Pass along test and Kuppuswamy’s SES Scale on 200 intellectually disabled children. The results showed that boys are more prone than girls to intellectual disability. 55% belonged to the age group of 6-10 years. The first born children were more susceptible to intellectual disability.

Somasundaram and Kumar (1984) compared the behavioural characteristics of institutionalized (N=30) and non-institutionalized (N=30) severely subnormal subjects. Analysis of data revealed that out-patients were more attentive and over active than the institutionalized. Destructive behaviour, self injury, overall poor performance, etc. behavioural problems were found common in institutionalized patients.

Mehta and Manju; Ochaney and Madhu (1984) applied an operant conditioning model to the training of 2 primarily and 2 secondarily intellectually disabled children (aged 4–8 yrs). Attention was focused on improving the ability of Ss to concentrate on and perform simple, everyday activities. The procedure involved an initial baseline measurement, an assessment of effective material reinforcers, formulation of a
contingency plan and active involvement of the parents with weekly individual sessions with the therapist. Assessment at 3 months showed satisfactory progress in all Ss.

Prasad, Mata and Sitholey Prabhat (1988) applied operant-conditioning behaviour therapy to the case of a 14.5-yr-old intellectual disabled female hospitalized for conduct disorder. S manifested a lack of interest in studies and household chores, indifference toward personal hygiene, and disrespectful and abusive behaviour toward family members. The short-term outcome was the elimination of all target symptoms.

Sen and Gururani (1988) in a study conducted in Delhi found that in an institutional set up, no extra effort was made by the staff members to train the intellectual disabled members, even though they might be capable of learning at least some skills. The sample consisted of 20 institutionalized and 20 normal children in the age range of 7-12 years. In an institution, though the child’s demands are met, equally important, if not more, the psychological needs that can be provided at home, was missing. It was also observed that children growing up in poor institution, often failed to develop normal pattern of social responsiveness, they tended to become withdrawn and apathetic, and very frequently they did not develop normal patterns of social behavior. There appeared to be a direct relationship between the extent of intellectual and language disability and the degree of sensory and visual stimulation, in the institutional environment.

The institutionalized children were found to be lacking in personal independent behavior, and displayed more maladaptive personal and social behavior as compared to their non-institutionalized and normal peers.

Rao (1989) carried out descriptive analysis of 56 cases of mental illness and intellectual disability in rehabilitation set up where in behaviour modification procedure
was employed. Individually tailored contingency management procedure resulted in approximately 70% of the cases showing an improvement vis-à-vis the target behaviour identified. A need to involve the family members in the therapeutic process was highlighted.

Abraham, Mishra and Kumaraiah (1990), studied two excess maladaptive behaviour, licking by 9 years old male with moderate intellectual disability and disturbing others by 10 years old male with moderate intellectual disability, were successfully modified through behaviour intervention procedure based on operant conditioning. The Ss maintained the modified behaviour pattern at 1 year follow up programme.

Narayan Jayanti and Kutty (1990) stated that reinforcement is most important aspect in training any skill to children with intellectual disability, such rewards include simple smile or pat expensive presents to child depending upon the situation. They various methods used for teaching are prompting, modelling, shaping and chaining.

Aniah, Kumaraiah and Mishra (1991) effectiveness of behaviour modification procedures in training dressing skills and oral hygiene in 10 institutionalized moderately intellectual disabled boys. Result showed the package to be effective for each subject. Skills were maintained over a follow up period of 1 year.

Narayan and Panda (1993), compared the effectiveness of adult and peer models with a no model condition in learning and retention of performance skills. The sample size was 150 intellectually disabled children (75 Educable IQ-51-70 and Trainable IQ 25-50) chronological age ranging form 10-14 years. The study showed a definite positive effect of peer models of learning performance skills in mild and moderate intellectually disabled children in India.
Sharma (1993) conducted a study of functional analysis of behaviour management of students with multiple disabilities. The study was an attempt to investigate the use of differential reinforcement in classroom situation for the management of problem behaviour. Relevance of functional analysis and its comparison with differential reinforcement in the classroom setup were also studied. The functional analysis model used in the study was ABC model, i.e. Antecedent-Behaviour-Consequence model. The sample comprised of four male students in the age range of 12 to 15 years having visual impairment with intellectual disability / Cerebral Palsy. For identification of problem behaviour Part B of AAMD, Adaptive Behaviour Scale was used. Target problem behaviour and rewards were identified. Baseline behaviour was also recorded. Functions of problem behaviour in all the four students were determined using ABC model of functional analysis. Intervention in the present study was given in two phases – phase-I was for five days during which only the differential reinforcement (intervention I) was given and subjected to analysis. Phase-II was also for five days. Intervention was given in the form of behavioural techniques based on the functions identified for the problem behaviours along with differential reinforcement and subjected to analysis. Effectiveness of both the interventions was evaluated on the thirteenth day. The results showed that the problematic behaviours of all the four subjects were managed during both the phases of interventions but more effectively during the second phase except in one case.

Mukhopadhyay, Pritha; Chakrabartii, Manas (1996), compared the treatment outcome of token economy (TE) and cognitive modification (CM) in 8 children (aged 8–12 yrs) with learning problems and conduct disorder. A detailed case history was taken from the parents and each child was interviewed. Pre- and post treatment conditions were measured using the Coloured Progressive Matrices, Conners
Abbreviated Rating Scale, and the Developmental Psychopathology Scale. Four children were exposed to TE and 4 children to CM for 10 sessions over 2–3 mo. When baseline data were compared with post-treatment data, the CM group showed greater improvement compared to the group that received TE. Also relapse was observed less in the CM group.

Jena, S.P.K. (1998) presented the procedure for intervention of a 14 years old mildly intellectually disabled male through differential reinforcement of alternative (DRA) for disruptive behaviour, spread over 22 sessions. Reinforcement and mild punishment for noise-making during the intervention phase she showed sharp decline in the rate of responding (52%-13.68%). It indicates effectiveness of DRA and punishment in treating intellectually disabled person.

Mani and Singhal (1998) studied the effectiveness of specific learning strategies namely, learning though the visual mode, the auditory mode and the combined visual and auditory modes in the acquisition of a vocational task, namely the assembly of a ball point pen by adults with severe intellectual disability. The results indicated that with systematic training, they can learn through the visual and auditory modes, but better with combined visual-auditory modes a vocational task.

Nanda, B. (1999) examined the effectiveness of differential reinforcement of lower rates of human techniques (DRL) and environment manipulation on a 4 years old intellectually disabled child’s self-stimulatory body rocking behaviour. The results indicated that the above mentioned techniques were effective as the frequency of rocking behaviour reduced from 35 to 5 at the end of the treatment.
Behera, A. (2001), determined the effectiveness of cognitive skill training on self help skills in intellectual disabled children. 15 moderately disabled children of the age group 5-8 years were selected for study. The study has indicated that intellectual disabled children are capable of learning through efficient therapy programme for a greater extent.

Choudhari (2004), developed a training programme for acquisition of self-care (dressing) skills and communication skills. The participants were 15 moderate intellectually disabled learners in the age range 12-18 years. The pre-post test design was employed in the study which the participants were exposed to the training programme for the period of 8 weeks. The results revealed that the learners exhibited significant improvement in overall dressing and communication skills.

Choudhari R. (2004) fifteen learners with moderate intellectual disability were selected for pre-reading-writing skills. The study comprised of object- to picture matching, pattern matching, alphabet recognition, copying straight line, copying figures, and tracing alphabet. Results exhibited that activity training programme for pre reading-writing enhanced the skills of participants.

Sangeeta (2005) developed intervention package for imparting training in motor, DLS, communication, social and academic skills. Significant mean difference were found between the pre and post intervention performances of the subjects. Improvement in all areas was observed after exposure to the intervention.

Batra, M. and Batra, V. (2006) compared the effectiveness of forward chaining and backward chaining techniques in children with Intellectual disability. Experimental research design with matched subject design used. Subjects were matched on the basis of IQ, age, sex, diagnosis and task component deficit. Baseline testing was done on the performance of the tasks of donning shoes and tying shoelaces accordingly. They were
then assessed according to the task deficit and matched on the basis of number of steps they could perform on either of two tasks. After baseline evaluation they were divided into two groups namely group A and group B. With group A forward chaining technique was used for training either of the two tasks (of tying shoelaces or donning socks). Each subject was given feedback about the performance by behavior modification strategies. After six training sessions, scoring was done on the same task on which subjects were trained on the basis of number of Verbal prompt, Actual prompt, Physical prompt, number of errors and number of steps, social reinforcements. Paired-t-test was used and P value calculated which was found to be insignificant showing that there is no significant in group A and group B in performance of the task chosen. Both the forward chaining and backward chaining technique are equally effective for ADL training in children with Intellectual disability.

Lal and Bali (2007) studied the effect of visual strategies on the development of communication skills in the children with autism. The treatment consisted of communication training through the use of objects, pictures, symbols and manual signs. Use of visual strategies had positive effect on development of communication skills in children with autism.

John, V. (2008). Studied the effectiveness of group therapy on social phobia in children with learning disability. The study was conducted for the duration of 3 months. The study showed marked decrease in social phobia in children with learning disability.

Gupta and Bhargava (2008), studied children with cerebral palsy and intellectual disability regarding play based stimulation programme. In case of the children with Intellectual disability, it was observed that the results were different. There were 2 children with mild intellectual disability and one with severe intellectual disability. For
all the 3 children, the performance was found to increase maximally in the cluster of Reaching and manipulation. Improvement was seen to some extent in the clusters of Manual dexterity and Understanding relationships for children with mild Intellectual disability. However, the effect of intervention in these two clusters was found to be less for the child with severe intellectual disability.

Venkatesh Kumar’s (2008) research has indicated that families, which are successful in coping with having an intellectually disabled child, are able to mobilize their internal and external means of support to deal effectively with the special needs of their child. A total of 62 parents including both father and mother of the intellectually disabled child i.e., 32 fathers and 30 mothers had been studied. Two way ANOVA was employed to find out the significant difference between gender, educational level on psychological stress and coping strategies. The analysis of the results showed that the relationship between psychological stress and coping strategies of the parents of intellectually disabled children was negative and highly significant.

Ganesh Kumar S,(et al) 2011, conducted a study at 2 special schools namely St. Agnes special school and Sannidhya special school in Mangalore among 103 students between the age group of 12 to 18 years. The psychosocial intervention was conducted in 8 sessions over a period of 4 months. A pre-test in the 1st session and post test in the 8th session (after the intervention) were conducted using Indian Disability Evaluation Assessment Scale (IDEAS). Data were analyzed using Percentages, Friedman test and Paired t test. The study has shown significant decrease in the disability level of self care, interpersonal activity, communication and understanding, work and increase in the quality of life after the intervention compared to baseline. The mean score of all do-mains- physical, psychological, social and environmental have shown a significant difference (P<0.001). But the mean difference was more in the
psychological and social domains when compared to the physical and environmental domains. This could be due to the emphasis of the intervention being more on the skills related to psychological and social aspects of everyday life. Psychosocial intervention brings about a decrease in the disability level and increase in the quality of life of mentally disabled adolescents.

The review, in short, suggests that the researches in this area are mainly conducted regarding various intellectual and cognitive qualities (more than 100 studies in 34 pages). Less than 50% of them (36 studies in 15 pages) are regarding residential and non residential schools and very few (37 studies in 11 pages) are regarding intervention.

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