CHAPTER 3
LITERATURE REVIEW

3.1 Intellectual Abilities and Learning Disability
3.2 ADHD, ADD or Externalizing Problem and Learning Disability
3.3 Emotional or Internalizing Problems and Learning Disability - An Overview
CHAPTER 3
LITERATURE REVIEW

In the earlier chapter, conceptual background was formulated to gain the clear understanding of the Learning Difficulties, it's associated behavioral, that is, externalizing factors and emotional, that is, internalizing factors. Learning Disabilities and importance of Intellectual assessment was also discussed.

Intellectual abilities, behavioral problems mainly ADD and ADHD, and emotional problems of children with LD have been examined extensively, both theoretically and through empirical research. This Literature review mainly consists of three variables, namely, intellectual abilities, measured on intelligence test, ADHD and ADD, and Internalizing or emotional problems found in children diagnosed with LD. Indian as well as western research is reviewed.

3.1 Intellectual Abilities and Learning Disability

Intelligence is one of the most important factors related to diagnosis of the LD. Discrepancy between IQ scores and the achievement scores in the school subjects are consider for the formal diagnosis. This intelligence-achievement discrepancy and IQ test which measures the cognitive abilities are well researched area in the field. Majority of the research is carried out with the WISC test score patterns with the LD. Stanford- Binet scale, Peabody picture vocabulary test, Kaufman-Binet scale, ICIT, Wide range achievement test are some of the examples which were used to measure the intelligence of the children with LD.

Lot of studies were conducted to see the correlation between two intelligence tests, WISC and Wechsler Adult Intelligence Scale (WAIS) in the diagnosis of LD. WISC and WAIS analyses were carried out and compared to see if there are any common patterns which can be obtained from the children having LD. Bannatyne's (1974) re categorization of WISC profile is another area of research, which have been studied by many scholars. This re categorization consists of 1) on Arithmetic, Digit span and Coding sub tests of the MISIC.
Verbal Conceptualizing Ability (VCA) includes sub tests Comprehension, similarities, vocabulary, 2) Spatial Ability (SPA) includes sub tests Picture completion, Block design, Object assembly, 3) Sequencing Ability (SQA) includes sub tests such as Digit Span, Arithmetic, Coding and 4) Acquired Knowledge (ACK) includes Information, Arithmetic, Vocabulary. Intelligence tests were used in the assessment of children having LD, to see the diagnostic utility of the particular test.

D'Angiulli, (2003), studied the cognitive functioning as measured by the WISC-R to check that,' Do children with LD have distinctive patterns of performance on the test?' Patterns of performance on the Wechsler Intelligence Scale for Children-Revised (WISC-R) have been proposed as useful tools for the identification of children with learning disabilities (LD).

However, most of the studies of WISC-R patterns in children with LD have been plagued by the lack of a typically achieving comparison group, by failure to measure individual patterns, and by the lack of a precise definition of LD. In an attempt to address these flaws and to assess the presence of patterns of performance on the WISC-R, researcher examined data from 121 children with Typical Achievement (TA), 143 children with Reading Disabilities (RD), and 100 children with a specific Arithmetic Disability (AD), ages 6 to 16 years. The results indicated that the RD and AD groups had significantly lower scores than the TA group on all the Verbal IQ sub tests. Many of the children with AD and RD showed a significant difference between Verbal and Performance IQ scores, but so did many of the typically achieving children. Although there were some children with LD who showed the predicted patterns, typically, 65% or more of the children with LD did not. Their results indicate that the patterns of performance on intelligence tests are not reliable enough for the diagnosis of LD in children.

WISC-III and MISC comparative study was conducted by Panicker, Hirisave, (2004). The present study aimed at comparing the performance of children in the Wechsler Intelligence Scale for Children WISC-III, UK is and Malin's Intelligence Scale for Indian Children (MISC), to establish the need for revision of norms and to see the extent of difference between performances in these two tests. The sample consisted of 51 children within three age groups, namely (7 years to 7 years 11 months, 8 years to 8 years 11 months and 9 years to 9 years 11 months). The tools used included were Children's Behavior Questionnaire, Test of
Reading, Writing and Arithmetic, WISC-III and MISIC. The results indicated a significant difference between subtest scores on the WISC-III and MISIC.

Diagnostic utility of Bannatyne WISC-III pattern was studied by Smith, Courtney B.; Watkins, Marley W. (2004). Regrouping WISC -III subtest into Bannatyne’s spatial, conceptual, and sequential patterns has been thought by many to identify children with LD. This study investigated the prevalence and diagnostic utility of WISC-III Bannatyne patterns by comparing 1,302 children with LD to 2,158 children in the WISC-III normative sample. Further analysis was conducted on a sub sample of students with specific reading disabilities. Results indicated that the presence of the Bannatyne WISC-III pattern would not lead to decisions that are useful in differentiating children with LD from children without LD. For example, Receiver Operating Characteristic (ROC) analysis, measured by the Area Under the Curve (AUC), indicated that the Bannatyne WISC-III pattern exhibited low diagnostic utility (AUC=0.54-0.55). Due to its inaccuracy, in findings use of the Bannatyne WISC-III pattern is not recommended.

A comparison between WISC-III and WISC-R scores for learning disabilities reevaluations were studied by Lyon, (1995). This study examined differences between Wechsler Intelligence Scale for Children-Third Edition (WISC-III) and Wechsler Intelligence Scale for Children-Revised (WISC-R) scores for 40 elementary students with learning disabilities. WISC-III Full Scale, Verbal, and Performance scores were lower than comparable WISC-R scores by one-third to one-half a standard deviation.

Many researchers, study the WISC score patterns according to different age groups of LD children.

Mayes, Calhoun, & Crowell (1997), studied the WISC-III profiles for children with and without Learning Disabilities. The degree of WISC-III inter subtest scatter was normal and similar for 66 children with LD and 51 children without LD, but the patterns of scores differed. In the 8 years to 16 years old sample, children with LD scored lower on the Freedom from Distractibility Index relative to FSIQ than children without LD. This difference was found in both the ADHD and non ADHD subgroups, suggesting that children with LD may have an attention deficit even if they do not meet the diagnostic criteria for ADHD. The
Coding, Arithmetic and Digit Span (CAD) profile was evident in the mean scores for the LD/ADHD and LD/non ADHD subgroups, but it was not found among the lowest subtest scores for any of the non LD subgroups. Though WISC-III profile types were apparent in LD group data, only a minority of individual children with LD actually had those profiles. In the 6 years and 7 years old group, children with and without LD were indistinguishable on the WISC-III, which may reflect the difficulty of ruling out LD at this young age.

Reviews of research using the WISC-R showed that groups of children with a LD scored low on the original Freedom from Distractibility Index (FDI) or factor (Arithmetic, Coding, and Digit Span sub tests) relative to other factors (Kaufman, 1994; Wielkiewicz, 1990) and on the ACID pattern (Arithmetic, Coding, Information, and Digit Span) in comparison to other sub tests (Joschko & Rourke, 1985; Sattler, 1988). However, Joschko and Rourke (1985) caution that the WISC-R, ACID profile is common in LD group mean scores but is not found for the majority of individual children with LD. Similarly, Sattler (1988) states that there is no unique WISC-R profile characteristic of all children with LD and that profile analysis should not be used in the diagnosis of LD.

To date, few studies are available that investigate the WISC-III performance of children with LD, and results are somewhat equivocal. Slate, (1995) reported that FDI (Arithmetic and Digit Span) was not the lowest factor for 202 children with LD, whereas data collected during development and validation of the WISC-III (Prifitera & Dersh, 1993; Wechsler, 1991) showed that FDI was the lowest factor for a sample of 99 children with LD. Similarly, FDI followed closely by the Processing Speed Index (PSI) were both significantly lower than the remaining two factors in a group of 26 children with a reading disability (Newby, Recht, Caldwell, & Schaefer, 1993).

Data reported in the WISC-III manual (Wechsler, 1991) reveal another apparent discrepancy. According to the WISC-III manual and Prifitera and Dersh (1993), the lowest subtests for children with LD were Arithmetic, Coding, Digit Span, and Symbol Search, which comprise FDI and PSI. However, the table in the WISC-III manual (Wechsler, 1991) indicates that the mean score on the ACID profile (Arithmetic, Coding, Information, and Digit Span, which were not the four lowest sub tests) is even lower than the mean scores on FDI and PSI (composed of the lowest sub tests). According to the more detailed report of these data by
Prifitera and Dersh (1993), the mean Information score was actually higher than the mean of all 13 sub tests for the 99 children with LD. Kaufman states in his literature review and analysis, ".....My suggestion to clinicians and researchers who have found value in the ACID profile is to abandon it for the WISC-III and to focus instead on the . . . FD and PS Indexes;" in other words, they should replace "the ACID profile with the SCAD [Symbol Search, Coding, Arithmetic, and Digit Span] profile" (1994).

In addition to few equivocal studies, existing WISC-III and LD research is limited by methodological problems. Some studies are not based on the administration of all sub tests comprising the four WISC-III factors.

Dudley-Marling, Curtis et al. (1981) reviewed the WISC and WISC-R profiles of learning disabled children. The evidence suggested that LD children, as a group, exhibit a characteristic WISC-R profile whereas few individual LD children actually confirm to this pattern. It was concluded that WISC-R profiles may not be useful for differential diagnosis of LD students.

Miller & Walker, (1981) concluded in the myth of the LD -WISC-R profile that no LD pattern has been found and the search for such patterns is not justified. Uses and abuses of the WISC-R with the LD were studied by Galvin (1981). It is concluded that the WISC-R can be an adjunct to LD diagnosis and a step in educational planning for LD student.

One way to clinically interpret the WISC-III profile is to examine subtest scatter. Subtest scatter on the WISC-III of seven points or more from the highest to the lowest verbal subtest scaled score and nine points or more from the highest to the lowest performance subtest scaled score is not typical and only occurs in 15% of children (Greenway & Milne, 1999). According to these authors, when interpreting the WISC-III, the ACID (Arithmetic, Coding, Information, and Digit Span) profile was typically used to determine if a child possibly had a learning disability (1999). If the child had scatter among subtests, such that these four subtests were the lowest tests, then that could be indicative of a learning disability (1999). However, Kaufman (1994) has suggested that a SCAD (Symbol Search, Coding, Arithmetic, and Digit Span) profile would be a better indicator if a child had a learning disability as opposed to the ACID profile. He suggested this because the sub tests in the SCAD profile place more
emphasis on the child’s ability to “encode information for subsequent mental processing.”

Comparison of scores on WISC-III and WISC-R showed approximately 8 point decrease in the scores on verbal, performance and FSIQ. This led to a fear of increasing the proportion of population eligible at the cut off score, consequently increasing the prevalence of LD (Jones, 1996).

The manual for WISC-III claims the test to be useful for diagnostic assessment in a variety of special groups. A study was conducted where children with difficulties in reading, math, spelling or a combination of all three areas were studied. It was found that WISC-III had discriminative ability to differentiate LD from normally achieving subjects. However, the ability of WISC-III to discriminate the four LD groups- reading, math, spelling and a combination of all three academic areas was not established (Shoeppep, 1995).

Malin's test has been used by Indian researchers in the field of LD before this study, to study the deficits and neurological profile of children having Specific Learning Disability. (Kohli, Malhotra, Mohanty, Khera, & Kaur, 2005), detecting learning disabilities in school children by (Shah, Khanna, & Pinto, 1981).

These studies conclusions mentioned the usefulness of Malin's test in various aspects of LD. To date, not a single study is done which gives us the comparison of scores between any two categories of LD by using Malin's test. Present study tries to explore the comparison of MISIC performance between diagnosed LDL and LDN categories of LD.

### 3.2 ADHD, ADD or Externalizing Problem and Learning Disability

Literature review in this area showed the co-morbidity of ADHD and LD. However the inattention and impulsivity characteristic of ADHD make it difficult to determine if academic difficulty is due to the presence of LD or is a consequence of attention deficits (Semrud Clickman, et al, 1992). Language disorder, depression and anxiety are often experienced by the children diagnosed with LD.
ADHD and LD are very well studied by western scholars. Studies are limited in India. ADHD and LD are both major problems of childhood that frequently co-occur and persist into adolescents and adulthood. Conservative estimates suggest that 25% - 40% individuals with ADHD also meet diagnostic criteria for a specific learning disorder, and about 15% - 40% of individuals with LD meet diagnostic criteria for ADHD (Willcutt and Pennington, 2000).

In clinical samples as many as 70% of the children with ADHD may manifest a learning disorder (Mayes and Calhoun, 2006). Despite the prevalence of LD and co-morbid ADHD, widespread confusion remains about the differentiation and co-occurrence of these two clinical entities. Are they merely alternative names for the same set of problems? Are the learning problems associated with ADHD secondary to the psychiatric aspects of the condition (inattention, impulsivity, hyperactivity); a result of cognitive deficits associated with learning disorders; are caused by other problems such as psychosocial disadvantage, demoralization, and resultant decline in motivation, alone or in any combination? The answers to these questions have important implications for clinical practice and education, as well as for nosology and legal policy.

One of the most common co-morbid conditions in childhood is that of reading disabilities and ADHD (Beitchman & Young, 1997; Biederman, et al, 1991). Children with specific learning disabilities show an increased risk of hyperactivity (Cantwell and Baker, 1991; Faraone, et al, 1993). There is a strong relationship between inattentiveness and reading disabilities (Rowe, 1992). Reported rates of co-morbid ADHD in learning disabled children vary from about 10% to as high as 60% depending on the specific sample examined (Halperin et al., 1984; Holborow & Berry, 1986). The subgroup of children with ADHD along with LD deserves special clinical and educational attention (Biederman et al, 1991). Due to the high degree of overlap between reading disabilities and ADHD, detecting the existence of ADHD in the reading disabled child is important in order to gauge better the intervention required (Beitchman & Young, 1997).

Mayes, et al. (2000), analyzed clinical and psycho educational data for 119 children (ages 8 years to 16 years) referred for learning and or behavior problems. A LD was present in 70% of children with attention-deficit or hyperactivity disorder. A LD in written expression was two times more common than a LD in reading, math, or spelling.
Co-morbidity of Reading Disability and ADHD was examined by Willcut and Pennington (2000). This study used a community sample of 494 twins with a reading disability (223 girls, 271 boys) and 373 twins without Reading Disability (189 girls, 184 boys) to assess the relation between Reading Disability (RD) and ADHD. Symptoms of DSM-III and DSM-IV-TR, of ADHD were classified into symptoms of inattention and symptoms of hyperactivity-impulsivity (H / I). Results indicated that individuals with RD were more likely than individuals without RD to meet criteria for ADHD and that the association between RD and ADHD was stronger for symptoms of inattention than for symptoms of H / I. Parents and teachers reported similar rates of ADHD, suggesting that ADHD symptoms were pervasive across settings and were not solely attributable to academic frustration. Analysis of possible gender differences revealed that RD was significantly associated with inattention in both girls and boys but associated with H/I only in boys. This difference may provide a partial explanation for the discrepancy between the gender ratio obtained in referred (approximately 4 boys to 1 girl) and non referred (1.2 to 1.5 boys to 1 girl) samples of individuals with RD. Specifically, the hyperactive and impulsive behaviors exhibited by boys with RD may be more disruptive than the inattentive behaviors exhibited by girls and may therefore precipitate more frequent referrals for clinical attention.

Although there is general agreement that LD and ADD often co-occur, there is no consensus as to the nature of the correlation. Neither is there agreement about causality. Much of the literature suggests that learning disabilities are more frequently associated with the subtype of ADD that is predominantly inattentive rather than hyperactive. Evidence that such an association exists should help in the identification of specific ADD subtypes. For children diagnosed with attention deficit/no hyperactivity there may be opportunity for early preventive measures to be implemented in academic areas. Medication in combination with specialized instruction may be indicated (Riccio & Jemison, 1998). Intervention other than medication that influences the behavioral aspects of ADD, along with academic interventions appropriate to the learning disability, may enhance and improve learning. There is a need to further explore the link between these two disorders. The nature of the co-occurrence should be more precisely expressed and educational interventions undertaken in order to more effectively remediate these complex disorders.
Co-occurrence of ADD and LD: An overview research was carried out by Maynard, et.al. (1999). The purpose of this paper is to review the contemporary literature related to the co-occurrence of Attention-Deficit Disorder (ADD), with and without hyperactivity, and specific learning disabilities. The paper promotes the finding stating that the ADD and LD correlation is very strong, and both the disorders should get the clinical attention.

There are few studies conducted on Arithmetic Disability and ADD subtypes.

Marshall, et al. (1998) studied the Arithmetic Disability and ADD subtypes. This study investigated whether specific academic deficits were associated with attention-deficit disorder (ADD) subtypes. Twenty students (ages 8 years to 12 years) with attention-deficit disorder with hyperactivity (ADD/H) were compared to 20 students with attention-deficit disorder without hyperactivity (ADD/no H). Group differences were compared using a MANCOVA, and paired t tests were used to compare within-group differences. Dependent variables for the within-group differences were four achievement sub test scores from the Woodcock-Johnson Psycho-Educational Battery-Revised: Letter-Word Identification, Passage Comprehension, Calculation, and Applied Problems. Consistent with much of the previous research, no significant between-group differences were found on the achievement measures. Significant differences did, however, appear in the six within-group comparisons, all involving lower performance on the Math Calculations sub test. For students with ADD/H, only one comparison (with Math Applied Problems) reached significance. Students with ADD/no H, however, had significantly lower scores on the Calculation sub test compared to all of the other achievement sub-tests. These results provided additional support for the hypothesis that inattention exerts a specific and deleterious effect on the acquisition of arithmetic computation skills.

These findings have important implications for the diagnosis and treatment of ADHD as conceptualized in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994), because they suggest that students with ADHD-Predominantly Inattentive Type may be at increased risk for arithmetic calculation deficits.
Crawford (2007) in his study stated that Specific Learning Disability (SLD) and ADHD are under recognized in India. Disorders like ADHD and SLD are prevalent in India; however, one of the major obstacles is lack of awareness of these disorders. The higher the awareness among health-care professionals and school authorities, the earlier the identification of affected children and referral for appropriate intervention can begin and the fewer children will remain undetected.

This lack of awareness is evident in the profiles of the 50 children who participated in Karande, et al. (2007) study. The average age at which the children were diagnosed was 11.36 years (with a range from 7 years to 17 years), while the average age at which the children's symptoms had first been noticed was only 5.55 years (with a range from 4 years to 6 years).

These averages can be compared to those found by Parr et al., who reported that the mean age at diagnosis for 391 children with ADHD was 8.7 years and that girls were more likely to have been diagnosed prior to age 8. The delay between symptoms first being noticed and the child being diagnosed with SLD and ADHD was nearly 6 years on average for the children studied by Karande et al. (2007).

Thus, it is not surprising that all of the children in their study demonstrated poor school performance by the time they were assessed in the authors' clinic. Problems in school performance, as opposed to specific symptoms of ADHD, are common complaints and common reasons for referral to child development centers in India. Some researchers have suggested that attempts to raise awareness of, and access to, interventions for children with SLD and/or ADHD should be made using locally acceptable models, focusing more on educational and religious interventions as opposed to the medications and psychiatric labels of the biomedical model. Before initiating culturally acceptable and appropriate interventions, health-care professionals and researchers should consider the possibility of other developmental disorders being present in affected children. Karande, et al. (2007) research team has conducted a number of studies looking at the presence of co-occurring disorders in children with ADHD and/ or reading problems. They found that the chance of a child with ADHD having at least one other developmental disorder was 80.4%, and the chance of a child
with reading problems having at least one other developmental disorder was 51.6%. In a subsequent study, they also found that the higher the number of co-occurring developmental disorders present in children with ADHD, the poorer the performance on tests of memory and visual motor skills, the more severe the behavioral problems and the higher the impairment in everyday functioning for the child. One of the key messages from their research was to alert clinicians and researchers to the importance of considering co-occurring disorders in children with disorders like ADHD and/or SLD, whether they are designing an intervention or a new research study. The co-occurrence of ADHD with other developmental disorders is so common that assessing for one disorder should at least involve screening for the others.

Granted the study by Karande et al. had limitations, including the biases associated with a convenience sample and the cross-sectional design, but nonetheless, the implications of this study are very important to consider. The fact remains that better awareness of disorders like SLD and ADHD, as well as better awareness of culturally acceptable means of treating affected children, better awareness of other co-occurring developmental disorders and better awareness of the potential for symptoms to persist into adulthood, can lead to a decreased burden on affected children, their families and society in India as a whole.

Scholastic difficulties with behavioral problems were studied by Hirisave, & K. Shanti (2000). The study aimed at investigating behavioral problems in children with scholastic skill difficulties. The sample consisted of 20 children between 5 years to 8 years of age. With scholastic difficulties, and those who did not have difficulties was being compared. Results revealed the number of externalizing, internalizing and learning problems in children with scholastic difficulties.

Ramma and Balachandra (1997) and Ramaa and Gowramma (1999) also studied some of the behavioral correlates of children with learning disabilities, particularly related to ADD and attention deficit hyperactivity disorder ADHD. Their study revealed less than 1% of such problems among children with L.D.
Present study aimed to investigate the correlation of ADHD with two types of LD, namely, LDL and LDN by using Du Paul's ADHD rating scale (1990), rated by teachers and parents of the children diagnosed with the Learning Difficulties. The correlation between ADHD rating scale scores rated by teachers and parents of children with two types of learning difficulties, with three age groups were examined in this study. Previous research done by Maynard, et al. (1999) and Marshall et al. (1998) also examined the correlation of ADHD with different types of LD, but age group wise co relational studies were not done. Especially in India this ADHD and LD correlation is not studied much.

3.3 Emotional or Internalizing Problems and Learning Disability - An Overview

Research has linked LD to a number of emotional and social problems. Low self-esteem, depression, anxiety, loneliness and aggression have all been found to exist at higher rates among children with Learning Difficulties, though it is unclear whether learning disorders directly or indirectly causes troubles.

Behavioral and emotional problems of students with LD, serious emotional disturbance, or both conditions were studied by Handwerk, et.al. (1998). This study investigates the behavioral and emotional problems of children with learning disabilities (LD), serious emotional disturbance (SED), and LD/SED, using the Teacher Report Form (TRF) and Child Behavior Checklist (CBCL). The sample consisted of 217 students with LD, 72 with SED, and 68 with SED/LD, ages 6 to 18 (mean age = 11.5). The students with SED were rated more impaired than the students with LD on all TRF scales except Attention Problems, and on three of the eight CBCL syndrome scales. The children with LD differed from those with SED mainly in terms of severity of problems, not with respect to type of problem. It is concluded that students with co-morbid LD and SED are under identified and undeserved in special education systems. From this research one point is clear that emotional problems are hiding in LD.
Emotional problems were studied with children and adolescents age groups by various researchers. Depression, anxiety, self esteem, loneliness are addressed by their studies. Ashanti, et al. (1982) studied the co-occurrence of major depressive disorder and LD in 100 children aged 9 to 12 years, 62% of children with major depressive disorder (MDD) had LD, whereas only 22% of non-depresses children had LD. The authors felt that this three fold increase in LD observed among MDD children implied either a casual relationship between LD and MDD or a predisposition for some children to manifest both conditions. Livingston (1985) reviewed the literature on co-morbid depression and LD and hypothesized three potential relationships: Depression causes or exacerbates learning problems. LD cause or exacerbate depression. A specific brain dysfunction can lead to both MDD and LD in some children. Livingston suggested that determining rates of LD in MDD children would be important in clarifying the nature of the relationship between these disorders. A link between suicide and LD has been suggested by Peck (1985). Fristad, et al. (1992) of Ohio State university, determined the occurrence of LD in 30 inpatient children aged 6 to 12 years with major depressive disorder and found that LD occurred seven times more often compared to community based rates (33% v/s 4.7%). Huntington & Bender (1993) reviewed the literature from 1984 to 1993 on educational well being in adolescents with LD. It was concluded that adolescents with LD have a less positive academic self concept, experience higher rates of trait anxiety and have a higher prevalence of somatic complaints.

Many researchers have found that students with LD experience more depression than their peers, though the rates of occurrence vary from 14% to 36% (Short, 1992; Stanley, et al., 1997; Stevenson & Romney, 1984; Wright Strawderman & Watson, 1992). Similarly, children referred to inpatient mental health centers for depression have a higher rate of LD than other non depressed children referred for services (Kashani, Cantwell, Shekim, & Reid, 1982) and the general population (Fristad, Topolosky, Weller & Weller, 1992). As with low self-esteem, younger children with LD may experience more severe depression than older children with LD (Wright Straederman & Watson, 1992). This may be because of older children having increased understanding of their LD and can cope better (Hall & Haws, 1989).
There are many explanations for why children with LD might experience depression. Some children may not be able to tolerate the repeated frustration and failure they experience as a result of their LD. This discouragement, if unchecked, can lead to feelings of helplessness, inadequacy, and hopelessness. Another possibility is that child's LD has associated consequences that contribute to depression. For example, receiving pull-out services, being labeled or otherwise being identified as different from their peers may increase children's sense of isolation. Actual peer rejection may follow, perhaps as a self-fulfilling prophecy. The type of LD may also make depression more likely. For example core language deficits may interfere with social communication, leading to social problems and poor self-esteem. Nonverbal learning disabilities that involve social deficit and difficulty dealing with novelty may also be a particular risk factor for depression and suicidility because of social ostracism (Rourke, Young, & Leenars, 1989).

Depression in children with LD needs to be taken seriously, since suicidal feelings may occur. For example, in their study of 8 to 11 year olds with LD, Wright Strawderman and Watson (1992) found that 11% felt they wanted to kill themselves. Peck (1985) also found over a 3 year period in Los Angeles County that 50% of children less than 15 years of age who committed suicide had been diagnosed with LD.

Why are students with LD Depressed? This problem was studied by Sideridis (2007). The thesis of the present study was that failure in achievement tasks may constitute a stress factor that can trigger a depression episode, particularly for students with learning disabilities (LD), and that a particular motivational pattern may constitute a cognitive diathesis for depression. Participants were 104 students referred for LD who were drawn from a pool of approximately 900 students from Grades 5 and 6. Students were challenged with a series of difficult math exercises, and their achievement behaviors were examined as a function of achievement goal orientations. Results from structural equation modeling provided empirical support of the contention that performance - avoidance goals may account for a series of negative cognitions and affect. Direct positive paths linked performance - avoidance goals to anxiety, depression, and negative affect; negative paths were revealed with regard to self-esteem and positive affect. Thus, performance - avoidance goals may possess elements of the diathesis mechanism.
described by Dykman (1998), constituting a vulnerability factor that triggers the mechanism of depression when negative events are in place.

Prior, et al. (1999) found that in children with arithmetic difficulties, phobic disorder or anxiety was the most common co-morbidity (30%) of the children with spelling and arithmetic difficulties, 24% had phobic disorder or anxiety. Cantwell & Beker (1991) noted that children with LD had increased rates of mood disorders.

There are studies which were also conducted on anxiety experienced by LD.

Students with LD experience higher levels of overall anxiety than non disabled students (Margalit & Zak, 1984; Rodriguez & Routh, 1989). It has been estimated that up to 25% of children with LD meet criteria for an anxiety disorder (Cantwell & Baker, 1991). This makes intuitive sense. Because children with LD face many situations during the school day where they might have trouble, their overall level of anticipatory anxiety may high. Heightened anxiety may also be related to a student's sense that things are beyond his or her control (Margalit & Zak, 1984), since students with LD tend to see control over success and failure is in the hands of others (Grolnick & Ryan, 1990; Tarnowski & Nay, 1989).

Students with LD may express their anxiety directly, such as by doubting themselves (e.g., “What if I fail the test?”). Anxiety can also be demonstrated more directly through somatic complaints (Margalit & Raviv, 1984). Children who “somatize” their anxiety are unaware that they are worried and instead feel only the physical symptoms of anxiety (such as headaches, stomachaches, and fatigue). Some might think that these somatic complaints are made up to escape a task (e.g., being allowed to go to the nurse’s room rather than do the math lesson). However, Margalit & Raviv (1984) found that children with LD were usually not permitted to leave the classroom for their somatic complaints.

Sudipta et al. (1995) studied anxiety and self-esteem in 20 children aged 8-13 years with Specific Developmental Disorders of Scholastic Skills (SDDSS) and equal number without SDDSS. The children with SDDSS were selected from a clinic set-up and the other children
from normal schools. Findings showed that SDDSS children had higher levels of state anxiety (though not necessarily of trait anxiety) and lower self-esteem. The investigators stressed the need for management of high anxiety and low self-esteem in children with LD.

For a number of reasons one might expect that children classified as LD would have negative self-concepts. A number of studies have in fact, found lower self-esteem in subjects with LD compares to non-LD children, using variety of scales (Larsen, Parker, & Jorjorian, 1973; Rogers & Saklofske, 1985; Rosenthal, 1973).

A wealth of data exists documenting that children with LD have significant difficulties in both academic and social domains. Academically they fail more subjects than their classmates and are more likely to be held back one or more times (Taylor, 1989). Socially they are more likely than comparison children to receive high rates of social rejection nominations and low rates of social acceptance (Dudley-Marling & Edmiaston, 1985; Kavale & Forness, 1996). Children who are repeatedly exposed to failure experiences are at risk for the development of a “learned helplessness” response style, so that they are less likely to persist following challenging task (Licht & Kistner, 1986). Thus, it is not surprising that children with LD show poor persistence following academic failure (Licht & Kistner, 1986). It has been proposed that because of repeated failure experiences, children with LD lose confidence in their intellectual abilities and begin to believe that their efforts will not have a positive effect on their academic endeavors (Johnson, 1982; Klein et al, 1976; Licht et al, 1985; Tennen & Eller, 1977). Thus, a vicious cycle develops in which the children's belief causes them to become frustrated and give up easily, which leads to failure and reinforces their feelings of helplessness.

The large body of research on self-esteem and self-concept in students with LD had yielded complicating findings. A substantial portion supports the idea that students with LD have worse self-concepts and lower self-esteem than their non disabled peers and students with behavioral disorders (Grolnick & Ryan, 1990; Stanley, Dai & Nolan, 1997). This may be due to the repeat failures experienced by children with LD (Meyer, 1983). Students with LD may also generalize from their deficits to an overall negative image of themselves (Heyman, 1990), perhaps because this tendency is shared by others. Poor self-concept may be related to
hypersensitivity; children wit LD tend to be fearful or further humiliation and become frustrated easily due to their repeated experiences of failure (Abrams, 1986; Short, 1992).

Intelligence does not seem to prevent children with LD from adopting poor self-concepts and motivation and from experiencing negative emotional consequences such as depression. Students with LD who have very low levels of self-esteem and poor overall self-concepts may feel inadequate in academic, social, behavioral, and nonacademic skill areas (Kloomok & Cosden, 1994).

However, some research suggests that the extent of self-esteem difficulties may be limited. Some researchers have failed to find any significant differences in overall self-concept between students with LD and their non-disabled peers (Sabornie, 1994; Tollefson et al., 1982). It is not clear if this may be due to the ages of the children being researched. Interestingly, older youths and adolescents show less discrepancy than younger children, who perhaps have not yet developed adequate coping mechanisms. It may also be that children compensate with strengths in other areas, such as nonacademic abilities (Hagborg, 1996), or that academic ability is not as important to children with LD (Grolnick & Ryan, 1990).

Other researchers have found adequate overall self-concept but lower academic self-concept among youths with LD (Chapman, 1998; Heath, 1995). This may result from realistic views of their learning problems as being specific rather than reflecting a global lack of intelligence. High levels of perceived social support may also boost overall self-concept (Kloomok & Cosden, 1994). Even when a LD only affects academic self-concept, there is potential for comprised achievement. Children whose actual achievement suffers as a result of their poor self-concepts (and not just their LD may create a self-fulfilling prophecy of poor school performance and learning.

Classroom social relationships are an important part of child's life, particularly if the child has LD, because they impact self-esteem and other areas of emotional well-being. In general, students with LD report more problems in interpersonal relationships and are seen as being less socially competent than their non-disabled peers (Bryan, 1974; Roberts & Zubrick, 1993).
Specifically they may use less assertive and effective conversational behaviors (Wojnilower & Gross, 1988) and may actually misread nonverbal communication (Bryan, 1977). Students with LD tend to rate themselves negatively on social acceptance (Heath & Wiener, 1996) and also report more frequent victimization by their peers (Sabornie, 1994). These children appear to be more likely to experience more peer rejection (Swanson & Malone, 1992).

Given their often impaired social relationships, you might expect that students with LD report more loneliness than students without LD (Margalit & Levin-Alyagon, 1994; Sabornie, 1994). Because of repeated rejection by peers, students with LD also may have greater expectation of loneliness in the future (Turkaspa et al., 1998).

Co morbidity of LD and ADHD along with emotional problems was also addressed by many studies. McGillivray & Baker (2009), studied the effects of co morbid ADHD with LD on anxiety, depression and aggression in adults. ADHD and learning disabilities (LD) frequently coexist and there are indications that co morbidity may increase the risk of psychopathology. This study examined the gender distribution and frequency of co morbidity and its impact on the prevalence of symptoms of anxiety, depression, and aggression in a clinic sample of 80 adults with ADHD, aged 18 to 58 years. More individuals were diagnosed with ADHD+LD than ADHD only, with no difference in this distribution according to gender. A factorial multivariate analysis of variance indicated that females with ADHD+LD displayed more cognitive depression than females with ADHD only and than males with ADHD+LD and ADHD only. However, individuals with ADHD only and individuals with ADHD+LD did not differ on overall anxiety, depression or aggression. Likewise, males and females did not differ on measures of psychopathology. This study lays the foundation for continued research into the characteristics and co morbidities of adults with ADHD.

Emotional and behavioral characteristics over a six years period in youth with persistent and non persistent dyscalculia were Aurebach, et al. (2008). They examined behavioral problems in a matched sample of 58 youths with persistent dyscalculia (PD) and non persistent dyscalculia (NPD). Participants were classified as having dyscalculia at age 10-11 years. Parents completed the Child Behavior Checklist for their children at ages 10-11, 13-14, and
16-17 years, while the youths did so at the last two age periods. Only at age 16-17 years were there significantly more problems, particularly attention problems and externalizing problems, reported by parents for PD youths compared to NPD youths. A higher percentage in the PD group than in the NPD group received scores in the clinical range for externalizing problems. However, the mean levels of behavior problems at this age and the earlier ages were within the normal range for both groups. For youth-reported problems, the only significant difference was for attention problems at 16-17 years. Therapeutic interventions should focus on the academic domain and improving and altering behavioral patterns.

Arthur, A. R. (2003), reviewed the emotional lives of people with LD. They stated that the emotional lives and difficulties of people with learning disabilities are much neglected. Their paper reviews accounts of research and therapy and makes an assessment of the current state of knowledge. According to them very little research actually exists when compared to the non-learning disabled, and so, studies of psychotherapy, child development, parent-infant bonding, psychological assessment and emotional disturbance in people with LD are examined. The review finds that there is evidence to suggest the presence of a significantly higher level of emotional developmental problems and disturbance in people with LD. This problem requires multidisciplinary attention if progress in improving quality of life is to be maintained.

In conclusion, a studies reflecting three factors of LD shows that there is a strong correlation between ADHD, emotional problems and LD. Present study mainly focus on to find out the correlation of these three factors with different age groups with their IQ.