The discussion is presented under the following headings

5.1. Prevalence of problem in the Ashrama School as identified on Children’s Behaviour Questionnaire

5.2. Pre-intervention (base line) scores and levels of the group on different assessment tools of cognitive aspects and psychosocial aspects

5.3. Pre-intervention (base line) scores and levels on different assessment tools

5.4. Comparison of experimental group (before and after intervention) and control group (before and after waitlist period) by also considering effect size estimates on different assessment tools of cognitive aspects and psychosocial aspects

5.5. Gender difference comparison of the experimental group and control group on different assessment tools of cognitive aspects and psychosocial aspects

5.6. Relationship among cognitive and psychosocial aspects of experimental group and control group
1.1. **Prevalence of problem in the Ashrama school as identified on children’s behaviour questionnaire**

In the present study 5.6 per cent of children (Ashrama school children studying in 4th, 5th, and 6th standard) were identified as having problematic behaviour on Children’s Behaviour Questionnaire. This prevalence rate of 5.6 per cent was on the low side, as per expectations. Epidemiological surveys point to prevalent rates above 10.6% for mental health and scholastic problems in children. Compared to other Indian rural school-based studies by Jiloha and Murthy (1981), Parvatha Vardhini (1983), Ruckmini (1994), and Banerjee (1997), the prevalence rates were exceedingly low in the present population.

With the advent of epidemiological surveys dealing exclusively with children, using tools with acceptable reliability and validity, a better picture has emerged regarding the prevalence of childhood mental health problems. From 1967 onwards, there have been 14 clinic-based studies, seven population surveys in rural areas and 10 surveys in urban areas. Unfortunately these are not comparable methodologically (Kapur, 1997).

To compare the present study with one important study by multicentre ICMR with a common methodology- In 1984 of 1,985 child psychiatric cases it was reported that 29 per cent suffered from neuroses, 23 per cent from psychoses, 23 per cent from hysteria, 14 per cent from epilepsy, 12 per cent from mental retardation, nine per cent from behaviour problems, five per cent from emotional problems and four per cent from scholastic backwardness. In the present study, total of 435 children were administered Children’s Behaviour Questionnaire and 25 children scored above the cut off point of 9. Of the 25 children who scored above the cut off point high per cent of children were identified as absenting from school followed by rank order in terms of other issues of quarrelsome, being over active and refusing to come to school;
destroying things and being afraid of new situation; fidgeting, having short attention span and seen bullies other children; truants from school, appears unhappy and distressed, nail biting, stealing things occasionally; thumb sucking and bed wetting; irritable, disobedient, tells lies and not much liked by other children; often worried and complains of pains and aches; doing things solitarily and fussy child; mannerisms of the face and having speech difficulty. The issues and problems stated in the end were seen in very less per cent of children.

In the present study identified 5.6 per cent of tribal children having problematic behaviour on Children’s Behaviour Questionnaire were either examined and counselled or referred for further treatment to the extent possible.

In a review of 55 epidemiological studies in India, by Bhola and Kapur (2003), it has been suggested that there is a need to examine methodological issues, psychosocial correlates of psycho-pathology and cross-cultural issues within India.

The studies also reveal that multiple informants such as teachers, parents and self-report offer a more comprehensive picture of child mental health problems as they tend to be situation specific. The clinical based data reflects more serious disorders, while school data reveals milder forms of mental health problems and of scholastic problems. The nature of disorders reported in schools being milder may not need clinic based services. The differences in the nature of disorder picked up in these studies, point to the need for different types of services required at different levels.
1.2. **Pre-intervention (base line) comparison of the experimental and control group on different assessment tools**

Analysis using independent ‘t’ test on different assessment tools and their sub tests were done for experimental and control group before the intervention to establish the base line scores comparisons on different tests and to check for homogeneity between the experimental and control group. Over all, the mean, and ‘t’ values of different assessment tools done to check for homogeneity between the experimental and control group of tribal children indicated that except on two sub scales (total score of Double Digit Cancellation on Number Cancellation Test; and subtest of school on Pre Adolescent Adjustment Scale), there was no significant difference between the experimental group and control group pre intervention. Hence it was concluded that there was homogeneity between the experimental and control group and further it could be assumed that any difference on experimental group on these tests and subtests could be because of the intervention programme.
1.3. **Pre-intervention (base line) scores and levels on different assessment tools**

1.3.1. **Pre-intervention (base line) scores on Number Cancellation Test**

The present study assessed the attention and concentration by using Number Cancellation Test (Kapoor, 1974) which consisted of two types of task i.e. single digit cancellation task and double digit cancellation. In the present study the total number of correct digits cancelled by children on both single digit cancellation and double digit cancellation was below the expected level indicating that the performance of the group was below average on Number Cancellation Test.

The study by Kapur and Uma (2003) on a rural sample of 800 students has found that this test was sensitive enough to assess the level of attention and concentration in children (8-12 years) and even in their study the rural children aged between 8-12 years had below average performance on Number Cancellation Test (Kapoor, 1974). None of the other studies were available to compare the performance of the children on this particular test in background of tribal children. Whereas some studies have used other methods to assess the attention by using Digit-Span Test which is a tool to assess attention and especially sensitive to deficits in attention, concentration, and alertness to the environment (Oommen, 1990). In a study conducted by Das (1992) the performance of the advantaged children was better than that of the disadvantaged children on Digit-Span (forward) and socially advantaged children performed significantly better than their socially disadvantaged counterparts on test of Digit-Span (backward). Attentiveness is also assessed as part of personality trait by some studies conducted on children. One such study by Helen Baker et al., (2009) administered temperament questionnaire consisting of one subscale being attention. The results showed that the undernourished children were less sociable and less attentive. Though not many studies were available with specific reference to the
particular test used in the study and the sample of tribal children, some studies as indicated above do point out that for the tasks on attention the tribal children have below average performance and there is a need for intervention methods to improve attention.

1.3.2. Pre-intervention (base line) scores on Test of Memory for Children

The present study assessed the Memory for 4th, 5th, and 6th standard tribal AshrmaschoolChildren by using Test of Memory for Children (Barnabas et al., 2002) which consisted of 12 sub tests. On the subtest of picture recall the group as a whole has stood above 80 individuals /groups which were the best performance of the group. On the subtests of personal information, word recall (meaningful) the group as a whole has stood above 60 individuals /groups which is the second best performance of the group. On the subtests of paired associate learning and Cattell’s retentivity Test the group as a whole has stood above 50 individuals /groups which is the third best performance of the group. On the other subtests the group has stood below 50 individuals /groups and the least being on the subtest of digit span (digit forward) where in the group has stood below 10 individuals /groups. Overall on the Test of Memory for Children the group as a whole has stood above 30 individuals /groups which seem to be not adequate.

Regarding memory and its related aspects, studies have been conducted on different age groups like grades three to five (Tiwari, 1986); age six to seven years and age eight to nine years (Das & Padhee, 1993). In the present study the children studying are 4th, 5th, and 6th standard tribal children.

Regarding memory and its related aspects, studies have been conducted on different groups like girls (Tiwari, 1986); Harijan group (Das & Padhee, 1993; Das, 1994); rural children (Tiwari, 1986; Flores-Mendoza & Do Nascimento, 2007);
disadvantaged children (Das, 1992); and with children under poverty (Croll, 2002). In the present study the areas assessed are specifically tribal school children studying in Ashrama schools.

To compare the results of the present study on memory and its related aspects with other studies already conducted, it can be seen that studies have used serial recall (Tiwari, 1986); Digit Span (Flores-Mendoza & Do Nascimento, 2007; Das & Padhee, 1993; Das, 1992); Figure Copying Test (Das & Padhee, 1993); Free Recall, Serial Recall and Figure Copying (Das, 1992); verbal, visuospatial working memory (Michele Tine, 2014) and episodic memory and semantic memory (Piccolo et al., 2016). Piccolo et al., (2016) assessed aspects of memory using memory tasks of digit span (forward and backward), pseudoword span, visuospatial working memory, immediate recall of words, immediate recall of figures (visuoverbal episodic memory) and semantic memory (4 general knowledge questions). In the present study Test of Memory for Children (Barnabas et al., 2002) was selected to assess the level of memory. The Test of Memory for Children consisted of 12 different sub tests. This test was considered because this test battery covers wide dimensions of 147 items for assessing memory process of children, standardized on Indian Children.

None of the studies were available with specific reference to the particular memory test used in the present study and the sample of tribal children. To compare the present study with other studies which have used different assessment tools to assess memory many studies have reported that disadvantaged (social, economical, poverty, rural, tribal) children performances on memory are not adequate.

Most studies found that children from lower social economic status backgrounds perform worse on measures of working and declarative memory than their higher social economic status peers (Herrmann & Guadagno, 1997; Farah et
al., 2006; Noble et al., 2007b; Evans & Schamberg, 2009; Sarsour, et al., 2011; Hackman, et al., 2015). In a study by Farahet al., (2006) higher socio economic status was associated with better performance on battery of memory tasks. Michele Tine (2014) investigated the difference in working memory between children living in rural poverty and children in urban poverty which showed that low-socioeconomic status children exhibited both verbal and visuospatial working memory deficits. Piccolo et al., (2016) in their study found that the children with lower socio economic status had lower performance regarding verbal episodic, semantic memory, working memory, visuoverbal memory and inhibitory control tasks than those with higher socio economic status.

Tiwari (1986) tested the hypothesis that children with different backgrounds display different levels of control process performance and results showed that urban girls scored higher on serial recall than rural girls and subjects from superior schools demonstrated greater serial recall. Das (1992) reported that the performance of the advantaged children was better than that of the disadvantaged children on Digit-Span (forward), Free Recall, and Serial Recall where in advantaged children performed significantly better than their socially disadvantaged counterparts on tests of Figure Copying, and Digit-Span (backward). In their study on children aged six to seven years and eight to nine years reported that the performance of the socially advantaged (Brahmin caste) was better than that of the disadvantaged (Harijan) children on the Digit-Span and the Figure Copying Test. A hierarchy of mean scores was seen, with the enriched Brahmins at the top, restricted Brahmins in the middle, and enriched and restricted Harijans at the bottom (Das & Padhee, 1993). In a study by Flores-Mendoza and Do Nascimento (2007) the comparison between the rural and the urban children,
showed 16.18 points of intellectual quotient difference on one of the two subtests of subtests Digit Span.

Some studies found no differences associated to the socioeconomic status in the performance of executive functions (inhibitory control) (Wiebe, Espy & Charak, 2008) and working memory (Waber, et al., 2007; Lupien, King, Meaney, & McEwen, 2001). The study by Engel, Santos and Gathercole (2008) evaluated the impact of socioeconomic factors on children's performance on tests of working memory. Twenty Brazilian children, aged 6 and 7 years, from low-income families, completed tests of working memory (verbal short-term memory and verbal complex span). A further group of Brazilian children from families of higher socioeconomic status matched for age, gender, and nonverbal ability also participated in the study. Results indicated that no significant group differences on the working memory measures. But as indicated above more number of studies has reported that lower economic status had negative influence on development of memory.

Of the different types of memory tests used in different studies (Free Recall, serial recall, Digit Span- forward & backward, Figure Copying Test, pseudoword span, immediate recall of words, immediate recall of figures, visuoverbal episodic memory and semantic memory) the results of the present study on sub tests of immediate logical memory, word recall meaningful and picture recall can be compared with the results of one study which has used immediate recall of words and immediate recall of figures (Piccolo et al., 2016) which indicated that that the children with lower socio economic status had lower performance when compared to higher socio economic status. Apart from that the results of the present study can be compared with the most commonly used subtest of memory that is digit span. Studies using digit span have indicated that memory was not adequate for disadvantaged
group (Flores-Mendoza & do Nascimento, 2007; Das & Padhee, 1993). The present study also indicates that on the subtest of Digit forward the group has stood below 90 individuals/groups, and on Digit backward the group has stood below 70 individuals/groups which are again not adequate. All these results indicate that there is a need for intervention to improve the memory by using different strategies.

1.3.3. Pre-intervention (base line) scores on Colored Progressive Matrices

The present study assessed the person’s present clarity of observation and level of intellectual development by using the Colored Progressive Matrices (CPM). But, the CPM cannot be used satisfactorily for the quantitative assessment of intellectual dysfunction. They only indicate where a person is failing (Raven, 1965). Hence the present study was interested in understanding where the group was failing rather than quantitative assessment of intellectual dysfunction. The Overall results in the present study indicate that the 4th, 5th, and 6th standard tribal children’s performance was not adequate on the Colored Progressive Matrices.

In terms of the assessment tool used to assess intellectual functioning couple of studies has used the measure of Raven’s Progressive Matrices (Das, 1992; Das & Padhee, 1993; Tzuriel, & Klein, 1985; Tzuriel, 1989; Carver, 1990), where as others have used verbal and nonverbal intelligence tests and Wechsler Intelligence Scale for Children-Revised (WISC-R) (Dwivedi & Dubey, 1989; Cueto et al., 1997). It could also be seen that intelligence was seen as a part of personality trait by many studies (Balkrishna, 1986; Sujatha & Yeshodhar 1986; Jain, 1988; Roy, 1986). The present study has used the Colored Progressive Matrices to assess the level of intellectual functioning.

In terms of the study sample areas - studies regarding assessing intellectual ability have been done on rural students (Dwivedi & Dubey, 1989); rural SC/ST
students (Sujatha & Yeshodhar, 1986); comparison between Christian tribals and non
tribals (Balkrishna, 1986; Jain, 1988); comparisons between SC, Non SC and
Brahmins (Gaur & Sen, 1989; Das, & Padhee, 1993); comparisons between socially
disadvantaged/deprived and advantaged/Non deprived (Das, 1992; Roy, 1986; Tzuriel
& Klein, 1985; Tzuriel, 1989); and finally comparisons between urban and rural
Students (Cueto et al., 1997; Flores-Mendoza & Do Nascimento, 2007). The present
study has not tried to compare between groups but assess the intellectual level of
tribal Ashrama school children.

In terms of the age of the sample, studies have been carried out on elementary
and middle school children and on adolescents or high school children (Gaur & Sen,
1989; Flores-Mendoza & Do Nascimento, 2007). The present study has concentrated
on tribal Ashrama school children studying in 4th, 5th, and 6th standard.

Some studies have considered intelligence as a personality factor and have
found that rural students are less intelligent. As noted by Sujatha and Yeshodhar
(1986) both SC/ST and non-SC/ST students from rural area were low on the
personality factor B (less intelligent/more intelligent). Jain (1988) reported that
scheduled tribes and scheduled castes adolescents were comparatively less intelligent
as a personality trait than upper caste adolescents. The present study has considered
intelligence as a cognitive aspect and has found that tribal children (4th, 5th, and
6th standard) have not performed adequately on Coloured Progressive Matrices.

As observed by Balkrishna (1986), Christian tribal students possessed more
intelligence and better reasoning ability than non-Christian tribal students. The
present study did not have category of Christians but had tribal students belonging to
different caste like Jenukuruba, Kadukuruba, Yarava, Beda, Nayaka, Soliga
and Bhovi, but the study has not attempted comparison between the castes as the sample for some castes were small.

Subjects from non-scheduled castes and tested on Raven’s Standard Progressive Matrices showed that the non-scheduled caste subjects were comparatively more intellectual than the scheduled castes subjects (Gaur & Sen, 1989). Das and Padhee (1993) reported that a hierarchy of mean scores was seen, with the enriched Brahmins at the top, restricted Brahmins in the middle, and enriched and restricted Harijans at the bottom on Coloured Progressive Matrices and other cognitive tests. Das (1992) found that socially advantaged children performed significantly better than their socially disadvantaged counterparts on tests of Progressive Matrices and other cognitive tests. Roy (1986) reported that there was a significant difference between socially deprived children and privileged children on intelligence and other cognitive aspects.

Urban students scored higher than rural students, the highest scores were from students in urban private and parochial schools compared to state schools on Wechsler Intelligence Scale for Children--Revised (WISC--R) (Cueto et al., 1997). In a study by Flores-Mendoza and Do Nascimento (2007) the comparison between the rural and the urban children showed 30 points of intellectual quotient difference on Raven, and 16.18 points of intellectual quotient difference on two verbal subtests (Arithmetic and Digit Span).

Some studies did indicate that there was no significant difference between SC and ST students, but at the same time revealed that both the groups from rural area did not perform adequately on intelligence test. As reported by Pal (1984), there was no significant difference in intelligence of scheduled caste students and high caste students and both of them did poorly on intelligence test. As noted by Sujatha and
Yeshodhar (1986) both SC/ST and non-SC/ST students from rural area were low on the personality factor B (less intelligent/more intelligent). This shows that irrespective of the group (SC or ST) rural students are not faring well on intelligence tests. Even in the present study it was seen that tribal children have not performed adequately on Coloured Progressive Matrices.

Number of studies has shown that socioeconomic disadvantage and other risk factors that are associated with poverty (e.g., lower parental education and high family stress) have a negative effect on cognitive development and academic achievement (Duncan et al., 1994). Flores-Mendoza and do Nascimento (2007) through their study observed that the more difference between rural and urban children was on tool loaded on crystallized intelligence than on fluid intelligence and concluded that environmental deficits affect the fluid intelligence more than the crystallized intelligence. In a study by Dwivedi and Dubey (1989) performance IQ was higher than verbal IQ at each age level for rural children. A corresponding increase existed in performance and verbal IQ with increasing age, suggested that the influence of cultural deprivation in rural children is lessened with increased exposure to education in schools. McLoyd (1998) states researches has been consistently reporting that persistent poverty has more detrimental effects on IQ than transitory poverty.

The present study was conducted in the area where the children were deprived of many basic amenities and interaction indicating social and economic deprivation. The environment was not very conducive for cognitive development and hence even their performance on intellectual ability was not adequate as also reported by other studies. This pushes the evidence further about the need to provide effective programs which can give exposure to specific developmental aspects.
1.3.4. Pre-intervention (base line) scores on Pre Adolescent Adjustment Scale

The present study assessed the adjustment of children by using Preadolescent Adjustment Scale (PAAS; Pareek et al., 1975). This scale yields separate scores in five areas; home, school, peers, teachers and general, along with an overall score for total adjustment. This scale was selected since it has been validated on a sample of Indian children and assesses adjustment in different relevant domains. The average scores obtained by the 4th, 5th, and 6th standard group on all the five areas indicate that on all the areas the group as a whole is maladjusted.

Related to adjustment and its related aspects, studies have been conducted on different groups like adivasi students; tribal and non-tribal; rural migrant children; urban and rural students; scheduled castes/scheduled tribes; socially disadvantaged group, deprived, economically disadvantaged and individuals from low-income background (Nomani, 1965; Kumar, 1989; Chen, Wang & Wang, 2009; Raju & Rahamtulla, 2007; Goyal & Chopra, 1989; Sujatha & Yeshodhar, 1986; Jain, 1988; Ushasreem, 1987; Roy, 1986; Morales & Guerra, 2006; Shek, 2002; Esposito, 1999). Studies on adjustment and its related aspects have studied this concept under different aspects like personality factor, general adjustment, social adjustment, school adjustment, adjustment to instructional programmes and personal hygiene rules (Jain, 1988; Nomani, 1965; Ushasreem, 1987; Goyal & Chopra, 1989; Sujatha & Yeshodhar, 1986; Roy, 1986). In the present study the areas assessed are specifically tribal school children studying in 4th, 5th, and 6th standard and has used Pre Adolescent Adjustment Scale to assess levels of adjustment in five areas of home, school, peers, teachers and general, along with an overall total adjustment.

Not many studies were available with specific reference to the particular assessment tool of Pre Adolescent Adjustment Scale used in the present study and the
sample of tribal children. To compare the present study with other studies which have used different assessment tools to assess adjustment - exceptionally one specific study on tribal and non-tribal students studying in secondary and higher secondary schools school by Kumar (1989) indicated that there existed no difference in adjustment between tribals and non-tribal except that non-tribals showed a more favorable attitude towards school than the tribal’s. But many other studies have reported that disadvantaged (social, economical, poverty, rural, tribal) children’s adjustment in general was not satisfactory. Studies have revealed that health adjustment and social adjustment in general was not satisfactory for Adivasi Students (Nomani, 1965), non-disadvantaged subjects were better adjusted and higher achieving than socially disadvantaged group (Ushasreem, 1987), and there was a significant difference between the two groups of socially deprived children and privileged children on adjustment to instructional programmes and adjustment to personal hygiene rules (Roy, 1986). Jain (1988) reported that scheduled tribes and scheduled castes adolescents were comparatively less intelligent, emotionally unstable, expedient and tensed than upper caste adolescents, as personality factor. In a study by Pal (1984), scheduled caste students differed significantly from their high caste counterparts on six out of 14 personality factors. Scheduled caste students were more reserved, expedient, shy, tough minded, tense and had undisciplined self-conflict. On the other hand, high caste students were more outgoing, conscientious, venturesome, tender minded, controlled and relaxed. The study conducted by Sujatha and Yeshodhar (1986) on SC/ST and non-SC/ST high school students indicated that SC/ST students had relatively poor school adjustment compared to non-SC/ST students. The study concluded that there is a great need to provide for a specially designed compensatory programme to enrich SC/ST student’s cognitive faculty and achievement. Steps
should also be taken to provide a stimulating school environment which encourages SC/ST children to develop aspirations and to achieve better. In the present study the mean scores obtained by the 4th, 5th, and 6th standard group on all the five areas of home, school, peers, teachers and general, along with an overall score for total adjustment indicate that on all the areas the group as a whole is maladjusted.

Studies have shown that adjustment has been correlated with many other issues like aspects of the students of shyness (Chen et al., 2009), self-motivation of students (Sonal Shivagunde & Kulkarni, 2012), academic achievement (Sujatha & Yeshodhar, 1986); aspects of the environment like three stressor contexts of school, family, neighbourhood (Morales & Guerra, 2006), family functioning (Shek, 2002), parental education and occupation (Raju & Rahamtulla, 2007); School related aspects like school climate and the teacher–student relationship (Esposito, 1999), the class in which they are studying, the medium of instruction present in the school, and the type of management of the school (Raju & Rahamtulla, 2007), support of teachers (Sonal Shivagunde & Kulkarni, 2012) etc.

Sujatha and Yeshodhar (1986) found that SC/ST students had relatively poor school adjustment and a significant association between academic achievement and school adjustment was found in the case of SC/ST students. The study by Raju and Rahamtulla (2007) found that adjustment of rural school children was primarily dependent on the school variables like the class in which they are studying, the medium of instruction present in the school, and the type of management of the school. Parental education and occupation of the school children also significantly influenced adjustment. Chen et al., (2009) reported that shyness was generally associated with indexes of adjustment such as leadership, teacher-rated competence, and academic achievement in rural migrant children. Study by Morales and Guerra
(2006) on economically disadvantaged communities indicated that three stressor contexts (school, family, neighbourhood), were related contemporaneously and longitudinally to negative outcomes across adjustment measures. Shek (2002) showed that family functioning was significantly related to measures of economic disadvantaged adolescent school adjustment (perceived academic performance, satisfaction with academic performance, and school conduct). Study by Esposito (1999) on families from low-income, minority, and living in chronically poor urban neighbourhoods indicated that overall school climate and the teacher–student relationship significantly predicted school adjustment.

Findings of a study by Sonal Shivagunde and Kulkarni (2012) on tribal children of Ahmednagar district in Maharasthra revealed that the self - motivation of students to make efforts for academic progress and support of teachers are the most critical dimensions influencing school adjustment. Analysis also showed that unfavourable family background, inadequate academic support from teachers and inconsistencies of the curriculum with tribal context are the main contributory factors for low academic achievement. A study on tribal and non-tribal students studying in secondary and higher secondary schools school by Kumar (1989) showed that adjustment and attitude towards school were found to be associated positively and significantly both in the case of tribal as well as non-tribal students. These evidences further emphasize the need to use intervention and preventive strategies specifically at the school level for development of children in terms of adjustment from disadvantaged background, which was important for the present study group of tribal children too.
1.3.5. **Pre-intervention (base line) scores on Children’s Self Concept Scale**

Children’s Self-concept Scale (Ahluwalia, 2002) was selected for the study as it is designed to assess the self-concept. The test contains six sub-scales of behaviour; intellectual and school status; physical appearance and attributes; anxiety; popularity; happiness and satisfaction. The average scores obtained by the 4th, 5th, and 6th standard group on all the sub-scales indicates that on two subscales of behaviour; intellectual and school status the group as a whole has average favourable self-concept and on the rest of the sub-scales of physical appearance and attributes; anxiety; popularity; and happiness and satisfaction the group has below average self-concept. In terms of overall self-concept the group as a whole has below average self-concept.

Countless studies have been conducted to understand the individual’s personality in the aspects of self concept and self esteem. In terms of disadvantaged groups the different groups being studied are scheduled caste, scheduled tribe, rural students and disadvantaged from low socio economic status (Goyal & Chopra, 1989; Patel, 1987; Jin-dao, 2003; Woodward & Frank, 1988; Houlihan et al., 1994; Pal, 1984; Thakur & Madnawat, 1986; Magano, 2007; Freda & Albertazzi, 2001; Farrell et al., 2009). With the background of disadvantage to understand the aspect of self concept different studies have focused on different age ranges starting from age eight to around 20 years including primary, middle, and high school students (10–14 years) and adolescents (Freda & Albertazzi, 2001; Woodward & Frank, 1988; and Magano, 2007). Of these studies many of the studies have been a comparative study between disadvantaged and advantaged, SC/ST and Non SC/ST, rural/tribal and urban. In the present study the areas assessed are specifically tribal school children studying in 4th,
and 6th standard and has used Children’s Self-concept Scale (Ahluwalia, 2002) to assess the self-concept.

Self has been studied under the labels of self-concept (Magano, 2007; Jin-dao, 2003; Goyal & Chopra, 1989; Patel, 1987; Magano, 2007; Pal, 1984); and self-esteem (Woodward & Frank, 1988; Thakur & Madnawat, 1986; Zhang et al., 2006; Houlihan et al., 1994; Freda & Albertazzi, 2001; Farrell et al., 2009). In the present study the areas assessed are specifically children’s self-concept.

Apart from one specific study by Thakur and Madnawat (1986) which has stated that the self-esteem of scheduled caste subjects was significantly higher than that of the upper-caste subjects, many studies have indicated that disadvantaged group in any form have low self concept. Studies have indicated that scheduled caste students possessed poor social self-concept in comparison to their high caste counterparts (Pal, 1984); non-scheduled castes/scheduled tribes student-teachers exhibited higher self-concept than their scheduled castes/scheduled tribe’s counterparts (Goyal & Chopra, 1989); children in the low socio economic status schools scored significantly lower on self-esteem than children in the high socio economic status schools (Farrell et al., 2009). According to a study by Patel (1987), all the three groups, viz., scheduled caste, scheduled tribe, and the advantaged children, differed significantly in their achievement in academic subjects and self-concept. A Study by Jin – dao (2003) on the primary and secondary students in the rural area aged from 10 to 17 years old showed that the urban students had significantly higher self concept level than the rural students. Houlihan et al., 1994) showed that girls from the rural setting had significantly poorer self-esteem than did other subjects. In the present study the average scores obtained by the 4th, 5th, and
6th standard tribal group in terms of overall self-concept shows that the group has below average self-concept.

Studies have shown that self-concept and self esteem of disadvantaged children and adolescents has been correlated with many other aspects like environment (Magano, 2007), poor scholastic performance and high risk of depression (Freda & Albertazzi, 2001), loneliness (Woodward & Frank, 1988), interpersonal relationship loss and hardness in learning (Zhang et al., 2006).

A study by Magano (2007) on adolescents from disadvantaged environments indicated that there is a significant relationship between environment and the self concept. In a study by Freda and Albertazzi (2001) on primary, middle, and high school students (aged 10–14 years) from disadvantaged background it was ascertained that students affected by poor scholastic performance and negative self-esteem have a high risk of depression. Woodward and Frank (1988) investigated that children (aged eight –20 years) from rural Nebraska had extremely high loneliness scores and that 10 of 12 self-esteem characteristics were significant in relation to loneliness scores. In a study by Zhang et al., (2006) on two rural middle school children of Anhui province it was observed that 19.0% of students had problems on the self-esteem and indicated that interpersonal relationship lose and hardness in learning had association with self-esteem. These studies point out the higher need to intervene and use both preventive strategies and intervention programmes for development of self concept with children from disadvantaged background, and which was needed for the group of tribal children of the present study.

1.3.6. Pre-intervention (base line) scores on Group Social Problem Solving Assessment

Group Social Problem Solving Assessment (GSPSSA) questionnaire provides a screening of children’s knowledge of the social decision making steps. It is a paper
pencil test which has items spanning five areas such as feelings, problems, solutions, consequences and making solutions work. The five areas are further summarized into scores on interpersonal sensitivity; problem analysis and action; and specificity of planning. The average scores obtained by the 4th, 5th, and 6th standard group on all the three areas which indicates that on all the three areas the group as a whole is at risk i.e. the group social decision making was not adequate.

None of the studies were available to compare the performance of the children on this particular test in background of rural/tribal children. Theoretically it’s been stated that social problem solving skills are skills that students “use to analyze, understand, and prepare to respond to everyday problems, decisions, and conflicts” (Elias & Clabby, 1988). Learning these skills help students to improve their ability to cope with stress (Dubow & Tisak, 1989; Elias & Clabby, 1988), handle interpersonal situations (Elias & Clabby, 1988), experience more positive social adjustments, improve academically and show improvements in behavior (Dubow & Tisak, 1989; Gootman, 2001; Nelson et al., 1996). Social problem solving skills also help students to better “read” analyse the various demands associated with social situations (Elias & Clabby, 1988) and exercise greater self-control over their behaviors (Gootman, 2001). Hence there is a need to work on improving the social problem solving skills during the developmental stages irrespective of the area one belongs to. And it was much needed for the group of tribal school children of the present study.
1.4. Comparison of experimental group (before and after intervention) and control group (before and after waitlist period) by also considering effect size estimates on different assessment tools

1.4.1. Effect of intervention on Number Cancellation Test

On Number Cancellation Test the 4th, 5th, and 6th standard tribal children demonstrated a significant improvement for single digit cancellation (overall for the entire sample; and for girls and boys separately) after intervention and waitlist period. On double digit cancellation the experimental group had significantly improved after intervention whereas the control group had significantly decreased in attention after waitlist period (overall for the entire sample and for girls). Though there was no significant difference in double digit cancellation, control group before intervention was better in complex attention task for boys. This indicates that as the task is complicated the performance has decreased in control group.

It was to be noted that experimental group (after intervention) was significantly better than control group (after waitlist period) for single digit cancellation (overall for the entire sample; and for girls and boys separately) and double digit cancellation (overall for the entire sample; and for girls and boys separately). The effect size indicated that the intervention had significant small and medium effect on single digit cancellation and double digit cancellation respectively which are the tasks of attention.

All these indicate that the intervention programme was effective on enhancing of attention on experimental group. The results of the group as a whole is according to the hypothesis stated that there will be a significant improvement in the single digit cancellation and double digit cancellation for children after intervention programme (for overall sample; and girls and boys separately). And the results of the group is according to the hypothesis stated that experimental group (with intervention) will be
a significantly better in the single digit and double digit cancellation than control (without intervention) group children.

It can be seen that some studies were very keen about tackling attention problem with ADHD (Ray et al., 2007) and some others - ‘attentiveness’ as personality trait (Pellegrini & Davis, 1993) and other studies saw attention as associated cognitive issues with other major cognitive aspects like problem solving and information processing (Saiz & Roman, 1998).

Researchers have worked with different groups of children to enhance attention and the groups are children with behaviour disorders (Rosal, 1993); children exhibiting behavioural and emotional difficulties (Muro, et al., 2006); children with attention deficit/hyperactivity disorder (ADHD) (Ray et al., 2007). Very few studies have worked with disadvantaged children (Saiz & Roman, 1998) to enhance attention. The present study concentrated in improving attention of other aspects among tribal Ashrama school children.

Some of the strategies to enhance attention includes stringing beads, matching – sorting, finger dexterity games, mazes, colouring and painting within the lines, jigsaw puzzles, scanning pictures and numbers, listening to stories, tapping boards etc (Oommen In: Uma et al., 2002). Apart from this other researchers have used different techniques to enhance attention which include cognitive art therapy and art therapy (Rosal, 1993); long-term child-centred play therapy (Muro, etal., 2006); child centered play therapy and reading mentoring (Ray et al., 2007); playtime on the playground (Pellegrini & Davis, 1993); playing musical instruments (Musacchia et al., 1997); and cognitive training program (Saiz & Roman, 1998). Naglieri and Rojahn (2001) have suggested that children with lower attention need to be taught to plan more thoughtfully and be more strategic in the things they do. Though in the
present study the attention enhancing tasks and specified therapy techniques were specifically not used, the intervention programme package consisted of a combination of art and craft work, games and play, word and vocabulary, number games and cultural and extracurricular activities, which adopted a child-to-child approach and many activities mentioned above if not exactly the same way but indirectly were part of the intervention programme.

Many of the above mentioned intervention programmes though used on children with different backgrounds has been useful in improving attention either as cognitive or personality factor. Similar to the present studies Art work that is art therapy and another therapy technique that is cognitive art therapy was examined to modify adaptive classroom behaviour among children with Behaviour disorders. Both the conditions were more effective than a control group in helping Behaviour disordered subjects improve (Rosal, 1993).

Resembling to the play activity of the present study the impact of long-term child centred play therapy with children exhibiting behavioural and emotional difficulties was statistically significant in improvement on ADHD domain (Muro et al., 2006). In the same manner Ray et al., (2007) demonstrated that children who participated in child centered play therapy and reading mentoring demonstrated statistically significant decrease in the ADHD Index. Pellegrini and Davis (1993) charted the behaviour of children in the classroom immediately preceding playtime on the playground and results showed that play time improved attention to seat work. Ray et al., (2007) using intervention of child centered play therapy and reading mentoring on ADHD children showed that children who participated in either of the intervention conditions demonstrated significant improvement on the ADHD Index. Though the present study was not dealing with therapeutic method to improve
attention and not dealing with behavioural problems, aspects of the art and play therapy was incorporated in intervention programme.

Resembling the cultural and extracurricular activities with music of the present study was another study (Musacchia et al., 1997) which demonstrated that playing musical instruments triggers changes in the brain stem as well as in the brain cortex. They found that musician taking decreased response time, which is also component of attention.

Apart from the intervention programmes used by different individuals similar to the programme as in the present study, some other intervention programme have been used to enhance attention of the disadvantaged group – which is of the interested area of the present study. One such study is done by Saiz and Roman (1998) involving socially disadvantaged children to study the effect of a cognitive training program on different aspects of the problem-solving abilities along with levels of attention. Results showed that there was a significant improved on all the measures, which also involved levels of attention that improved through cognitive training program.

The present study used child friendly intervention programme of a combination of art and craft work; games and play; word and vocabulary games; number games and cultural activities and extracurricular activities to enhance attention among tribal ashram school children which was effective to moderate level as described through effect size estimate.

1.4.2. Effect of intervention on Test of Memory for Children

On different sub tests of personal information, mental control, sentence repetition, delayed logical memory, word recall meaningful, word recall non meaningful, digit span forward, delayed response, picture recall, paired associate learning, retentivity test, and total score for Memory Test for Children there was
significant improvement after intervention. But for the subtests of immediate logical memory, digit span backward, and BVRT there was no significant improvement even after intervention.

On different sub tests of personal information, mental control, sentence repetition, immediate logical memory, delayed logical memory, word recall meaningful, word recall non meaningful, digit span forward, delayed response, picture recall, BVRT, paired associate learning, retentivity test, and total score for Memory Test for Children, there was no significant improvement in the control group after waitlist period, whereas on the subtest of digit span backward there was significant improvement in the control group after waitlist period.

Girls and boys of experimental group have demonstrated a significant improvement for overall memory after intervention, whereas the control group had not significantly improved in overall memory after waitlist period. Though there was no significant difference in overall memory control group before intervention was better in memory than the control group after waitlist period.

On different sub tests of personal information, mental control, sentence repetition, immediate logical memory, word recall meaningful, word recall non meaningful, digit span forward, delayed response, picture recall, paired associate learning, retentivity test, and total score for Memory Test for Children the experimental group (after intervention) was significant better than the control group (after waitlist period). But for the subtests of Delayed Logical Memory, digit span backward, and BVRT there was no significant difference between the means of experimental (after intervention) and control group (after waitlist period).

On different sub tests of immediate memory, digit span backward and BVRT the effect size were of marginal level indicating no effect of intervention on these
aspects. On subtests of sentence repetition, delayed memory, delayed response and picture recall the effect sizes were of small range indicating small effect of intervention. On subtests of personal information, word recall non meaningful, digit span forward and retentivity test the effect size were of medium range indicating medium effect of intervention. On subtests of mental control, word recall meaningful, paired associate learning, and for total scores on this test the effect size were of large range indicating large effect of intervention on these aspects.

Girls and boys in the experimental (after intervention) have scored significantly better in overall memory when compared to girls and boys in the control group (after waitlist period).

The results of the group as a whole is according to the hypothesis stated that there will be a significant improvement in memory for children after intervention programme (overall for the entire sample; and for girls and boys separately). And the results of the group as a whole is according to the hypothesis stated that experimental group (with intervention) will be significantly better in total scores on memory than control (without intervention) group children (overall for the entire sample; and for girls and boys separately).

Interventions have been conducted to enhance different aspects of memory. Some of the studies as conducted by different researchers are for enhancing verbal memory (Chan et al., 1998); verbal learning, retention abilities and verbal memory (Ho et al., 2003); and academic achievement (Johnson & Memmott, 2006).

Not many specific studies were available which had used play, games or any other playway methods to improve memory among children, may be because there is already theoretically and experimentally proven fact that mnemonic techniques (Gehring & Toglia, 1989; Baron, 2006) can be used to improve the memory ability in
individuals. In children, greater aerobic fitness has been associated with better relational memory (Chaddock, et al., 2010), and an aerobic fitness intervention enhanced relational memory (Monti, Hillman, & Cohen, 2012). Suggestive evidence from studies of physical activity indicated improvement in executive functions (Uhrich & Swalm, 2007; Budde, Voelcker-Rehage, Pietrabyk-Kendziorra, Ribeiro, & Tidow, 2008). Studies of exercise have provided evidence for plasticity in hippocampal volume and declarative memory processes most associated with the hippocampus (relational memory; Davachi, 2006). Some studies have used programmes aimed at training particular neurocognitive systems, for example by using computerized, game-based strategies for training executive functions or school curricula that employ specific exercises as well as overarching strategies to promote executive functions throughout the school day (Blair & Diamond, 2008; Diamond, Barnett, Thomas, & Munro, 2007; Thorell, Lindqvist, Nutley, Bohlin, & Klingberg, 2009).

Few research studies have used music to enhance memory. Suggestive evidence from studies of music training (Rauscher, et al., 1997; Bergman-Nutley, et al., 2011) showed improvement in executive functions. Adults with music training in their childhood demonstrated better verbal memory according to a study by Chan et al., 1998. A study with six to 15 year old boys found that those with music training had significantly better verbal learning and retention abilities. The longer the duration of the music training, the better was the verbal memory (Ho et al., 2003).

The studies using interventions as mentioned above have used aerobic, physical activity, exercise, fitness training, game-based strategies, school curricula and music to enhance memory among children (Monti et al., 2012; Uhrich & Swalm, 2007; Budde et al., 2008; Rauscher, et al., 1997; Bergman-Nutley, et al., 2011). In the
present study though these activities were not used specifically but involved almost many of these aspects through art work, games and play, cultural and extracurricular activities involving music and drama. These activities too involved physical activity, exercise, game-based strategies and music and hence like other studies have indicated the present study was also successful in initiating change related to functioning of memory.

In the present study many aspects of memory has improved after intervention programme but some complex aspects of memory like delayed logical memory, digit span backward and visual retentivity have had no impact indicating that the intervention has not been able to tap these aspects of memory. It can be noticed that of the other areas these three areas are the complex aspects of memory which require components of long term retention and reconstruction of memory. Hence it is important to add some aspects to the intervention like games of retaining and manipulation so that these aspects can also be improved.

1.4.3. Effect of intervention on Colour Progressive Matrices

There was a significant improvement shown by experimental group (after intervention) and control group (after waitlist period) on Colour Progressive Matrices. Though both the experimental and control groups have improved, the experimental group (after intervention) has improved more than control group (after waitlist period). Girls and boys in the experimental group have shown significant improvement in Colour Progressive Matrices after intervention programme, whereas the control group had not significantly improved in Colour Progressive Matrices after waitlist period.

On Colour Progressive Matrices, experimental group (after intervention) was significant better than the control group (after waitlist period) (overall for the entire
sample; and for girls and boys separately). For Colour Progressive Matrices test the effect size was of the medium range, indicating that the intervention had medium level of impact on enhancing of the person’s present clarity of observation and intellectual level of functioning.

The results of the group are according to the hypothesis stated that there will be a significant improvement in level of intellectual functioning for children after intervention programme (overall for the entire sample; and for girls and boys separately). And the results of the group are according to the hypothesis stated that experimental group will be a significantly better in level of intellectual functioning (with intervention) when compared to control (after waitlist period) group (overall for the entire sample; and for girls and boys separately).

Different modalities of art, play, games, drama and teaching methods were used to enhance cognitive development in general and intellectual functioning in specific like creative arts therapies (Harvey, 1989); play (Brems, 1993; Russ, 1998); active play (Smilansky, 1968); games (Egan, 1997); strategic board games (Thompson, 2001); dramatic play (Ellis, 1973; Fisher, 1992; Landreth, 1991; Piaget, 1962; Stambak & Sinclair, 1993; Smilansky, 1968); dramatic enactment (Clift, 1983); educational games with case discussions (Bolt, 1998); Integrated movement, art, and music activities (Harvey, 1989) and teaching intervention (Tzuriel & Klein, 1985; Tzuriel, 1989).

Many interventions studies used different modalities of art, play, games, drama and teaching methods to develop and improve different aspects of cognitive development in general and intellectual functioning in specific like positive growth in thinking (Harvey, 1989); improvement in cognitive skills (Brems, 1993); better cognitive process (Russ, 1998); gains in cognitive activities (Smilansky,
improvement in visual perceptual skills as shown on WRAT 3R, WISC III Coding and Block Design subscale (Thompson, 2001); cognitive development (Ellis, 1973; Fisher, 1992; Landreth, 1991; Piaget, 1962; Stambak & Sinclair, 1993; Smilansky, 1968); intellectual development (Freyberg, 1973; Pepler & Ross, 1981); more instances of higher order thinking (Clift, 1983); improved general propensity to identify problems, suggest solutions, and cite concepts in written reflections (Bolt, 1998); higher gain in scores on Children's Analogical Thinking Modifiability and Coloured Progressive Matrices (Tzuriel & Klein, 1985; Tzuriel, 1989).

Harvey (1989) in a study investigated the use of creative arts therapies to effect cognition by using integrated movement, art, and music activities which suggested positive growth in thinking. Play leads to maturation in a number of developmental arenas including cognitive skills (Brems, 1993). Play is involved in the development of cognitive process (Russ, 1998). Smilansky’s (1968) findings says that there is gains in cognitive activities like better verbalization, better problem-solving strategies, better ability to take on the perspective of another and higher intellectual competence if children get involved in active play.

As mentioned by Egan (1997) one of the attributes of games can be intellectual or biomechanical. There was significant improvement on the visual perceptual skills for the group of pre-adolescents who played strategic board games (Thompson, 2001) as assessed on WRAT 3R, WISC III Coding and Block Design subscale.

Research suggests that engaging in dramatic play can have beneficial effects on children’s cognitive development (Ellis, 1973; Fisher, 1992; Landreth, 1991; Piaget, 1962; Stambak & Sinclair, 1993; Smilansky, 1968). Researchers have commented that children who actively participate in dramatic play during preschool
and early elementary years are advanced in intellectual development (Freyberg, 1973; Pepler & Ross, 1981). In her research with high school students, Clift (1983) found that students using dramatic enactment performed as well as students in traditional lecture, discussion, or seatwork modes. Moreover, they experienced more instances of higher order thinking and less topic-irrelevant thought than students in the non-dramatic mode.

Bolt (1998) investigated and described whether cognitive growth occurred among subjects in an elementary educational games class in which case discussions were used as a teaching method. Data revealed an improved general propensity to identify problems, suggest solutions, and cite concepts in written reflections.

One study stated that disadvantaged and regular children achieved higher gain scores on Children's Analogical Thinking Modifiability (CATM) and Coloured Progressive Matrices (CPM) after teaching intervention. It was also reported that teaching was more effective for socially disadvantaged (SD) than socially advantaged (SA) subjects (Tzuriel & Klein, 1985; Tzuriel, 1989).

All these aspects were considered and play way method of intervention was planned on for the present study for enhancement of individual’s present clarity of observation and level of intellectual functioning, which did improve moderately with intervention.

1.4.4. Effect of intervention on Pre Adolescent Adjustment Scale

The experimental group had significantly improved after intervention, whereas the control group had not significantly improved after waitlist period on different subtests of home, school, peers, teachers, general and total scores on Pre Adolescent Adjustment Scale. Girls and boys of experimental group demonstrated a significant improvement in total scores on Pre Adolescent Adjustment Scale after intervention,
whereas the control group had not significantly improved in overall memory after waitlist period. Though there was no significant difference, control group after waitlist period was better in total scores of Pre Adolescent Adjustment Scale than the control group prior to waitlist period. The experimental group (after intervention) was significantly better than control group (after waitlist period) on different subtests of Pre Adolescent Adjustment Scale. Girls and boys of the experimental group (after intervention) were significantly better than control group (after waitlist period) on total scores on of Pre Adolescent Adjustment Scale.

For different subtests of home, school, teachers, and general on Pre Adolescent Adjustment Scale the effect size was of medium range indicating medium effect of intervention on these aspects. On other subtests of peers and total scores of Pre Adolescent Adjustment Scale the effect size was of large range indicating large effect of intervention on these aspects.

The results of the group as a whole is according to the hypothesis stated that there will be a significant improvement in adjustment of children and adolescents after intervention programme (overall for the entire sample; and for girls and boys separately). And the results of the group as a whole is according to the hypothesis stated that there will be a significant difference in adjustment between experimental (with intervention) and control (without intervention) group children and adolescents (overall for the entire sample; and for girls and boys separately).

Interventions have been conducted on different groups to enhance different aspects of adjustment. Some of the studies as conducted by different researchers are for the groups of 3rd to 7th standard (Garibaldi, 1995; Ikeya & Kasai, 2003; Byrkjedal, 1992; Baggerly, 1999; Sierra & Zayda 1999; Eidson, 1989; Stopa, Barrett, & Golingi, 2010) and on 8th and 9th standard students (Spier, 2010; Moore, Cartledge &
Heckaman, 1995). In terms of background area studies have been conducted on suburban elementary school; rural school; and socioeconomically backward students (Garibaldi, 1995; Byrkjedal, 1992; Stopa et al., 2010).

Different Interventions have been used to enhance different aspects of adjustment. Some of the studies as conducted by different researchers have used different intervention techniques like art therapy intervention and art therapy with bibliotherapy; game-related social skills; cooperative games program; short-term and long-term play therapy group; child-centred play therapy; dramatic play in creating play-stories; the peer support program interms of games and role-playing Music therapy work; behavioural music therapy treatment program; creative drama and theatre classes (Garibaldi, 1995; Rosal, 1993; Spier, 2010; Dunn-Snow, 1997; Moore et al., 1995; Carlson, 1999; Ray et al., 2008; Baggerly, 1999; Sierra & Zayda, 1999; Ikeya & Kasai, 2003; Byrkjedal, 1992; Eidson, 1989; Glass, Guli, & Sermrud, 2000).

Intervention studies have been conducted on different groups to enhance different aspects of adjustment like children who had adjustment difficulties; exhibiting emotional and behavioural difficulties; disruptive behaviours; behaviour disorders; emotional or behavioural disorders; learning disabled; and children with perceptual deficits (Baggerly, 1999; Ray et al., 2008; Spier, 2010; Rosal, 1993; Moore et al., 1995; Garibaldi, 1995; Glass et al., 2000).

Intervention studies have been conducted on different groups to enhance different aspects of adjustment. Some studies using diverse methods of intervention have shown improvement on adjustment and related aspects. Garibaldi (1995) examined the effect of art therapy intervention on learning disabled in a suburban elementary school which indicated that the participation in art therapy can benefit children's self-perceptions of academic competence and also the teachers perceived
significant change in their students' level of social acceptance. A comparative group art therapy research by Rosal (1993) examined the use of cognitive behavioural art therapy and art therapy on adaptive classroom behaviour of children with behaviour disorders. A personal conduct drawing interview found that both conditions helped subjects gain more positive attitudes about the self in relation to school, peers, and authority figures. Spier (2010) examined the effectiveness of a group art therapy intervention within a school setting to increase coping skills and decrease disruptive behaviours. Changes in pre- and post-intervention "Me in Ninth Grade" drawings were seen and results supported that the art therapy group can be beneficial in decreasing disruptive behaviours and increasing coping skills for the transition to high school. Elementary age children were provided a model of interdisciplinary learning that combines art therapy and bibliotherapy within the context of a whole language approach to teaching and learning by Dunn-Snow (1997). This technique promoted change in the students understanding of themselves and their relationships with others.

Carlson (1999) conducted cooperative games program with students who had demonstrated trouble with working together cooperatively. Over the course of the sessions, cooperation and group cohesion when participating in these games increased. The teacher was also able to translate the cooperative game rules and philosophy to reading groups and other in-class activities. Ray et al., (2008) evaluated students exhibiting emotional and behavioural difficulties in the short-term intensive play therapy group and long-term play therapy group. Results indicated that both intervention groups demonstrated significant improvement in teacher-student relationship.
The purpose of the study conducted by Sierra and Zayda (1999) was to seek a clearer understanding of the structural properties of dramatic play in creating play-stories engaged by 11 to 12 years old children. It was found that dramatic play appeared to be an excellent learning tool to help school children in their social understanding of reality. The peer support program was designed to develop social skills through experiences in games and role-playing by Ikeya and Kasai (2003). After intervention the results showed that pupils exhibit less aggression. The results also showed that self-evaluation was elevated among third graders and self-evaluation and trusting-others were increased. The group of children whose scores on social skills increased significantly also showed higher scores on self-esteem. The peer support program produced interrelated effects on social skills and self-esteem. Byrkjedal (1992) examined experiences from music therapy work in a Norwegian rural school. The findings show that the pupils behaviour and interpersonal patterns changed during the course of music therapy. The classroom climate changed from being in conflict, to being more cohesive. Results concluded that music therapy had accelerated group processes, cooperation and communication. Eidson (1989) examined the effect of a behavioural music therapy treatment program on students interpersonal behaviour on emotionally handicapped middle school students. Experimental subjects scores for classroom behaviour were almost twice as stable as scores for control subjects.

Moore et al., (1995) in a study taught 9th-grade male students with emotional or behavioural disorders the game-related social skills. A skills-training model involving social modelling, behavioural rehearsal, and behaviour transfer was used to teach the skills. Results indicated that students improved in their game-related social skills and greater overall improvements in behavior were found in the classroom.
Glass et al., (2000) conducted a study on social competence intervention programme through creative drama and theatre classes for children with perceptual deficits. Findings suggested that there was development of self-awareness of their feelings and behaviors, which had an impact on social interaction. Stopa et al., (2010) in a study examined the efficacy of the friends for life program, to children of socioeconomically disadvantaged communities. Significant reductions in anxiety, peer problems and conduct problems and the use of coping strategies were noted over time.

Many of these aspects were considered and play way method of intervention programme consisting of a combination of art and craft work; games and play; word and vocabulary games; number games and cultural activities, which adopted a child-to-child approach was used for the present study to enhance adjustment in children. For 4th, 5th, and 6th standard different subtests of home, school, teachers, and general on Pre Adolescent Adjustment Scale the effect size was of medium range indicating medium effect of intervention on these aspects. On other subtests of peers and total scores of Pre Adolescent Adjustment Scale the effect size was of large range indicating large effect of intervention on these aspects.

1.4.5. Effect of intervention on Children’s self concept scale

On different subtests of Children’s Self Concept Scale that is behaviour, intelligence and physical, anxiety, popularity, happiness, and total scores there was significant improvement in experimental group (after intervention) and in control group (after waitlist period). Though there was significant difference in improvement on all the subtests of Children’s Self Concept Scale for both experimental and control group, the improvement in terms of increase on mean scores are more for experimental group than control group. On total scores of Children’s Self Concept Scale there was
significant improvement in experimental group (after intervention) and in control group (after waitlist period) for both girls and boys. Though there was significant improvement in total scores of Children’s Self Concept Scale for both experimental and control group, the improvement in terms of increase on mean scores are more for experimental group than control group.

On different subtests of Children’s Self Concept Scale that is behaviour, intelligence and physical, anxiety, popularity, happiness, and total scores there was significant improvement in experimental group (after intervention) than control group (after waitlist period) indicating that intervention had more effect on increase on self concept scores. Girls and boys of the experimental group (after intervention) were significantly better then control group (after waitlist period) on total scores of Children’s Self Concept Scale.

On different subtests of behaviour, intelligence and school, physical, popularity, happiness, and total scores of Children’s Self Concept Scale the effect size was of large range indicating large effect of intervention on these aspects.

The results of the group as a whole is according to the hypothesis stated that there will be a significant improvement in self concept of children and adolescents after intervention programme (overall for the entire sample; and for girls and boys separately). And the results of the group as a whole is according to the hypothesis stated that experimental group (with intervention) will be significantly better than control (without intervention) group on aspects of self concept (overall for the entire sample; and for girls and boys separately).

Studies as conducted by different researchers to enhance different aspects of self-concept have worked on different groups, age groups from seven year old to adolescents to 18 year ones i.e. from second standard student to degree students
(Vincent & Guinn, 2001; Harvey, 1989; Garibaldi, 1995; Boehm-Morelli, 2000; Bleck & Bleck, 1982; Langsner & Anderson, 1987; Post, 1999; Mooney & Eggleston, 1986; Droese-Varellie & Ashley, 2000; Stopa et al., 2010; Baggerly, 1999; Thompson, 2001; Wright, 2006; Egge & McEvers, 1987; Hendricks, 2001). In the present study the age groups under study areas was specifically between 9 to 12 years and studying in 4th, 5th, and 6th standard.

The interventions to enhance self-concept have been conducted by many researchers on different disadvantaged groups like the tribals (Anuragmodi, 2008) rural schools (Boehm-Morelli, 2000; Wright, 2006; Mooney & Eggleston, 1986); disadvantaged schools (Blomfield & Barber, 2011); socioeconomically disadvantaged communities (Stopa et al., 2010); low socio-economic school (Lopez, 2002; Blomfield & Barber, 2011); and Hispanic children (Lopez, 2002; Vincent & Guinn, 2001). In the present study the group interested in was tribal Ashrama school children.

Apart from the disadvantaged groups interventions to enhance self-concept have also been conducted on different reference groups of learning disabled (Garibaldi, 1995); children with family or developmental challenges (Keve, 1995); behaviour disorders (Rosal, 1993); adjustment difficulties (Baggerly, 1999); individuals at-risk (Post, 1999); remedial readers (Boehm-Morelli, 2000); individuals with disruptive behavior (Bleck & Bleck, 1982); depressed adolescents (Hendricks, 2001); and individuals with perceptual deficits (Glass et al., 2000). In the present study the areas was specifically tribal Ashrama school children already screened on Children’s Behavior Questionnaire, with no specific behavioural problems.

Different modalities of art, play, games, drama and teaching methods were used by different researchers to enhance different aspects of self-concept like art therapy (Garibaldi, 1995; Rosal, 1993); short-term art therapy modality or artwork
including self-portraits (Keve, 1995); creative arts therapies and integrated movement, art, and music activities (Harvey, 1989); emotional expressiveness, and creative play and play therapy techniques (Green & Christensen, 2006); child-centred play therapy (Baggerly, 1999; Post, 1999); play therapy (Lopez, 2002); play and nondirective play therapy (Boehm-Morelli, 2000); play group (Bleck & Bleck, 1982); playing strategic board games (Thompson, 2001); outdoor challenge education program (Langsner & Anderson, 1987); peer support program and games-role-playing (Ikeya & Kasai, 2003); extracurricular activities (Blomfield & Barber, 2011); extra-curricularphysical activities (Amanda, 2002); music therapy techniques and cognitive behavioural group treatment (Hendricks, 2001); creative drama and theatre classes (Glass et al., 2000); innovative features song, dance mime and acting (Das, 1991); personal development and drama education (Wright, 2006); puppetry (Egge & McEvers, 1987). The present study consisted of intervention programme with package of art and craft wok; games and play; word games; number games, cultural and extracurricular activities.

Apart from those aspects of intervention methods which were of keen interest to the present study like art, craft, play, games and cultural activities other types of intervention programmes were also experimented by different researchers to enhance self concept like friends for Life program (Stopa et al., 2010); Little Acorns Program (Droese-Varellie, 2000); non-formal education (Anurag modi, 2008); educational intervention (Vincent & Guinn, 2001); group psychological service (Lan et al., 2009); and preventative mental health program (Mooney & Eggleston, 1986).

Intervention studies have been conducted on different groups to enhance different aspects of self-concept. Some studies using diverse methods of intervention have not shown improvement on self-concept and related aspects. Some of those intervention programmes being outdoor challenge education program (Langsner
&Anderson, 1987); child-centred play therapy (Post, 1999); play and nondirective play therapy (Boehm-Morelli, 2000). Langsner and Anderson (1987) studied the effects of an outdoor challenge education program on self-esteem and the findings showed no significant differences in self-esteem between the groups as a consequence of the outdoor challenge program. Post (1999) addressed the impact of child-centred play therapy on the self-esteem and other areas of at-risk for which the results indicated that children participating in play therapy did not change the self-esteem of the group. The effects of play and nondirective play therapy on reading self-concept were examined on children from five rural school districts by Boehm-Morelli (2000). Contrary to predictions, play and nondirective play therapy were not found to be more effective than a control group in enhancing reading self-concept in remedial readers.

The study by Das (1991) attempted to provide education with innovative features in remote tribal blocks (Orissa). Major findings indicated that skills like song, dance mime and acting were found to be important assets to help the teacher to improve the self-expression of the students. The study by Wright (2006) investigated effect of drama education on subjects from city and rural schools, the results of which indicated a significant improvement in self-concept. The findings of a study by Blomfield and Barber (2011), who investigated whether extracurricular activities were linked to a more positive self-concept for Australian disadvantaged schools adolescents, revealed that adolescents from low socio-economic status schools who participated in extracurricular activities had a more positive general self-worth and social self-concept. An intervention with participative, humanistic and constructivist approaches to change and learning in non-formal education was initiated in four tribal village adolescents by (Anurag modi, 2008) which brought a change in their self-confidence and perception about self and positive change in self-esteem was also seen.
The present study consisted of intervention programme with package of art and craft wok; games and play; word games; number games, cultural and extracurricular activities to enhance self concept apart from other aspects which was fruitful enough to enhance the self concept of the children to large extent in terms of effect size.

Harvey (1989) investigated the use of creative arts therapies (Integrated movement, art, and music activities) to effect self-concept which showed positive growth on self-concept post-intervention. Thompson (2001) examined the effect of playing strategic board games on the Self-esteem and the results showed significant improvement on the self-esteem scales in the areas of peer and home. Ikeya and Kasai (2003) investigated the effects of a peer support program with games and role-playing on the development of social skills and self-esteem of children which produced interrelated positive effects on social skills and self-esteem. Egge and McEvers (1987) described the use of puppetry as a guidance technique that provides adolescents with educational experiences, following which apart from other aspects positive changes in student behaviour and self-esteem were observed. Amanda (2002) considered to study the differences in physical self-perceptions between participants and non-participants in extra-curricular physical activities. The findings indicate that pupils who participated in extra-curricular activities display higher self-perceptions in some perceived domains of their physical self. Such intervention programmes as devised for the present study can also be used with other children apart from the tribal and disadvantaged children which can also enhance self concept.

Vincent and Guinn (2001) studied the effects of an educational intervention based on 3 components: communication; behaviour management; and cultural appreciation, values, and life skills among Hispanic children and found that the intervention affected self-esteem positively. Droese-Varellie (2000) evaluated the
efficacy of the Little Acorns program (designed to improve self-esteem) in rural elementary school. Self-concept and self-esteem related to school functioning showed significant improvements post-intervention.

Lopez (2002) studied on effect of play therapy on self-concept of Hispanic students with the lowest scores on Reading Test from low socio-economic school, which indicated that children improved in self-concept though not significantly. Lan et al., (2009) explored the effect of group psychological service on mental health of the children left behind in rural areas. After intervention, the group gained higher scores on Piers-Harris Children’s Self-concept Scale. In the present study child-friendly intervention programme enhanced self concept to a large extent apart. The present study also had revealed the prevalence of problem among the present group tribal children on whom the intervention could also yield better results as shown by other studies quoted above.

Garibaldi (1995) examining the effect of art therapy intervention on self-esteem of learning disabled indicated that the participation in art therapy improved on self-perceptions. Keve (1995) evaluated the effectiveness of a short-term art therapy modality for children with family or developmental challenges and confirmed that eleven of the eighteen children who completed the program showed specific signs of improvement.

Art therapy with behaviour disorders children found helping subjects gain more positive attitudes about the self in relation to school, peers, and authority figures (Rosal, 1993). Baggerly (1999) investigated the effectiveness of the application of child-centred play therapy procedures by trained fifth grade students in play sessions with children who had adjustment difficulties. Children in the experimental group revealed slightly positive trends in self concept. Subjects in a study by Bleck and
Bleck (1982) who presented with disruptive behavior assigned to a play group showed significant improvement on the Coopersmith Self-Esteem Inventory. Hendricks (2001) studied effectiveness of adding music therapy techniques to cognitive behavioural group treatment for depressed adolescents which resulted in reduced depression scores and increased self-concept scores.

Play way method of intervention programme consisting of a combination of art and craft work; games and play; word and vocabulary games; number games and cultural activities which adopted a child-to-child approach was used in the present study which showed large effect on different subtests of Children’s Self Concept Scale for 4th, 5th, and 6th standard tribal Ashrama school children.

1.4.6. **Effect of intervention on Group Social Problem Solving Assessment**

On different subtests of interpersonal sensitivity, problem analysis and action, and specificity of planning of Group Social Problem Solving Assessment the experimental group improved significantly after intervention, whereas the control group did not improve significantly after waitlist period.

On total scores of Group Social Problem Solving Assessment there was significant improvement in experimental group (after intervention) but no significant improvement in control group (after waitlist period) for both girls and boys. Though there was no significant improvement in total scores of Children’s Self Concept Scale for control group, for girls the mean scores was better in control group (before waitlist period), and for boys the mean scores was better in control group (after waitlist period).

Experimental group (after intervention) was significantly better on different subtests of Group Social Problem Solving Assessment than control group (after waitlist period). In the same manner the experimental group (after intervention) was
significantly better on total scores of Group Social Problem Solving Assessment than control group (after waitlist period) for both girls and boys.

On different subtests of interpersonal sensitivity, specificity of planning and problem analysis and action of Group Social Problem Solving Assessment the effect size was of large, small and medium range respectively indicating large effect of intervention on interpersonal sensitivity followed by medium effect on specificity of planning and small effect on problem analysis and action.

The results of the group as a whole is according to the hypothesis stated that there will be a significant improvement in group social problem solving skills for children after intervention programme (overall for the entire sample; and for girls and boys separately). And the results of the group as a whole is according to the hypothesis stated that experimental group (after intervention) will be significantly better group social problem solving skills than control group (after waitlist period) (overall for the entire sample; and for girls and boys separately).

Interventions have been conducted on different groups to enhance different aspects of social problem solving skills. Some of the studies as conducted by different researchers are for the groups of fourth standard to eight standard (Brigman & Molina, 1999; Mooney & Eggleston, 1986; Stopa et al., 2010; Gibbons, 2010; Spier, 2010; Goh, 2008).

For the disadvantaged groups the interventions to enhance social problem solving skills has been conducted by some researchers. The intervention has been conducted for the groups of rural schools, socially disadvantaged children, socioeconomically disadvantaged, academically disadvantaged population and public school (Mooney & Eggleston, 1986; Saiz& Roman, 1998; Stopa et al., 2010; Goh, 2008; Gibbons, 2010).
Intervention studies have been conducted to enhance different aspects of social problem solving skills on different groups like labelled children, impulsive students and children with anxiety (Johnson et al., 1997; Rath, 1992; Stopa et al., 2010).

Some of the studies as conducted by different researchers have used different intervention techniques like group art therapy intervention, cooperative classroom art therapy intervention, child centered play therapy, argumentive discourse, cognitive training program, verbal self instructions, use of response-cost and reward, Living – Learning –Working program, the friends for Life program, preventative mental health program (Spier, 2010; Gibbons, 2010; Johnson et al., 1997; Goh, 2008; Saiz & Roman, 1998; Rath, 1992; Brigman & Molina, 1999; Stopa et al., 2010; Mooney & Eggleston, 1986).

Social problem solving skills can be taught in a number of ways. For example, they can be worked into the curriculum (Elias & Clabby, 1992; Elias & Tobias, 1990; Elias & Tobias, 1996; Gootman, 2001), taught using cooperative learning strategies that give students the chance to develop and practice their social and academic skills at the same time (Van Acker, 1993).

Different modalities of art and play were used by different researchers to enhance different aspects of social problem solving skills on different reference groups. Spier (2010) examined the effectiveness of a group art therapy intervention within a school setting to increase coping skills and the results showed that art therapy group can be beneficial in increasing coping skills for the transition to high school. Gibbons (2010) described a cooperative classroom art therapy intervention in a public school in which the group explored the roles of fictional characters in conflict by including group discussion, writing, art-based reflection, and problem solving. Results indicated a change in the group that is essential for incorporating conflict resolution
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and problem solving in the classroom. Johnson et al., (1997) studied the effect of child centered play therapy on problems of labelled children. Post intervention the behaviours evidenced increasing skill in coping with the issues in their lives. It was concluded that the strengths children gain during play therapy allow them to more effectively cope with their world outside the play therapy room.

Different methods and techniques apart from the aspects of intervention package of the present study were also used to enhance social problem solving skills and other related aspects. Saiz and Roman (1998) studied the effect of a cognitive training program on the problem-solving abilities of socially disadvantaged children. The results indicated positive improvement on problem-solving methods the aspects tested. Brigman and Molina (1999) describe the Living-Learning-Working (LLW) program used with the objective of social problem solving, and contributing skills. Key strategies of the program were using stories, teaching story structure, role play, and modelling. Results indicate positive effect on social problem solving, and contributing skills.

Many of these aspects were considered and play way method of intervention programme consisting of a combination of art and craft work; games and play; word and vocabulary games; number games and cultural activities which adopted a child-to-child approach was used for the present study to bring development of the individual and one such aspect considered was enhancement group social problem solving skills. In the present study on subtests of group social problem solving assessment the effect size was of large, small and medium range respectively indicating large effect of intervention on interpersonal sensitivity followed by medium effect on specificity of planning and small effect on problem analysis and action.
1.5. **Gender difference comparison of the experimental and control group on different assessment tools**

Regarding gender difference in cognitive and psychosocial aspects very few studies were done on tribal children in relation to the variables of the present study. One study was done on tribal’s related to attention (Agarwal & Pandey, 1985), one study was done on scheduled castes related to intelligence (Jain, 1988), two studies on tribal children related to adjustment (Agarwal & Pandey, 1985; Verma & Sharma, 1992), and one study on rural children related to self-esteem (Zhang et al., 2006). In rest of the areas like memory and group social problem solving skills none of research was done specifically related to tribal or rural sample. Rest of the studies available concentrated on gender difference among children and adolescents, where as some studies stretched the age range the least being from 7 years children to the maximum of 21 years adolescents. Of the different cognitive and psychosocial aspects gender difference studies were minimal for attention, adjustment and social problem solving skills; whereas extensive research has been done on intelligence and the self concept has been researched moderately.

1.5.1. **Gender difference on Number Cancellation Test**

Before the intervention for the experimental group girls scored significantly better on Single Digit cancellation, Double Digit cancellation when compared to boys. Before the waitlist period for the control though there was no significant gender difference the girls had better attention when compared to boys. After the intervention for the experimental group there was no significant gender difference in attention. Though there was no significant gender difference, the girls had better complex attention when compared to boys; whereas boys had better simple attention when compared to girls. After waitlist period for the control group there was no significant gender
difference in attention. Though there was no significant gender difference the girls had better in attention when compared to boys.

The results of one group that is experimental group (Before intervention) is according to the hypotheses stated that there will be significant gender difference in attention and in this group girls were significantly better in Single Digit cancellation and Double Digit cancellation when compared to boys. For the rest of the groups that is control group (Before the waitlist period), experimental group (After the intervention) and control group (after the waitlist period) the results are not according to the hypotheses that there will be significant gender difference in attention.

Initially in experimental group (Before intervention) girls scored significantly better on Single Digit cancellation and Double Digit cancellation when compared to boys. Later in experimental group (After the intervention) there was no significant gender difference. It can be seen that the girls continued to have had better (though not significantly) complex attention when compared to boys, but the boys had better (though not significantly) better simple attention when compared to girls indicating that the intervention has not only created opportunity to pace up with girls but also move litter forward to girls (though not significantly). It could also be noted that experimental group (After the intervention) had shown significant improvement in attention both for boys and girls indicating that the intervention had helped girls and boys to improve in attention and also has given greater advantage to boys to pace with girls and reduce the gender gap because of intervention.

In the control group (Before the waitlist period) though there was no significant gender difference the girls had better attention when compared to boys and the same trend continued further even after waitlist period. To the contrary it can be seen that both girls and boys have decreased in performance on Double Digit
cancellation after waitlist period, and added to this girls have significantly decreased in performance after waitlist period giving a cue that there is a need for remedial work otherwise the performance could decrease further especially in complex tasks.

Gender difference in attention has been researched as component of reaction time (Agarwal & Pandey, 1985), attention scales (Jack & Johannes, 2001) and sustained attentional control (Riley et al., 2016). The age range of the sample in studies included children in Grade 3 (Warrick and Naglieri, 1993) and the ages of 10 and 70 years (Riley et al., 2016).

Different studies have found differences between boys’ and girls’ performances in attention (Gur et al., 2012; Naglieri & Rojahn, 2001; Warrick & Naglieri, 1993). A study comparing children and adolescence aged between 8 and 21 years showed that females were found to be more accurate in the attention tasks, but then males were quicker in reacting to different stimuli (Gur et al., 2012). Girls also outperformed boys (ages of 5 and 17 years) on measures of attention in a study by Naglieri and Rojahn (2001). In tribal students of the Rohilkhand and Lucknow regions, compared with females, the male subjects were found to show poorer reaction time (RT) (Agarwal & Pandey, 1985); girls earned significantly higher scores on measures of attention in Grade 3 (Warrick & Naglieri, 1993); girls outperformed boys on the Planning and Attention scales of the Cognitive Assessment System by about 5 points (Jack & Johannes, 2001). Even in the present study, in one group that is experimental group (before intervention) girls scored significantly better on Single Digit cancellation and Double Digit cancellation when compared to boys.

1.5.2. Gender difference on Test of Memory for Children

Before the intervention for the experimental group though there was no significant gender difference girls had better memory when compared to boys. Before
the intervention for the control group though there was no significant gender difference the boys had better memory when compared to girls. After the intervention for the experimental group though there was no significant gender difference the boys had better memory when compared to girls. After waitlist period for the control group though there was no significant gender difference boys continued to have better memory than girls.

Initially in experimental group (Before intervention) girls showed better (though not significantly) memory when compared to boys. Later in experimental group (After the intervention) it can be seen that the boys performed better (though not significantly) on memory when compared to girls indicating that the intervention has not only created opportunity to pace up with girls but also move litter forward to girls (though not significantly). It could also be noted that experimental group (After the intervention) had shown significant improvement in memory both for boys and girls indicating that the intervention had helped girls and boys to improve in memory and also has given greater advantage to boys to pace with girls and reduce the gender gap because of intervention.

In the control group (before the waitlist period) though there was no significant gender difference the boys had better memory when compared to girls and the same trend continued further even after waitlist period for control group. It can be seen that both girls and boys have decreased (though not significantly) in performance on memory after waitlist period giving a cue, that there is a need for remedial work otherwise the performance could decrease further especially in memory.

The results of groups that is experimental group (Before intervention), experimental group (after intervention), control group (Before the waitlist period), and
control group (after the waitlist period) are not according to the hypotheses stated that there will be significant gender difference in memory.

Gender difference in memory has been researched as verbal tasks (Patricia et al., 2004; Huang, 1993; Temple & Cornish, 1993), free delayed recall of a word list (Kramer et al., 1997), auditory learning task (Forrester and Geffen, 1991), spatial tasks (Patricia et al., 2004; Huang, 1993), visual-spatial working memory task (Robinson, Abbott, Berninger, & Busse, 1996), visual recognition memory (Ullman et al., 1997) and face recognition (Freire & Lee, 2001; Temple & Cornish, 1993).

Gender difference in memory has been researched on age groups of grades 1 to 5 (Ullman et al., 1997), five to six years (Kramer et al., 1997), five to 15-16 years (Kramer et al., 1997), 7 to 15 years (Forrester & Geffen, 1991), 9 to 21 years (Temple & Cornish, 1993), school-aged children (Freire & Lee, 2001; Temple & Cornish, 1993), adolescent’s (Huang, 1993) and females and males (Patricia et al., 2004).

Results of study revealed relative strengths for females on verbal tasks and males on spatial tasks (Patricia et al., 2004); Chinese adolescent girl’s outperformed adolescent boys on a verbal memory task (Huang, 1993); on verbal memory recognition task females (age from 9 to 21 years) outperformed males on this verbal memory task (Temple & Cornish, 1993); in the age group of five to six years girls perform at a higher level than do boys in free delayed recall of a word list, and similar results were evident in the other age groups tested (i.e., boys and girls up to 15-16 years of age) (Kramer et al., 1997).

Results of study revealed relative strengths for males on spatial tasks (Patricia et al., 2004); Chinese adolescent male’s outscored adolescent females on a visual-spatial memory task (Huang, 1993); significantly higher scores for male than female
preschoolers and kindergartners was reported on a visual-spatial working memory task (Robinson et al., 1996).

Studies have failed to find sex differences in face recognition (Freire & Lee, 2001; Temple & Cornish, 1993); in visual recognition memory (Ullman et al., 1997); and in auditory learning task (Forrester and Geffen, 1991). Even in the present study there was no significant gender difference in memory for different groups of experimental group (Before intervention), experimental group (after intervention), control group (Before the waitlist period), and control group (after the waitlist period).

1.5.3. Gender difference on Colored Progressive Matrices

Before the intervention for the experimental group though there was no significant gender difference the girls had better intellectual functioning when compared to boys. Before the intervention for the control group though there was no significant gender difference the girls had better intellectual functioning when compared to boys. After the intervention for the experimental group the boys though there was no significant gender difference had better intellectual functioning when compared to girls. After waitlist period for the control group though there was no significant gender difference the girls had better intellectual functioning when compared to boys.

Initially in experimental group (Before intervention) girls showed better (though not significantly) intelligence when compared to boys. Later in experimental group (After the intervention) it can be seen that the boys performed better (though not significantly) on intelligence when compared to girls indicating that the intervention has not only created opportunity to pace up with girls but also move litter forward to girls (though not significantly). It could also be noted that experimental group (After the intervention) had shown significant improvement in intelligence both for boys and girls indicating that the intervention had helped girls and boys to
improve in intelligence and also has given greater advantage to boys to pace with girls and reduce the gender gap because of intervention.

In the control group (before the waitlist period) though there was no significant gender difference the girls had better intelligence when compared to boys and the same trend continued further even after waitlist period for control group. It can be seen that both girls and boys have improved (though not significantly) in performance on intelligence after waitlist period but not significantly giving a cue that there is a need for remedial work otherwise the performance would not increase significantly further especially in intelligence.

The results of groups that is experimental group (Before intervention), experimental group (after intervention), control group (Before the waitlist period), and control group (after the waitlist period) is not according to the hypotheses stated that there will be significant gender difference in intelligence.

Gender difference in intelligence has been researched asverbal, spatial, and reasoning abilities as indicated by Colom and Garcí'a-Lo´pez (2002), and as general intelligence (Colom & Garcí'a-Lo´pez, 2002), intellectual capacity (Jain, 1988), on three measures of general fluid intelligence that is the PMA Inductive Reasoning Test, the Advanced Progressive Matrices (APM), and the Culture-Fair Intelligence Test (Colom & Garcí'a-Lo´pez, 2002), and on Standard Progressive Matrices test (Lynn, 1994; Lynn, 1998; Lynn, 1999; Colom & Garcí'a-López, 2002; Lynn et al., 2004; Irwing & Lynn, 2005; Abdel-Khalek & Lynn, 2006; Khaleefa & Lynn, 2008; Rushton & Jensen, 2010; Lynn et al., 2016).

Gender difference in intelligence has been researched on age groups of 6–11 year (Khaleefa and Lynn, 2008), 7–10 year (Lynn et al., 2004), 7 to 18 years (Lyonna et al., 2000) and 10 to 18 year (Lynn et al., 2016).
Some researchers claim that there is a sex difference, relying on the summation of the standardized sex differences in cognitive tests measuring verbal, spatial, and reasoning abilities (Colom & García-Lo´pez, 2002). There is contradictory empirical evidence concerning the problem of whether there is a sex difference in general intelligence (Colom & García-Lo´pez, 2002). The study by Jain (1988) observed that scheduled castes girls were better in intellectual capacity than scheduled castes boys.

It was proposed that general intelligence should be conceptualized as g. g is not the result of the simple summation of tests scores, but a source of variance evidenced by the correlation among several diverse tests (Colom & García-Lo´pez, 2002). Fluid intelligence is usually conceived as the core of intelligent behavior (Colom & García-Lo´pez, 2002). Three measures of general fluid intelligence that is the PMA Inductive Reasoning Test, the Advanced Progressive Matrices (APM), and the Culture-Fair Intelligence Test were used on high school graduates in the study by Colom and García-Lo´pez (2002) which reveal that females outperform males in the PMA Reasoning test, males outperform females in the Raven, and that there was no sex difference in the Culture-Fair Test. Therefore, given that there is no systematic difference favoring any sex in the measures of general fluid intelligence, and that there is no sex difference in the best available measure of general fluid intelligence (the Culture-Fair Test), it could be concluded that the sex difference in fluid intelligence is non-existent (Colom & García-Lo´pez, 2002).

Lynna et al., (2000) studied the sex differences in brain size and intelligence in children and adolescents. They put forth that sex differences in brain size decrease from the age of 7 through 13±14 years and increase from the age of 15 through 18 years. A small and non-significant difference in intelligence at age 9 is followed by a
significant difference in favor of girls at age 10, which is in turn followed by
differences in favor of boys from the age of 11 through 15. Although the sex
differences in brain size and for intelligence show the same general trend of a
narrowing and subsequent broadening over the age range 9±15 years, they do not
move in perfect synchrony. The girls' advantage in intelligence peaks at the age of 10,
and their disadvantage in respect of brain size is smallest at the age of 13. Possibly the
explanation for this lack of synchrony is that the "growth spurt" of girls which begins
to occur at the age of 7/8 years has different trajectories for different morphological
and physiological characteristics. For example, the myelinisation of the brain
neurones increases during childhood and adolescence and is positively related to
intelligence (Miller, 1994). It is possible that this or some similar process may occur
more rapidly in girls and match more precisely the accelerated development of girls' intelligence around the age of 10 years.

It is well known that RMT has been widely accepted as measurement of
general intelligence (Deary, Penke, & Johnson, 2010; Alderton & Larson, 1990; Cattell, 1963; and Raven, 1938). A number of researchers contest that no gender differences exist in Raven’s Matrices ability (Khaleefa & Lynn, 2008; Lynn et al., 2004; Rushton & Jensen, 2010). Lynn et al., (2004) reported that no statistically significant difference existed between scores obtained by boys and girls on the Standard Progressive Matrices test for 7–10 year olds in Mexico. A standardization of the Progressive Matrices in Syria for people aged 7 to 18 years also found no sex differences (Khaleefa & Lynn, 2008). Some investigations of sex differences in the Raven’s Matrices test showed a male advantage (Irwing & Lynn, 2005; Colom & García-López, 2002; and Lynn, 1998). Meanwhile, some other studies have observed an advantage for females (Khaleefa & Lynn, 2008; and Abdel-Khalek & Lynn, 2006).
Khaleefa and Lynn (2008) reported on a large standardization sample of 6–11 year olds who were tested using the Colored Progressive Matrices test in the United Arab Emirates where in girls performed significantly better than boys, but the difference was only small. Results of a sample of 722 10 to 18 year olds in Egypt assessing intelligence with the Standard Progressive Matrices showed that males obtained significantly higher scores than females at the ages of 16 and 17-18 years (Lynn et al., 2016).

A meta-analysis of 57 studies of sex differences in general population samples on the Standard and Advanced Progressive Matrices (SPM and APM, respectively) was analysed by Lynn (2004). Results showed that there is no difference among children aged 6–14 years, but that males obtain higher means from the age of 15 through to old age. These results disconfirm the frequent assertion than there are no sex differences on the progressive matrices and support a developmental theory that a male advantage appears from the age of 15 years.

A meta-analysis of 15 studies of child samples on the Colored Progressive Matrices showed that among children aged 5–11 years boys have an advantage of 0.21d equivalent to 3.2 IQ points (Lynn, 2004). The Lynn (1994, 1998, 1999) hypothesis stating that there is no sex difference on the progressive matrices among young children up to the age of 8 years; that girls have a slight advantage from the ages of 9 through 12 years; that boys and girls obtain about the same mean scores at the ages of 13– 15 years; that at the age of 16 years boys have a higher mean than girls; that this advantage increases up to the age of 18–19 years; and that from the age of 20 onwards the male advantage lies between 2.4 (Lynn, 1994) and 5.0 IQ points (Lynn, 1999).
In the present study the age groups considered was between 9 and 12 years. The present study results are same as many other studies which have concluded that there was no significant gender difference in intellectual functioning and also specifically assessed on the similar assessment tool as progressive matrices (Khaleefa & Lynn, 2008; Lynn, 2004). For this age of 9 through 12 years range some studies indicated that girls have shown slight advantage in intelligence though not significantly high (Lynn, 1994; Khaleefa & Lynn, 2008; Lynn, 1994; Lynn, 1998; Lynn, 1999), the same results are replicated in the present study for the experimental groups. Only one meta-analysis of 15 studies (Lynn, 2004) has stated that for this age of 9 through 12 years range boys have shown slight advantage in intelligence though not significantly high, and this has got reflected in the results of the control groups.

1.5.4. Gender difference on Pre Adolescent Adjustment Scale

Before the intervention for the experimental group though there was no significant gender difference the boys had better adjustment compared to girls. Before the intervention for the control group though there was no significant gender difference the girls had adjustment when compared to boys. After the intervention for the experimental group though there was no significant gender difference the girls had better adjustment when compared to boys. After waitlist period for the control group though there was no significant gender difference the girls had better adjustment when compared to boys.

Initially in experimental group (Before intervention) boys showed better (though not significantly) adjustment when compared to girls. Later in experimental group (After the intervention) it can be seen that the girls showed better (though not significantly) adjustment when compared to boys indicating that the intervention has not only created opportunity to pace up with boys but also move litter forward to boys.
(though not significantly). It could also be noted that experimental group (After the intervention) had shown significant improvement in adjustment both for girls and boys. The experimental group (After the intervention) was significantly better than control group (After waitlist period) in adjustment. All these indicating that the intervention had helped girls and boys to improve adjustment and also has given greater advantage to girls to pace with boy and reduce the gender gap on account of intervention.

In the control group (before the waitlist period) though there was no significant gender difference the girls had better adjustment when compared to boys and the same trend continued further even after waitlist period for control group. It can be seen that both girls and boys have improved (though not significantly) in adjustment after waitlist period but not significantly giving a cue that there is a need for remedial work otherwise adjustment would not increase significantly further.

The results of groups that is experimental group (Before intervention), experimental group (after intervention), control group (Before the waitlist period), and control group (after the waitlist period) is not according to the hypotheses stated that there will be significant gender difference in adjustment.

Gender difference in adjustment has been researched as to adjustment to general environment (Bhagia, 1966), sociability and adjustment (Agarwal & Pandey, 1985), social adjustment (Verma & Sharma, 1992; Sunita, 1986), adjustment at home (Sunita, 1986), emotional adjustment (Sunita, 1986; Verma & Sharma, 1992), educational adjustment (Verma & Sharma, 1992), and organizational adjustment to school (Bhagia, 1966).

Girls exceeded boys significantly in their adjustment to general environment and organizational aspect of the school Bhagia (1966); better adjusted at home than
boys (Sunita, 1986); compared with females, male subjects were found to show less sociability and adjustment in tribal students of the Rohilkhand and Lucknow (Agarwal & Pandey, 1985).

Boys were more socially adjusted than girls (Sunita, 1986); more emotionally adjusted than girls (Sunita, 1986). Tribal adolescent girls were socially and educationally less well adjusted than boys (Verma & Sharma, 1992); adolescent tribal boys showed overall better adjustment than girls (Verma & Sharma, 1992).

The results of experimental group (before intervention) are similar to studies where in boys were more socially (Sunita, 1986), emotionally (Sunita, 1986), socially and educationally (Verma & Sharma, 1992), overall better adjusted than girls (Verma & Sharma, 1992). The results of experimental group (before intervention) are similar to studies where in boys were more socially (Sunita, 1986), emotionally (Sunita, 1986), socially and educationally (Verma & Sharma, 1992), overall better adjustmented than girls (Verma & Sharma, 1992). The results of the present study for different groups of experimental group (before and after intervention), control group (before and after intervention) are similar to a study by Verma and Sharma (1992) which also showed that tribal boys and girls did not differ significantly in some aspects of adjustment.

1.5.5. Gender difference on Children’s Self Concept Scale

Before the intervention for the experimental group there was significant gender difference for total scores of Children’s Self Concept Scale and the boys had significantly better self concept when compared to girls. Before the intervention for the control group there was significant gender difference for total scores of Children’s Self Concept Scale and the boys had better self concept compared to girls. After the intervention for the experimental group though there was no significant gender
difference the girls had better self concept when compared to boys. After waitlist period for the control group there was significant gender difference for total scores of Children’s Self Concept Scale and the boys had significantly better self concept than girls.

Initially in experimental group (Before intervention) boys showed significantly better self concept when compared to girls. Later in experimental group (After the intervention) it can be seen that the girls showed better (though not significantly) adjustment when compared to boys indicating that the intervention has not only created opportunity to pace up with boys but also move litter forward to boys (though not significantly). It could also be noted that experimental group (After the intervention) had shown significant improvement in self concept both for girls and boys. The experimental group (After the intervention) was significantly better than control group (After waitlist period). All these indicating that the intervention had helped girls and boys to improve self concept and also has given greater advantage to girls to pace with boy and reduce the gender gap on account of intervention.

In the control group (before waitlist period) boys had significantly better self concept when compared to girls and the same trend continued further even after waitlist period for control group. It can be seen that both girls and boys have improved significantly in self concept after waitlist period even without any intervention. As they grow they get to know more about themselves and it can influence the knowledge about self and improve the self concept. But experimental group (after intervention) was significantly better in self concept than control group (after waitlist period) for both boys and girls. All these giving a cue that there could be need for remedial work otherwise though there could be improvement in self concept even without intervention, self concept cannot be significantly improved.
The results of groups that is experimental group (Before intervention), control group (Before waitlist period), and control group (after waitlist period) is not according to the hypotheses stated that there will be significant gender difference in self concept, except for the results of experimental group (after intervention) which is according to the to the hypotheses stated that there will be significant gender difference in self concept.

Gender difference in self concept has been researched as self-perceptions (Watkins et al., 1997), self-esteem (Watkins et al., 1997; Klomsten et al., 2004), physical self-concept (Crain & Bracken, 1994), self-concept (Kломsten et al., 2004; Wilgenbusch & Merrell, 1999; Watkins et al., 1997) and self-esteem (Zhang et al., 2006).

Gender difference in self concept has been researched on age groups of 10 to 13 years (Watkins et al., 1997), children and adolescents from 10 to 18 years old (Crain and Bracken, 1994), 1st grade to 12th grade (Wilgenbusch & Merrell, 1999), Grades 3 to 6 (Arens & Hasselhorn, 2014), elementary and secondary school students (Kломsten et al., 2004) and middle school students (Zhang et al., 2006).

Results on German students in Grades 3 to 6 indicated no difference in the self-concept–self-esteem relations between boys and girls (Arens & Hasselhorn, 2014). In the present study there was significant gender difference in all the groups except in the experimental group (after intervention) where there was no significant gender difference. Hence the results of the present study are consistent to this one study.

A study by Zhang et al., (2006) showed that girls had significantly better self-esteem than boys (rural middle school of Anhui province). In the present study girls in the experimental group (after intervention) had slightly better self concept compared
to boys though not significantly different. Hence the results of the present study resemble this one study.

Most of the studies have showed that girls had lower self concept compared to girls. Older girls reported significantly lower self-esteem than the older boys in the areas of physical abilities and general self-concept, whereas the boys reported more positive self-perceptions on most nonacademic self-scales (10-year-old and 13-year-old children of Beijing public schools) as studied by Watkins et al., (1997); significantly higher physical self-concept in boys than in girls in eight subdomains, as well as global physical self-concept and self-esteem (elementary- and secondary-school students) was reported in study by Klomsten et al., (2004); males (children and adolescents from 10 to 18 years old) were significantly higher on physical self-concept as indicated by (Crain & Bracken, 1994). A meta-analysis on gender differences in self-concept among children and adolescents by Wilgenbusch and Merrell (1999) consolidated the research which included participant samples from 7 different nations and ranged from 1st grade through 12th grade. Mean effect size estimates across dimensions showed a complex pattern of gender differences and similarities. Although some of the findings defied stereotypes, several were consistent with previous notions regarding differences in self-concept based on gender. In the present study three of the four groups that is experimental group (before intervention), control group (before waitlist period) and control group (after waitlist period) showed that girls had significantly better self concept compared to the boys, and which is consistent to many of the studies mentioned here.

1.5.6. Gender difference on Group Social Problem Solving Assessment

Before the intervention for the experimental group though there was no significant gender difference the girls had better social problem solving skills when compared to
boys. Before the intervention for the control group there was significant gender
difference for total scores of Group Social Problem Solving Skills and girls had
significantly better social problem solving skills when compared to boys. After the
intervention for the experimental group though there was no significant gender
difference the boys had better social problem solving skills when compared to girls.
After waitlist period for the control group though there was no significant gender
difference the girls had better social problem solving skills when compared to boys.

Initially in experimental group (Before intervention) girls showed better
(though not significantly) social problem solving skills when compared to boys. Later
in experimental group (After the intervention) it can be seen that the boys showed
better (though not significantly) social problem solving skills when compared to girls
indicating that the intervention has not only created opportunity to pace up with girls
but also move litter forward to boys (though not significantly). It could also be noted
that experimental group (After the intervention) had shown significant improvement
in social problem solving skills both for girls and boys. For control group there was
no significant improvement in social problem solving skills both for girls and boys
after waitlist period. The experimental group (After the intervention) was significantly
better than control group (After waitlist period) in social problem solving skills. All
these indicating that the intervention had helped girls and boys to improve social
problem solving skills and also has given greater advantage to boys to pace with girls
and reduce the gender gap on account of intervention.

In the control group (before the waitlist period) there was significant gender
difference in social problem solving skills and the girls had significantly better social
problem solving skills when compared to boys and the same trend continued further
even after waitlist period for control group but the difference was not significant. It
can be seen that and boys in the control group (after waitlist period) have improved (though not significantly) in social problem solving skills, but girls have decreased (though not significantly) in social problem solving skills after waitlist period. All these giving a cue that there is a need for remedial work otherwise (though not significantly) would not increase significantly further.

The results of groups that is experimental group (Before intervention), experimental group (after intervention) and control group (after the waitlist period) is not according to the hypotheses stated that there will be significant gender difference in social problem solving skills. Whereas the results of the control group (Before the waitlist period) is according to the hypotheses stated that there will be significant gender difference in social problem solving skills.

Gender difference in social problem solving skills has been researched as problem solving (Collins et al., 2014), means-ends problem-solving procedure (Murphy & Ross, 1987); social problem-solving strategies responses (Sue Walker et al., 2002); social problem solving skills (Arı & Helin Yaban, 2012).

Gender difference in social problem solving skills has been researched on age groups of 9 to 11 years (Arı & Helin Yaban, 2012), 9-15 years (Arı & Helin Yaban, 2012) and on secondary school students (Collins et al., 2014).

Studies report that preschool girl children's social problem-solving strategies responses were more competent (i.e., reflective of successful functioning with peers) than those of boys (Sue Walker et al., 2002). A clear overall advantage for females over male adolescents on the Means-Ends Problem-Solving Procedure (Murphy & Ross, 1987); girls of 9-11 year-old produced more solutions than boys for object acquisition and friendship initiation issues in Social Problem Solving Skills (Arı & Helin Yaban, 2012); females of 9-15 year-old were more likely to produce
assertive and submissive solutions while males tended to produce aggressive solutions. The girls of the control group (before intervention) were significantly better than the boys in social problem solving skills which is similar to the studies mentioned. In the similar way the girls of the present study belonging to groups of experimental group (before intervention) and control group (after intervention) had better social problem solving skills compared to boys, though not significantly better which is resembling the studies mentioned.

The results of the present study for different groups of experimental group (before intervention), experimental group (after intervention) and control group (after intervention) is similar to the study by Collins et al., (2014) which showed that gender had no significant affect on problem solving among secondary school students in Kenya.
1.6. Relationship among cognitive and psychosocial aspects of experimental group and control group

In experimental group (before intervention) and experimental group (after intervention) for cognitive aspects there existed significant positive correlation among Single Digit cancellation, Double Digit cancellation and Colour Progressive Matrices and Test of Memory mutually to one another indicating that as the scores in one area increases the scores in other area also increases.

In control group (before intervention) and control group (after waitlist period) among cognitive aspects the single Digit cancellation is significantly and positively correlated to Double Digit cancellation and Colour Progressive Matrices and Test of Memory; Double Digit cancellation is significantly correlated to Colour Progressive Matrices; Colour Progressive Matrices is significantly correlated to Test of Memory; Whereas Double Digit cancellation is not significantly correlated to Test of Memory, indicating that variations on Test of Memory will have no impact on Double Digit cancellation and vice versa.

Correlational studies in this regard are rare and theoretically it can be assumed that cognitive aspects are more are less related to one another directly or assumed that intellectual functioning is seen to be related to other cognitive aspects indirectly. Another explaination that could be offered is that cognitive aspects are dependent on many common brains functioning, and hence the cognitive aspects could be seen related to one another. Memory and double digit cancelling as being not related to one another seem to be indicating that memory is not reaction time as assessed in numer cancellation test rather than the attention per say.

In experimental group (before intervention)and control group (after waitlist period) for psychosocial aspects there existed no significant correlation among
adjustment, self concept and group social problem solving skills mutually to one another indicating that as the scores in one area increases it has no impact on the scores in other area. In experimental group (after intervention) for psychosocial aspects there existed significant positive correlation between adjustment and self concept, where as there was no significant correlation between other psychsocial aspects.

In control group (before intervention) for psychosocial aspects there existed significant positive correlation between self concept and group social problem solving skills indicating the influence of one area on the other; whereas there was no significant relationship between other areas of adjustment, self concept and group social problem solving skills indicating that the scores are independent of each other.

Correlation studies related to the psychosocial aspects of the present study is rarely a subject of research papers. Though there are some studies which have explored correlation between other psychsocial variables. The present study showed that there was significant correlation between adjustment and self concept only after the intervention in the experimental group which could indicate that both adjustment and self concept improved and were related to one another, where as in rest of the psychosocial areas there were no changes. In the control group though there was significant correlation between self concept and social problem solving skills the same results did not surface after there and half months period indicating probable relation and fluctuation in the relationship which cant give specific explanation and meaning.