

CHAPTER IV

RESULTS AND DISCUSSION

The study entitled, “Efficacy of Expressive Arts Therapy to enhance Academic Achievement among Learning Disabled Adolescents” highlights the significance of the therapy in moderating affective measures and cognitive measures such as Emotional Intelligence, Social Competence, Attention, Working Memory and Quality of Life in enhancing to the Academic Achievement among participants.

The data collected from the participants during Before, After and Follow-up Phases were subjected to statistical analysis. The findings are presented in the sections below

Section I shows the outcomes of the Percentage analysis of the Demographic Data such as Gender, Class, Area, Family Type, Reading Score and Spelling Score.

Section II presents the Descriptive Statistics of Mean and Standard Deviation, Homogeneity and One Way ANOVA between Learning Disabled Boys and Girls Adolescent in Emotional Intelligence, Social Competence, Attention, Working Memory and Academic Achievement among Learning Disabled Adolescents.

Section III shows the Inferential Statistics of Coefficient of Correlation to find out the relation between Emotional Intelligence, Social Competence, Working Memory, Attention, Academic Achievement and Quality of Life among Learning Disabled Adolescents.

Section IV presents the results of the Descriptive Statistics and One Way ANOVA between the Experimental Group and Waitlist Control Group in Emotional Intelligence, Social Competence, Working Memory, Attention, Academic Achievement and Quality of Life.

Section V presents the results of the Descriptive Statistics, Repeated Measures ANOVA, Post-hoc Pair wise comparison during Before, After and Follow-up phases to find out the Efficacy of Expressive Arts Therapy and Brain Gym in Emotional Intelligence, Social Competence, Attention, Working Memory, Academic Achievement and Quality of Life among Learning Disabled Adolescents.

Section I

This section shows the results of the Percentage analysis of the Demographic Data such as Gender, Age, Class, Area, Family Type, Reading Score and Spelling Score.

Table 1**Demographic Variables of the Learning Disabled Adolescents****N = 66**

Variables		Number	Percent
Gender	Boys	36	55
	Girls	30	45
Age	11	6	9
	12	15	23
	13	13	20
	14	16	24
	15	14	21
	16	2	3
Class	Primary	25	38
	Pre Secondary	27	41
	Secondary	14	21
Area	Urban	42	64
	Semi Urban	24	36
Family Type	Nuclear	29	44
	Joint	37	56
Reading Score	5 (Years)	3	05
	6 (Years)	14	21
	7 (Years)	26	39
	8 (Years)	6	09
	9 (Years)	7	10
	10 (Years)	4	06
	11 (Years)	1	02
	12 (Years)	4	06
	13 (Years)	1	02
	Spelling Score	5 (Years)	10
6 (Years)		18	27
7 (Years)		12	18
8 (Years)		12	18
9 (Years)		6	08
10 (Years)		3	05
11 (Years)		1	02
12 (Years)		3	05
13 (Years)		1	02

Percentages are rounded off

Majority of the participants were Boys (55%) followed by Girls (45%), 24% were 14 years old, 21% were 15 years old and 20% were 13 years old. Forty one percent were enrolled in Pre-Secondary class, 38% in Primary class and 21% in Secondary class. Majority of the participants were from Urban Area (64%) and only 36% were from Semi Urban area. Fifty six percent of the participants belonged to Joint family and 44% belonged to Nuclear family. In Reading Score, majority of the participants exhibited a reading age of 7 years (39%) followed by 6 years (21%). In Spelling Score, majority of the participants exhibited a spelling age of 6 years (27%) followed by 7 years (18%), 8 years (18%) and 5 years (15%).

Section II

Table 2

Homogeneity Test among schools in Emotional Intelligence using Levene’s Test of Equality of Error Variances

F	df1	df2	Sig.
2.34	1	64	0.13 NS

NS = Not Significant

Table 2 shows the result of the Levene’s Test and it is not significant. The data supports the assumption of homogeneity of variances among Gender and Emotional Intelligence. This suggests that the participants are homogenous and the data variances have similar spread among the sample taken from two schools. This means that the emotional intelligence spread between Learning Disabled Boy and Girl Adolescent students are similar. This demands and suggests ANOVA test to find gender difference.

Table 3

Mean and Standard Deviation of Gender Difference in Emotional Intelligence among Learning Disabled Adolescents

Gender	N	Mean	Standard Deviation
Girls	30	116.03	19.30
Boys	36	124.83	14.45

Table 3 shows the mean and standard deviation of Gender Difference in Emotional Intelligence among Learning Disabled Adolescents. The results indicated that Learning Disabled Adolescent Boys showed better Emotional Intelligence (124.83) than Girl

Learning Disabled Adolescents (116.03). Emotional Intelligence is the ability to handle emotions, think with clarity, managing emotional turmoil and being self-aware. Due to academic issues, learning disabled adolescents faced emotional setbacks and in the present study, moderate Emotional Intelligence (M=120.83) was assessed. Since the study was done in the city atmosphere with abundant security for education by the Institution, it is imperative that the students were protected and exhibited moderate Emotional Intelligence. The gender difference shows that though the students received undivided attention from their parents, teachers and institution, the Learning Disabled Adolescents Girls are found to be timid and shy in expressing themselves. They might internalize their emotions leading to unstable expression of emotions. Thus, a Gender Difference in Emotional Intelligence among Learning Disabled Adolescents can be identified. The current study is consistent with the research by Karimpour et al. (2019) that there is a significant Gender Difference in Emotional Intelligence among students. Boy students got better Emotional Intelligence scores on self-motivation and social skills.

Table 4
ANOVA for Gender Difference in Emotional Intelligence among Learning Disabled Adolescents

	Sum of Squares	df	Mean Square	F
Between Groups	1267.200	1	1267.200	4.47*
Within Groups	18157.967	64	283.718	

* = Significant at 0.05 level

Table 4 presents the ANOVA results for Gender Difference in Emotional Intelligence among Learning Disabled Adolescents. The result shows a significant difference in Emotional Intelligence among Learning Disabled Boy and Girl Adolescent students. The study by Encinas and Chauca (2020) posits that there is a presence of Gender Difference in Emotional Intelligence and that the Emotional Intelligence is better among boys than girls (Kapil Dev, 2022). Thus, the hypothesis (H1), “**There will be a significant difference among Learning Disabled Boy and Girl Adolescent students in Emotional Intelligence**” is accepted.

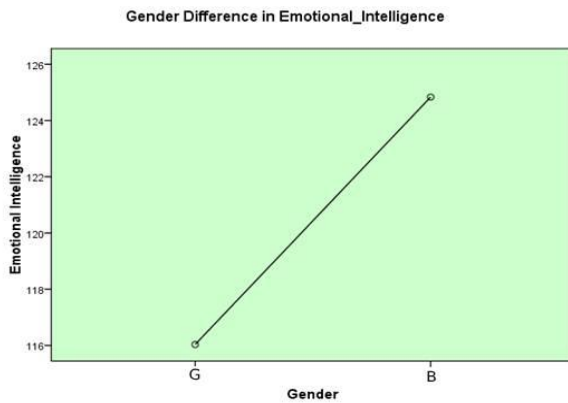


Figure 16. Gender Difference in Emotional Intelligence among Learning Disabled Adolescents

Figure 16 shows the Gender Difference among Learning Disabled Adolescents in Emotional Intelligence. The presence of better Emotional Intelligence among Learning Disabled Adolescent Boys than Learning Disabled Adolescent Girls might be due to internalizing of emotions among Girl students. This finding is unique in identifying the presence of Gender Difference in Emotional Intelligence among Learning Disabled Adolescents with Boy Adolescent students having better Emotional Intelligence than Girl Adolescent students. Hence, the hypothesis (H1), **“There will be a significant difference among Boys and Girls Learning Disabled Adolescents in Emotional Intelligence”** is accepted.

Table 5

Homogeneity Test results among schools in Social Competency using Levene’s Test of Equality of Error Variances

F	df1	df2	Sig.
0.42	1	64	0.52NS

NS = Not Significant

The results of the Levene’s Test from Table 5 are insignificant. The data supports the assumption of homogeneity of variances among Gender and Social Competence. This suggests that the participants are homogenous and the variances have similar spread among the sample taken from two schools.

Table 6**Mean and Standard Deviation of Gender Difference in Social Competence among Learning Disabled Adolescents**

Gender	N	Mean	Standard Deviation
Girls	30	126.63	14.79
Boys	36	130.31	15.15

Table 6 presents the Mean and Standard deviation of Gender Difference in Social Competence among Learning Disabled Adolescents. The result indicates a slight difference in the Mean of Social Competence among Learning Disabled Adolescent Boys (M=130.31) and Learning Disabled Adolescent Girls (M=126.33). Social Competence can be explained as the ability to interact with others, exhibit leadership qualities and collaborate effectively in the team. The current study measures moderate Social Competence (M=128.64). The presence of only slight change in the mean in Gender specifies that both Boy and Girl Adolescents participate in group activities as a part of the curriculum is appreciative and suggests that both Boy and Girl Adolescents are almost equal in Social Competence. But the behaviour of the adolescents outside the school set up towards social competence is unknown and the fact that these adolescents have poor Intelligence Quotient (IQ) (M=28.59) makes them vulnerable towards victimization. Hence, the current study aims at providing Expressive Arts Therapy as an intervention that caters to the expression of emotions through drawing, painting, music and movement (Brain Gym).

Table 7**ANOVA for Gender Difference in Social Competence among Learning Disabled Adolescents**

	Sum of Squares	df	Mean Square	F
Between Groups	220.667	1	220.667	0.98NS
Within Groups	14374.606	64	224.603	

NS = Not Significant

Table 7 shows the ANOVA results for Gender Difference in Social Competence among Learning Disabled Adolescents. The result shows that there is no significant gender difference in Social Competence among Learning Disabled Adolescents. It is imperative from the table that the mean difference is negligible and that both Learning Disabled Boy

and Girl Adolescent students are better in Social Competence. Further study on the interaction of the learning disabled adolescents with the general population is presented below.

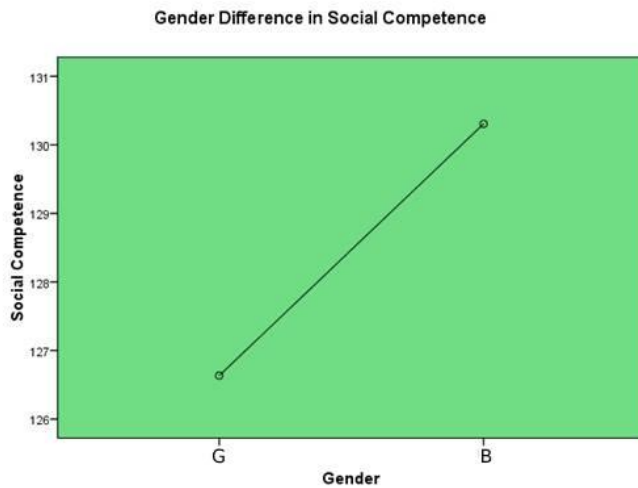


Figure 17. Gender Difference in Social Competence among Learning Disabled Adolescents

Figure 17 shows the slight presence of gender difference in Social Competence among Learning Disabled Boy and Girl Adolescent students. Though there is no significant gender difference, the level of social skills among Boy Learning Disabled Adolescents can be stated to show less inhibition and free expression of thoughts than Girl Learning Disabled Adolescents. Thus, the hypothesis (H2), “**There will be a significant difference among Learning Disabled Boy and Girl Adolescent students in Social Competence**” is rejected.

Table 8

Homogeneity Test among schools in Working Memory using Levene’s Test of Equality of Error Variances

F	df1	df2	Sig.
0.26	1	64	0.61 NS

NS = Not Significant

Table 8 shows the results of the Levene’s Test in Working Memory and the participants are homogenous and the variances have similar spread among the participants taken from two schools.

Table 9
Mean and Standard Deviation of Gender Difference in Working Memory among Learning Disabled Adolescents

Gender	N	Mean	Standard Deviation
Girls	30	85.33	17.87
Boys	36	78.83	16.63

Table 9 presents the Mean and Standard deviation among Boy and Girl Learning Disabled Adolescents in Working Memory and there is a slight difference in mean. Working memory is the ability to retain and recall the input stimulus within a brief time. The stimulus can be visual, auditory or kinesthetic. In the current study, Digit Span activity was conducted to test the working memory of the learning disabled adolescents. It has been identified that Girl Learning Disabled Adolescents have slightly better Working Memory than Boy Learning Disabled Adolescents.

Table 10
ANOVA for Gender Difference in Working Memory among Learning Disabled Adolescents

	Sum of Squares	df	Mean Square	F
Between Groups	691.364	1	691.364	2.34 NS
Within Groups	18933.667	64	295.839	

NS = Not Significant

Table 10 highlights the ANOVA result for Gender Difference in Working Memory among Learning Disabled Adolescents and there is no significant mean difference within the group and between the groups. Johnson (2022) is in line with the current study suggesting the insignificant effect of gender-based stereotype threat on working memory. Stereotype threat explains the underperformance of tasks considered to be “difficult” by any identity group. In his study, the influence of neuropsychological tests (working memory) on gender-based stereotype threat was studied and there was no gender difference in the working memory based on neuropsychological tests.

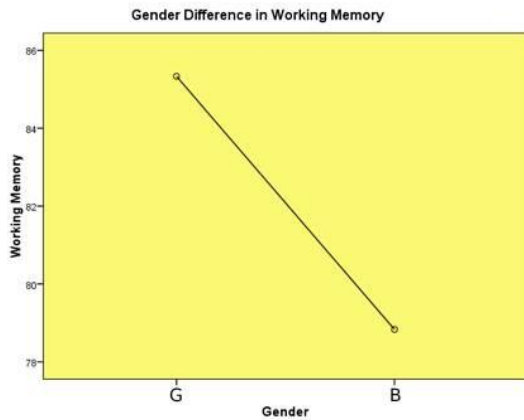


Figure 18. Gender Difference in Working Memory among Learning Disabled Adolescents

Figure 18 shows a slight difference in Learning Disabled Boy and Girl Adolescent students in Working Memory. The gender difference is negligible to have a significant impact on the Working Memory. Hence the hypothesis, **H3, “There will be a significant difference among Learning Disabled Boy and Girl Adolescent students in Working Memory”** is rejected.

Table 11

Homogeneity Test for Gender in Attention using Levene’s Test of Equality of Error Variances

F	df1	df2	Sig.
0.88	1	64	0.77 NS

NS = Not Significant

Table 11 indicates the result of Levene’s Test in attention and it is not statistically significant and it implies that the group is homogenous and the variances have similar spread among participants taken from two schools.

Table 12

Mean and Standard Deviation of Gender Difference in Attention among Learning Disabled Adolescents

Gender	N	Mean	Standard Deviation
Girls	30	63.00	7.08
Boys	36	63.53	6.53

Table 12 shows the Mean and Standard Deviation` of Gender Difference in Attention among Learning Disabled Adolescents and there is highly negligible difference in the Mean score. A probable explanation towards insignificant gender difference could be the individual attention provided to the students irrespective of gender. The teacher-student ratio was significantly adequate to cater to the needs of all the students necessitating the attention of all the students irrespective of gender difference. Since the Moss Attention Rating Scale (MARS) is a teacher rated scale, the teachers' might have provided a neutral feedback towards their students' performance in attention. Thus, there is no gender difference in Attention among Learning Disabled Adolescents.

Table 13

ANOVA for Gender Difference in Attention among Learning Disabled Adolescents

	Sum of Squares	df	Mean Square	F
Between Groups	4.558	1	4.558	0.10 NS
Within Groups	2942.972	64	45.984	

NS = Not Significant

Table 13 shows the ANOVA results for Gender Difference in Attention among Learning Disabled Adolescents and F value ($F = 0.10$) is highly negligible and it is not statistically significant to suggest the occurrence of Gender Difference in Attention among Learning Disabled Adolescents. Farish et al. (2019) studied the gender differences in the cognitive skills namely Visual Screening Ability, Response Speed and Sustained Attention among 53 undergraduate students in Kannur District, India. The result showed no significant difference between boy and girl students in the 3rd task which is sustained attention.

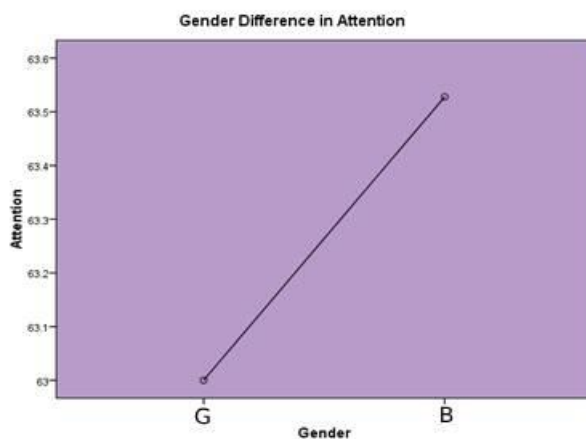


Figure 19. Gender Difference in Attention among Learning Disabled Adolescents

Figure 19 shows the negligible difference in Attention between Learning Disabled Boy and Girl Adolescent students. The reason could be the presence of adequate teacher-student ratio prevalent in the school that enabled the teacher to provide undivided care to all the students. This might have contributed for the students to stay focused in the lessons. The study by Contreras (2023) explains that teacher’s behaviour in grading is unbiased pertaining to gender and it is the behaviour of the students’ that result in gender gap. The current study also emphasizes the undivided care rendered by the teachers towards their students contributing for insignificant Gender Difference in Attention among Learning Disabled Adolescents. Hence, the hypothesis, **H4, “There will be a significant difference among Learning Disabled Boy and Girl Adolescent students in Attention”** is rejected. The unbiased result might contribute to the healthy growth of the learning disabled adolescents in various domains especially in academics.

Table 14

Homogeneity Test for Gender in Academic Achievement using Levene’s Test of Equality of Error Variances

F	df1	df2	Sig.
12.27	1	64	0.01**

****= Significant at 0.01 level**

Table 14 highlights the Levene’s Test of variances which are not equal among Gender in Working Memory and it supports the assumption that the participants are heterogeneous.

Table 15

Welch-Satterthwaite for Academic Achievement to adjust the unequal variances among Gender

	F	df1	df2
Welch	0.15NS	1	61.337

NS = Not Significant

The results of the Welch-Satterthwaite test are not significant from Table 15 and the degree of freedom 2 (df2) has been adjusted for unequal variances. Though the evidence shows that there is a lack of strong evidence for unequal variances, it doesn’t provide strong

evidence for homogeneity. This recommends combining the data from the 2 different schools, however, there are chances of bias.

Table 16

Mean and Standard Deviation of Gender Difference in Academic Achievement among Learning Disabled Adolescents

Gender	N	Mean	Standard Deviation
Girls	30	51.90	16.84
Boys	36	53.92	25.16

Table 16 shows the Mean and Standard Deviation of Gender Difference in Academic Achievement among Learning Disabled Adolescents. The results present no significant mean difference between Boy and Girl Learning Disabled Adolescent students in Academic Achievement. The study by Agormedah et al. (2021) is in line with the current study in showing that there is no gender difference in academic achievement. The study titled, “Assessment of Time Management Practices and Students’ Academic Achievement: The Moderating Role of Gender” used a descriptive survey design and included a sample of 325 students to explore the effect of gender in academic achievement. The study was carried out in Ghana and the result shows no gender difference in academic achievement among the students. In the current study, since the reading scores and spelling scores of the learning disabled students were below their age level, their scores in academics were also poor. From Table I, it is imperative that the majority of the participants (39% fall under 7 years of reading age and 27% fall under 6 years of spelling age) fall below their actual chronological age (range between 11 – 16 years). Hence, this could be an influencing factor for the presence of no significant academic achievement among Learning Disabled Boy and Girl Adolescent students.

Table 17

ANOVA for Gender Difference in Academic Achievement among Learning Disabled Adolescents

	Sum of Squares	df	Mean Square	F
Between Groups	66.550	1	66.550	0.14NS
Within Groups	30381.450	64	474.710	

NS = Not Significant

Table 17 shows the ANOVA score (0.14) and it is not statistically significant difference in academic achievement among boy and girl learning disabled adolescents. Bashir et al.(2023) assessed 200 students (100 boys and 100 girls) using academic achievement scale. The result revealed not significant gender difference in the academic achievement.

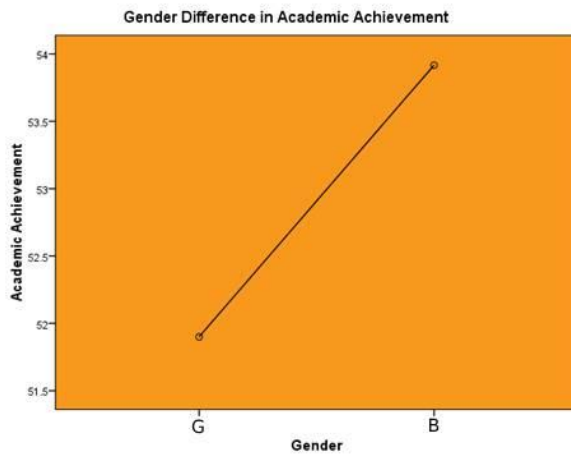


Figure 20. Gender Difference in Academic Achievement among Learning Disabled Adolescents

Figure 20 shows slight difference between the Learning Disabled Boy and Girl Adolescent students in Academic Achievement. This shows no significant difference which could be due to the negligible gender difference in the reading and spelling score influencing the academic achievement too. Hence the hypothesis, **H5** that “**There will be a significant difference among Learning Disabled Boy and Girl Adolescent students in Academic Achievement**” is rejected.

Table 18

Homogeneity Test for Gender in Quality of Life using Levene’s Test of Equality of Error Variances

F	df1	df2	Sig.
3.98	1	64	0.05*

* = Significant at 0.05 Level

Table 18 shows the results of Levene’s Test in Quality of Life and the variances are not equal among Gender it means that the participants are heterogeneous. ANOVA statistics can be used to apply adjustments in the unequal variances.

Table 19

Welch-Satterthwaite for Quality of Life to adjust the unequal variances among Gender

	F	df1	df2
Welch	1.31NS	1	62.920

NS = Not Significant

The results of the Welch-Satterthwaite test are not significant from Table 19 and the degree of freedom 2 (df2) has been adjusted for unequal variances. Though the evidence shows that there is a lack of strong evidence for unequal variances, it doesn't provide strong evidence for homogeneity. This recommends combining the data from the 2 different schools, however, there are chances of bias.

Table 20

Mean and Standard Deviation of Gender Difference in Quality of Life among Learning Disabled Adolescents

Gender	N	Mean	Standard Deviation
Girls	30	1.47	0.48
Boys	36	1.33	0.51

From Table 20, the mean of Quality of Life among Learning Disabled Boy and Girl Adolescent students are 1.47 and 1.33 respectively with a standard deviation of 0.48 and 0.51 respectively and suggests that there is no gender difference.

Table 21

ANOVA for Gender Difference in Quality of Life among Learning Disabled Adolescents

	Sum of Squares	df	Mean Square	F
Between Groups	0.316	1	0.316	1.29NS
Within Groups	15.639	64	0.244	

NS= Not Significant

Table 21 shows the ANOVA results for Gender Difference in Quality of Life among Learning Disabled Adolescents and it is statistically not significant gender difference.

Ginieri-Coccosis et al. (2013) emphasized the lack of gender difference in quality of life among Specific Learning Disabled children. In the study, quality of life was rated considering emotional well-being, low self-esteem and satisfaction with family members. The current study measured quality of life in the perspective of introspecting the participant's identification as a learning disabled student and its impact on their emotional well-being and overall satisfaction in academics. In this perspective, there was no gender difference that was statistically significant.

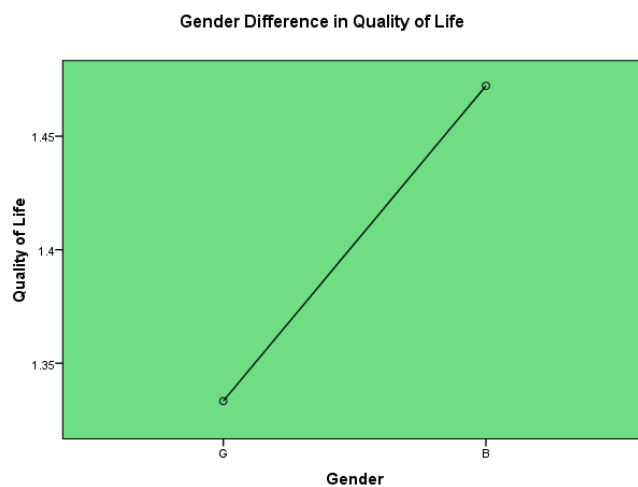


Figure 21. Gender Difference in Quality of Life among Learning Disabled Adolescents

Figure 21 shows the Gender Difference in Quality of Life among Learning Disabled Adolescents. The graph shows a slight mean difference between the Learning Disabled Boy and Girl Adolescent students in Academic Achievement. Hence the hypothesis, **H6** that “**There will be a significant difference among Learning Disabled Boy and Girl Adolescent students in Quality of Life**” is rejected. Though mean is statistically not significant, the slight difference in quality of life could be due to the presence of internalization of problems prevalent slightly more among girls than boys. Hence, the result recommends an intervention to enhance Quality of Life.

Section III Relationship between Emotional Intelligence, Social Competence, Working Memory, Attention, Academic Achievement and Quality of Life among Learning Disabled Adolescents

Table. 22

Pearson’s correlation between Emotional Intelligence, Social Competence, Working Memory, Attention, Academic Achievement and Quality of Life

Variables	Emotional Intelligence	Social Competence	Working Memory	Attention	Academic Achievement	Quality of Life
Emotional Intelligence	1	-0.20NS	0.19NS	0.16NS	-0.13NS	0.24NS
Social Competence	-0.20NS	1	-0.19NS	0.07NS	0.14NS	0.74NS
Working Memory	0.19NS	-0.19NS	1	0.01NS	0.19NS	0.18NS
Attention	0.16NS	0.07NS	0.01NS	1	0.14NS	0.05NS
Academic Achievement	-0.13NS	-0.14NS	0.19NS	0.14NS	1	0.05NS
Quality of Life	0.24NS	0.74NS	0.18NS	0.05NS	0.05NS	1

NS = Not Significant

Table 22 shows the Coefficient of Correlation between Emotional Intelligence and Social Competence among Learning Disabled Adolescents. The result indicates that there is no statistically significant relationship between Emotional Intelligence and Social Competence. Emotional Intelligence is the ability to handle emotions, think with clarity, managing emotional turmoil and being self-aware. Social Competence can be explained as the ability to interact with others, exhibit leadership qualities and collaborate effectively in the team. From the result, it can be considered that both Emotional Intelligence and Social Competence are two different entities.

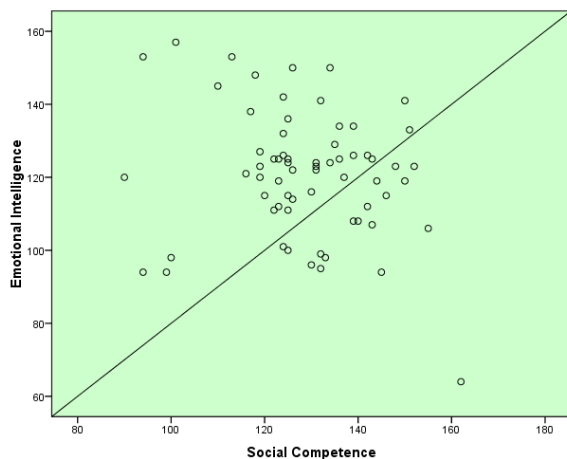


Figure 22. Scatter Plot for Emotional Intelligence and Social Competence among Learning Disabled Adolescents

Figure 22 shows the diagrammatic representation of the relationship between Emotional Intelligence and Social Competence. The scatter plot shows that the variances are dispersed unevenly and there is no significant relationship between Emotional Intelligence and Social Competence. Thus, the hypothesis **H7**, “**There will be a significant relationship between Emotional Intelligence and Social Competence among Learning Disabled Adolescents**” is rejected. The no significant relationship between Emotional Intelligence and Social Competence is accepted as it prevents the formation of multicollinearity within the data.

From Table 22, it is imperative that there is no significant correlation between Emotional Intelligence and Working Memory ($r = 0.19$) among Learning Disabled Adolescents. It can be suggested that there is no multicollinearity within the data.

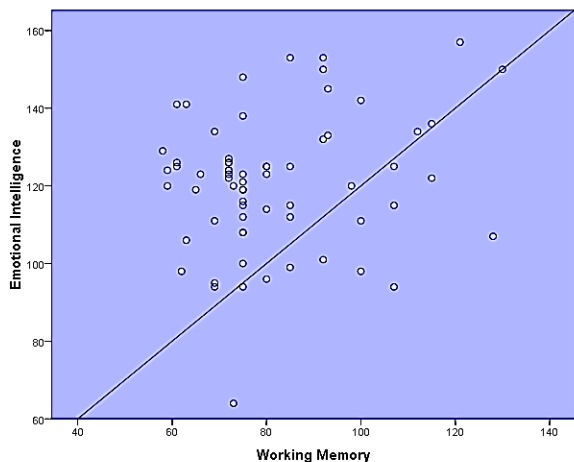


Figure 23. Scatter Plot for Emotional Intelligence and Working Memory among Learning Disabled Adolescents

From Figure 23, it is evident that the variances are unevenly distributed and remains farther from the dissecting line. This suggests that there is no significant relationship between the variables Emotional Intelligence and Working Memory. Hence the hypothesis, **H8**, “There will be a significant relationship between Emotional Intelligence and Working Memory among Learning Disabled Adolescents” is rejected.

Table 22 shows the coefficient of correlation score of Emotional Intelligence and Attention among Learning Disabled Adolescents. The value for $r = 0.16$ suggests the presence of no significant relationship between Emotional Intelligence and Attention among Learning Disabled Adolescents.

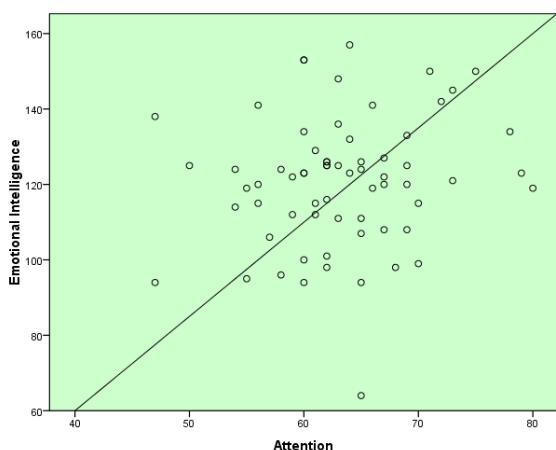


Figure 24. Scatter Plot for Emotional Intelligence and Attention among Learning Disabled Adolescents

Figure 24, it can be observed that majority of the variances are grouped in the center. However, the presence of outlier might affect the relationship and hence a weak correlation.

Hence, there is no significant relationship between the variables is seen widely. Hence, the hypothesis **H9**, “**There will be a significant relationship between Emotional Intelligence and Attention among Learning Disabled Adolescents**” is rejected.

The r value (-0.13) suggests no significant relationship between Emotional Intelligence and Academic Achievement (Table 22). Hence, when Emotional Intelligence increases, Academic Achievement decreases, however, the evidence is not sufficient to prove. It can be discussed that a learning disabled adolescent with poor academic performance when engaged with more socialization activity contributing to better Emotional Intelligence, the later will further affect academic performance. However, the variances are not significant to prove this hypothesis.

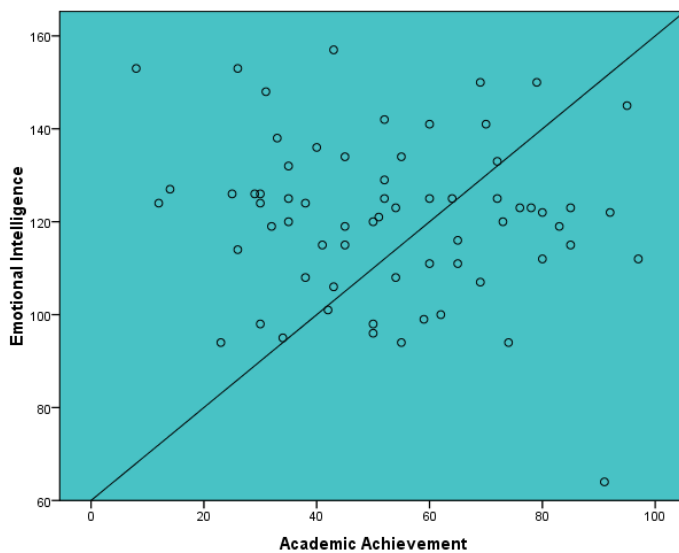


Figure 25. Scatter Plot for Emotional Intelligence and Academic Achievement among Learning Disabled Adolescents

From Figure 25, it can be observed that the variances are scattered suggesting a weak relationship among Emotional Intelligence and Academic Achievement. Hence, the Hypothesis **H10**, “**There will be a significant relationship between Emotional Intelligence and Academic Achievement among Learning Disabled Adolescents**” is rejected.

From Table 22, it is observed that there is a weak relationship between Emotional Intelligence and Quality of Life among Learning Disabled Adolescents. Hence, the Hypothesis **H11**, “**There will be a significant relationship between Emotional Intelligence and Quality of Life among Learning Disabled Adolescents**” is rejected.

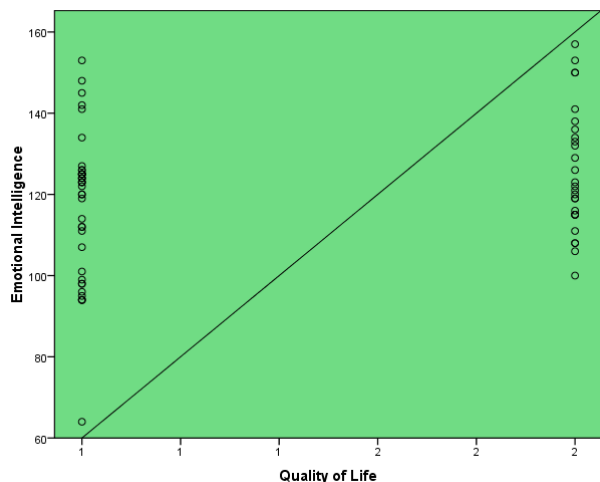


Figure 26. Scatter Plot for Emotional Intelligence and Quality of Life among Learning Disabled Adolescents

Figure 26 shows the presence of alignment of variances at extreme ends of 1 and 2 (“1” denotes “Yes” responses and “2” denotes “No” responses). The binary division clearly signifies the absence of multicollinearity between the variables. Hence, the Hypothesis **H11**, **“There will be a significant relationship between Emotional Intelligence and Quality of Life among Learning Disabled Adolescents”** is rejected.

Table 22 shows that there is no significant relationship between Social Competence and Working Memory ($r = -0.19$) among the Learning Disabled Adolescents and it suggests the absence of multicollinearity between the variables. Hence the hypothesis **H12**, **“There will be a significant relationship between Social Competence and Working Memory among Learning Disabled Adolescents”** is rejected.

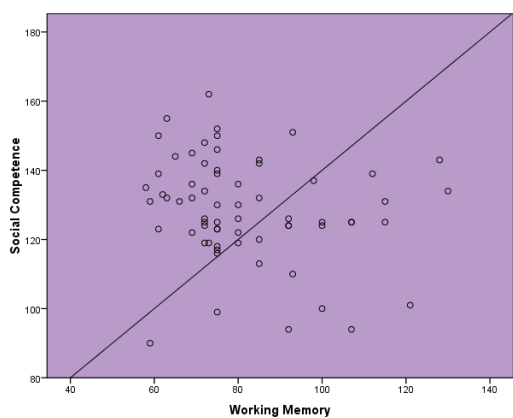


Figure 27. Scatter Plot for Social Competence and Working Memory among Learning Disabled Adolescents

Figure 27 shows the presence of few outliers which possibly could interfere with the collinearity between the variables. However, the r value suggests absence of multicollinearity and hence no significant relationship between the variables. Hence, the Hypothesis **H12**, “There will be a significant relationship between Social Competence and Working Memory among Learning Disabled Adolescents” is rejected.

From Table 22, it is imperative to observe the r value (0.07) being not significant to suggest a probable relationship between Social Competence and Attention. This eliminates the possibility of multicollinearity between the variables. Hence, the hypothesis **H13**, “There will be a significant relationship between Social Competence and Attention among Learning Disabled Adolescents” is rejected.

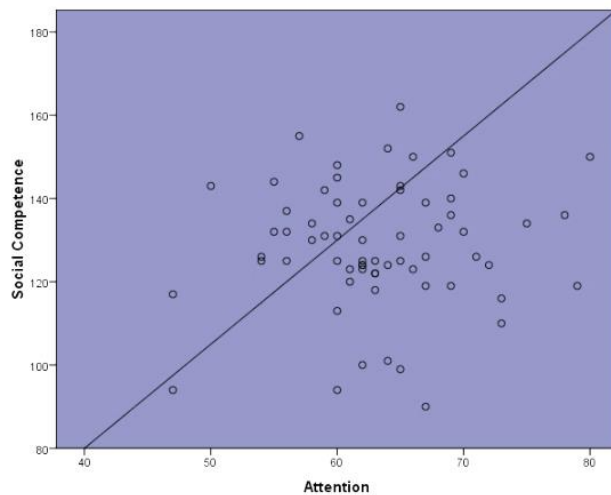


Figure 28. Scatter Plot for Social Competence and Attention among Learning Disabled Adolescents

The above Scatter Plot diagram presents the significant presence of outliers in the variance affecting the relationship between Social Competence and Attention among Learning Disabled Adolescents. These extreme variables might be due to systematic bias as Social Competence was a group administered test whereas Attention was a teacher rated test. This assumption might have contributed to the scattered data. However, the result is not contributing to multicollinearity and hence the hypothesis **H13**, “There will be a significant relationship between Social Competence and Attention among Learning Disabled Adolescents” is rejected.

Table 22 shares the correlation coefficient value ($r = 0.14$) between the variables Social Competence and Academic Achievement. The result is not significant to show a strong

relationship between the variables and this removes the presence of multicollinearity between Social Competence and Academic Achievement among Learning Disabled Adolescents. Hence the hypothesis **H14, “There will be a significant relationship between Social Competence and Academic Achievement among Learning Disabled Adolescents”** is rejected.

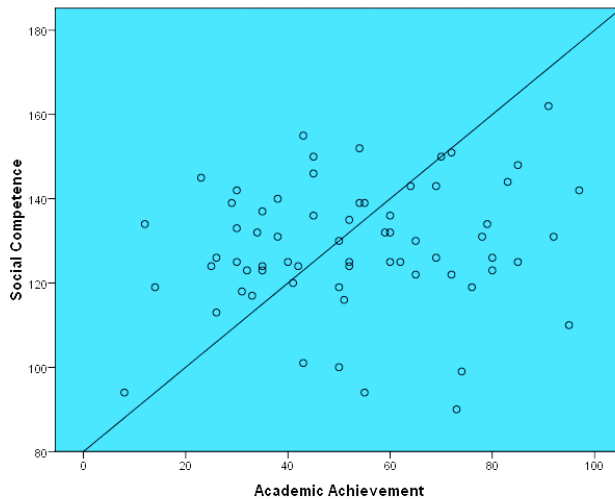


Figure 29. Scatter Plot for Social Competence and Academic Achievement among Learning Disabled Adolescents

Figure 29 shows the scatter plot between the Social Competence and Academic Achievement and the variances are spread out variedly contributing to no significant relationship. Hence the hypothesis **H14, “There will be a significant relationship between Social Competence and Academic Achievement among Learning Disabled Adolescents”** is rejected.

Table 22 shows no significant relationship ($r = 0.74$) between the variables Social Competence and Quality of Life among the Learning Disabled Adolescents. Hence the hypothesis **H15, “There will be a significant relationship between Social Competence and Quality of Life among Learning Disabled Adolescents”** is rejected. The result indicates the fact that social competence and quality of life are different entities with components social skills, social cognition and emotional well-being, self-esteem addressed as different. It is imperative that social competence addresses the external well-being of an individual and quality of life caters to the subjective well-being of an individual. Thus , the lack of distinguishing relationship can be attributed to the different focus of the variables.



Figure 30. Scatter Plot for Social Competence and Quality of Life among Learning Disabled Adolescents

Figure 30 shows the binary distribution of the variable, Quality of Life matching the continuous variable, Social Competence. This shows the distribution of variances at the extreme ends, however, the presence of multicollinearity is absent. Hence, the hypothesis **H15**, “**There will be a significant relationship between Social Competence and Quality of Life among Learning Disabled Adolescents**” is rejected.

Table 22 shows the coefficient of correlation between Working Memory and Attention among Learning Disabled Adolescents. The result indicates that it is not statistically no significant relationship between Working Memory and Attention among Learning Disabled Adolescents. Thus the hypothesis, **H16**, “**There will be a significant relationship between Working Memory and Attention of the Learning Disabled Adolescents**” is rejected. The result highlights the fact that working memory identified with recall and recognition aspects of memory whereas attention is relates to the amount of focus provided to a stimulus to be processed by memory.

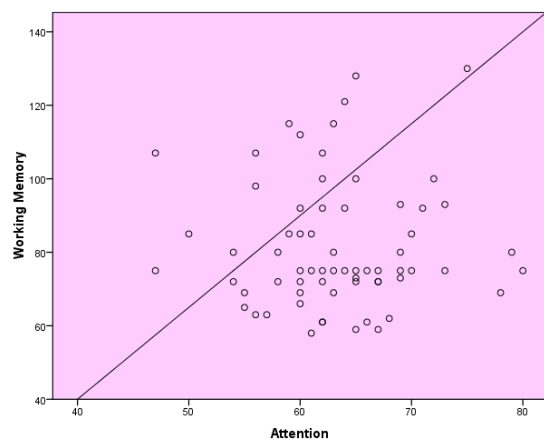


Figure 31. Scatter Plot for Working Memory and Attention among Learning Disabled Adolescents

Figure 31 shows that the variances are sloppily distributed contribute for weak relationship between Working Memory and Attention. Hence, the hypothesis, **H16, “There will be a significant relationship between Working Memory and Attention among Learning Disabled Adolescents”** is rejected.

From Table 22, it is evident that there is no correlation between Working Memory and Academic Achievement among Learning Disabled Adolescents with r value is 0.19. Hence, the hypothesis **H17, “There will be a significant relationship between Working Memory and Academic Achievement among Learning Disabled Adolescents”** is rejected.

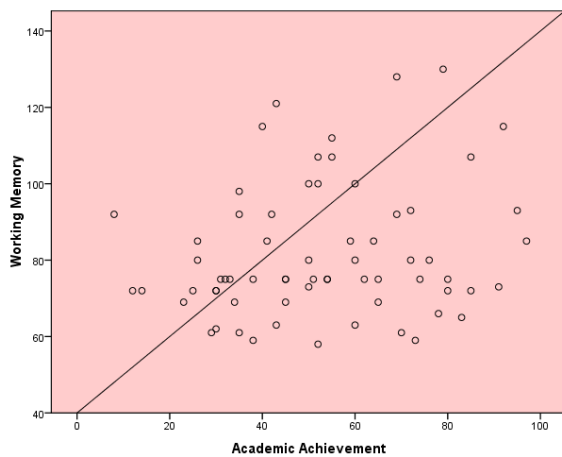


Figure 32. Scatter Plot for Working Memory and Academic Achievement among Learning Disabled Adolescents

Figure 32 presents a slight positive correlation between the variables Working Memory and Academic Achievement, however, the relationship is weak to accept the hypothesis. Hence, the hypothesis **H17, “There will be a significant relationship between Working Memory and Academic Achievement among Learning Disabled Adolescents”** is rejected.

There is no significant relationship between Working Memory and Quality of Life among the Learning Disabled Adolescents, from Table 26 ($r = 0.18$). Hence, the hypothesis **H18, “There will be a significant relationship between Working Memory and Quality of Life among Learning Disabled Adolescents”** is rejected.



Figure 33. Scatter Plot for Working Memory and Quality of Life among Learning Disabled Adolescents

Figure 33 shows the binary distribution of Quality of Life related to the continuous data of Working Memory. However, this shows the absence of multicollinearity within the variables. Hence, the hypothesis **H18, “There will be a significant relationship between Working Memory and Quality of Life among Learning Disabled Adolescents”** is rejected.

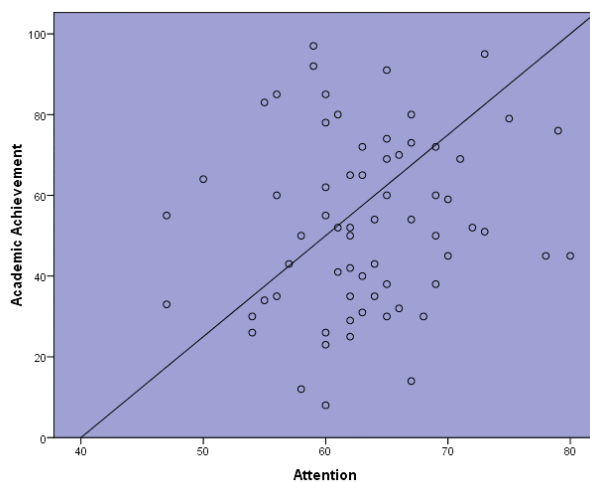


Figure 34. Scatter Plot for Attention and Academic Achievement among Learning Disabled Adolescents

Figure 34 shows that the variances are sporadically distributed and hence hypothesis **H19, “There will be a significant relationship between Attention and Academic Achievement among Learning Disabled Adolescents”** is rejected.

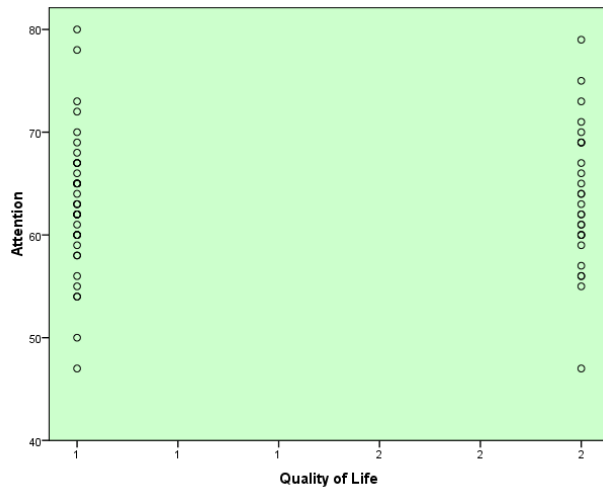


Figure 35. Scatter Plot for Attention and Quality of Life among Learning Disabled Adolescents

From figure 35, it is imperative that the binary distributions of the variances are not correlated and hence the hypothesis **H20**, “**There will be a significant relationship between Attention and Quality of Life among Learning Disabled Adolescents**” is rejected.



Figure 36. Scatter Plot for Academic Achievement and Quality of Life among Learning Disabled Adolescents

Figure 36 represents the binary split of variances between Academic Achievement and Quality of Life and hence the hypothesis, **H21**, “**There will be a significant relationship between Academic Achievement and Quality of Life among Learning Disabled Adolescents**” is rejected.

Section IV.

Table 23

Mean and Standard Deviation of Experimental Group and Waitlist Control Group in Emotional Intelligence among Learning Disabled Adolescents

Therapy Groups	N	Mean	Standard Deviation
Experimental	35	126.43	16.46
Waitlist Control	31	114.52	16.21

Table 24

ANOVA for Experimental Group and Waitlist Control Group in Emotional Intelligence among Learning Disabled Adolescents

	Sum of Squares	df	Mean Square	F
Between Groups	2332.853	1	2332.853	8.74*
Within Groups	17092.313	64	267.067	

* = **Significant at 0.05 Level**

From Table 23 and 24, it is evident that there is a significant mean difference in Emotional Intelligence between Experimental Group and Waitlist Control Group. The Emotional Intelligence of Waitlist Control Group (Mean = 114.52) is slightly lower than the Experimental Group (Mean = 126.43). Although the participants in Experimental Group and Waitlist Control Group matched similar on the curriculum and syllabus, there were differences observed in the socioeconomic factors and Parental occupation. These confounding variables might contribute to the significant differences. However, administering intervention to the Experimental Group is recommended to enhance the Emotional Intelligence among the participants. Considering the above discussion, the hypothesis **H22, “There will be significant difference between Experimental Group and Waitlist Control Group in Emotional Intelligence among Learning Disabled Adolescents”** is accepted.

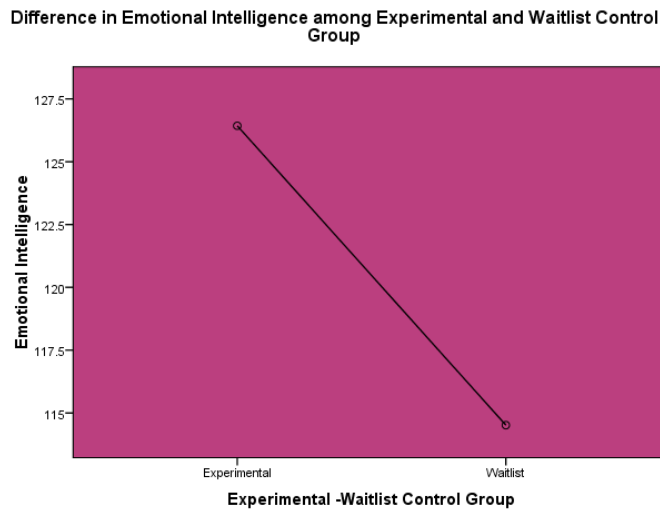


Figure 37 Mean Difference between Experimental Group and Waitlist Control Group in Emotional Intelligence among Learning Disabled Adolescents

Table 25

Mean and Standard Deviation of Experimental Group and Waitlist Control Group in Social Competence among Learning Disabled Adolescents

Therapy Groups	N	Mean	Standard Deviation
Experimental	35	128.49	15.66
Waitlist Control	31	126.71	14.43

Table 26

ANOVA for Experimental Group and Waitlist Control Group in Social Competence among Learning Disabled Adolescents

	Sum of Squares	df	Mean Square	F
Between Groups	1.691	1	1.691	0.01 NS
Within Groups	14593.582	64	228.025	

NS = Not Significant

Table 25 and 26, shows no significant difference in the mean of Social Competence between the Experimental Group and Waitlist Control Group among Learning Disabled Adolescents. Thus, the hypothesis **H23, “There will be significant difference between Experimental Group and Waitlist Control Group in Social Competence among Learning Disabled Adolescents”** is rejected.

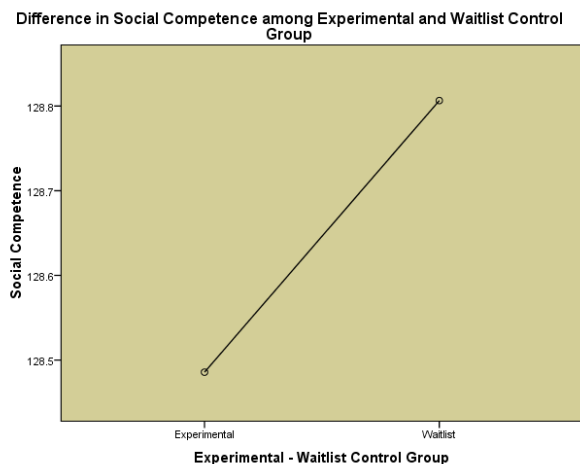


Figure 38 Mean Difference between Experimental Group and Waitlist Control Group in Social Competence among Learning Disabled Adolescents

Table 27

Mean and Standard Deviation of Experimental Group and Waitlist Control Group in Attention among Learning Disabled Adolescents

Therapy Groups	N	Mean	Standard Deviation
Experimental	35	64.94	8.05
Waitlist Control	31	61.32	4.25

Table 28

ANOVA for Experimental Group and Waitlist Control Group in Attention among Learning Disabled Adolescents

	Sum of Squares	df	Mean Square	F
Between Groups	204.096	1	204.096	4.76*
Within Groups	2743.434	64	42.866	

* = Significant at 0.05 Level

Table 27 and 28 shows the significant mean difference between Experimental Group and Waitlist Control Group in Attention among Learning Disabled Adolescents. The mean difference can be attributed to the teacher rated questionnaire, thus contributing to the difference. Hence, the hypothesis, **H24, “There will be significant difference between Experimental Group and Waitlist Control Group in Attention among Learning Disabled Adolescents”** is accepted.

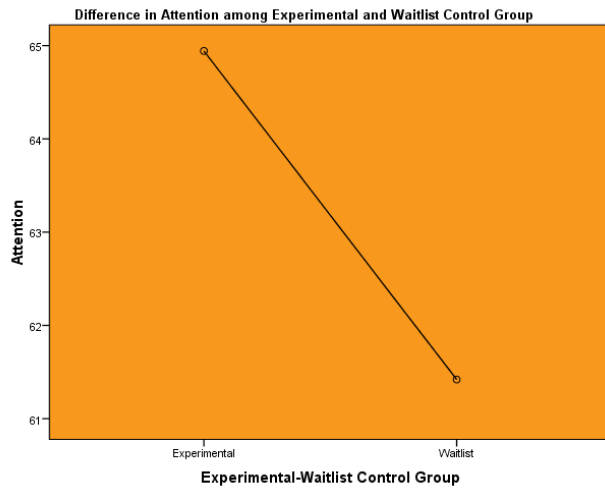


Figure 39 Mean Difference between Experimental Group and Waitlist Control Group in Attention among Learning Disabled Adolescents

Table 29 Mean and Standard Deviation of Experimental Group and Waitlist Control Group in Working Memory among Learning Disabled Adolescents

Therapy Groups	N	Mean	Standard Deviation
Experimental	35	8.57	18.25
Waitlist Control	31	9.74	15.59

Table 30 ANOVA for Experimental Group and Waitlist Control Group in Working Memory among Learning Disabled Adolescents

	Sum of Squares	df	Mean Square	F
Between Groups	37.330	1	37.330	3.5 NS
Within Groups	594.442	64	9.288	

NS = Not Significant

From Table 29 and 30, it is imperative that there is no significant difference in the Working Memory between Experimental and Waitlist Control Group among Learning Disabled Adolescents. Hence, the hypothesis **H25, “There will be significant difference between Experimental Group and Waitlist Control Group in Working Memory among Learning Disabled Adolescents”** is rejected. Working memory is the tendency of a person to recall and recognize a stimulus. It influences the learning process and contributes to

academic achievement among learning disabled adolescents. Plenty of intervention strategies enhances the cognitive functioning and recommends cognitive rehabilitation for learning disabled students. The homogeneity of the participants were discussed earlier and the influence of uniform NIOS curriculum could have an impact on the statistical result of not significant difference in working memory between experimental group and waitlist control group.

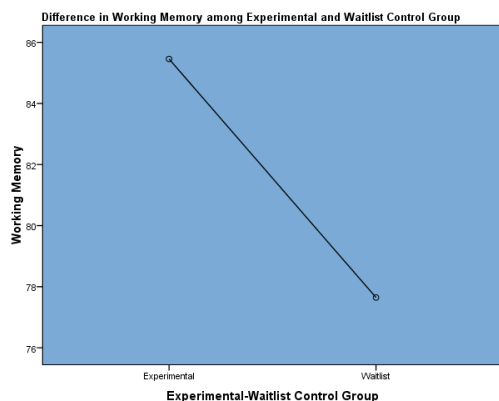


Figure 40 Mean Difference between Experimental Group and Waitlist Control Group in Working Memory among Learning Disabled Adolescents

Table 31

Mean and Standard Deviation of Experimental Group and Waitlist Control Group in Academic Achievement among Learning Disabled Adolescents

Therapy Groups	N	Mean	Standard Deviation
Experimental	35	51.09	21.28
Waitlist Control	31	55.10	22.19

Table 32

ANOVA for Experimental Group and Waitlist Control in Academic Achievement among Learning Disabled Adolescents

	Sum of Squares	df	Mean Square	F
Between Groups	273.064	1	273.064	0.58 NS
Within Groups	30174.936	64	471.483	

NS = Not Significant

From Table 31 and 32, it is evident that there is no significant mean difference in Academic Achievement between Experimental Group and Waitlist Control Group among

Learning Disabled Adolescents. Hence the hypothesis H26, “There will be significant difference between Experimental Group and Waitlist Control Group in Academic Achievement among Learning Disabled Adolescents” is rejected. The homogeneity of the sample discussed earlier and the influence of uniform NIOS curriculum could have an impact on the statistical result of no significant difference in academic achievement between experimental group and waitlist control group.

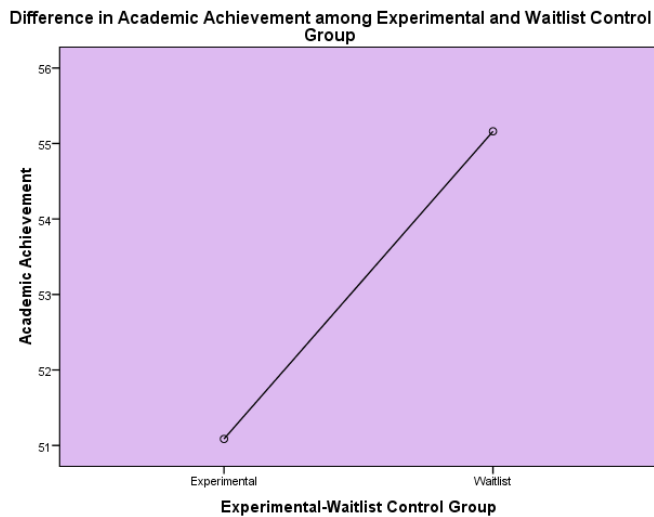


Figure 41 Mean difference between Experimental Group and Waitlist Control Group in Academic Achievement among Learning Disabled Adolescents

Table 33

Mean and Standard Deviation of Experimental Group and Waitlist Control Group in Quality of Life among Learning Disabled Adolescents

Therapy Groups	N	Mean	Standard Deviation
Experimental	35	1.60	0.40
Waitlist Control	31	1.13	0.51

Table 34

ANOVA for Experimental Group and Waitlist Control in Quality of Life among Learning Disabled Adolescents

	Sum of Squares	df	Mean Square	F
Between Groups	1.964	1	1.964	8.98*
Within Groups	13.991	64	.219	

* = Significant at 0.05 Level

From Table 33 and 34 there is significant mean difference among Experimental Group and Waitlist Control Group in Quality of Life among Learning Disabled Adolescents. Hence the hypothesis H27, “There will be significant difference between Experimental Group and Waitlist Control Group in Quality of Life among Learning Disabled Adolescents” is accepted. This implies that quality of life of the experimental group has changed and when compared to the waitlist control group it has streamlined whereas the quality of life of the waitlist control group tend to continue as there was no therapy.

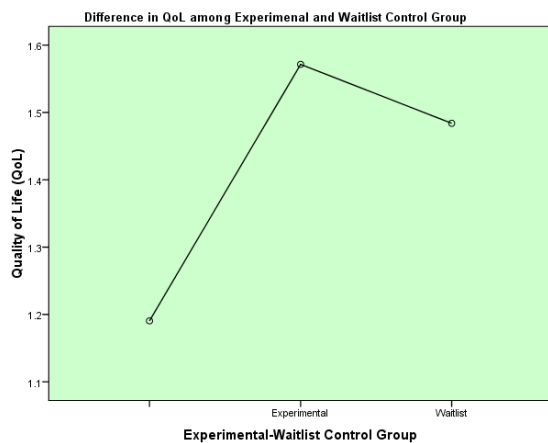


Figure 42 Mean Difference between Experimental Group and Waitlist Control Group in Quality of Life among Learning Disabled Adolescents.

Section V

Table 35

Mean and Standard Deviation of Emotional Intelligence (EI) in the Experimental Group during Before, After and Follow-up Phases

Group	Phases	Mean	Standard Deviation
Experimental Group	Before	126.43	16.46
	After	136.91	19.30
	Follow-up	124.71	17.02

Table 35 presents the Mean and Standard Deviation of Emotional Intelligence among the Experimental Group in Before, After and Follow-up Phases. The result shows that there was improvement in the level of Emotional Intelligence After therapy. Hathaway(2023) analyzed the effectiveness of introducing the *Second Step* curriculum in the classrooms by administering Expressive Arts Therapy. The term Socioemotional Learning was used

interchangeably to represent Emotional Intelligence. The Expressive Arts Therapy and Brain Gym had been effective in enhancing the emotional intelligence.

Table 36

Mean and Standard Deviation of Emotional Intelligence (EI) in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases

Group	Phases	Mean	Standard Deviation
Waitlist Control Group	Pre-test	114.52	16.21
	Post-test	115.00	16.35
	Follow-up	114.42	16.09

Table 36 shows the Mean and Standard Deviation of Emotional Intelligence among the Waitlist Control Group in Pre-test, Post-test and Follow-up Phases. The result shows no improvement in Emotional Intelligence among the Waitlist Control Group in Pre-test, Post-test and Follow-up Phases.

Table 37

Repeated Measures ANOVA for Emotional Intelligence (EI) in the Experimental and Waitlist Control Group during Before, After and Follow-up Phases

Source		Sum of Squares	df	Mean Square	F
Phases	Sphericity Assumed	1572.464	2	786.232	35.37**
	Greenhouse-Geisser	1572.464	1.783	882.109	35.37**
	Huynh-Feldt	1572.464	1.859	845.933	35.37**
	Lower-bound	1572.464	1.000	1572.464	35.37**
Phases * Therapy	Sphericity Assumed	1302.343	2	651.172	29.29**
	Greenhouse-Geisser	1302.343	1.783	730.588	29.29**
	Huynh-Feldt	1302.343	1.859	700.617	29.29**
	Lower-bound	1302.343	1.000	1302.343	29.29**

** = Significant at 0.01 level

Table 37 represents the results of Repeated Measures ANOVA for Emotional Intelligence among the Experimental and Waitlist Control Group in Before, After and

Follow-up Phases. The results indicated that there is a significant difference in the Emotional Intelligence between the Experimental and Waitlist Control group. There is a significant difference between phases of the therapy (Before, After and Follow-up) as well as between the groups (Experimental and Waitlist Control). This shows that Expressive Arts Therapy and Brain Gym were effective in enhancing the Emotional Intelligence of the Learning Disabled Adolescents. Edanur (2022) analyzed the effect of Expressive Arts Therapy in enhancing Emotional Intelligence among Diploma Programme Students. The results confirmed that the potential of the therapy to enhance the Emotional Intelligence of the students.

Table 38
Pairwise Comparisons for Emotional Intelligence (EI) in the Experimental Group during Before, After and Follow-up Phases

Phases (I)	Phases (J)	Mean Difference (I-J)	Standard Error
Before	After	-10.49**	1.47
	Follow-up	1.71NS	1.20
After	Before	10.49**	1.47
	Follow-up	12.20**	1.74
Follow-up	Before	-1.71NS	1.20
	After	-12.20**	1.74

**** = Significant at 0.01 level** **NS = Not Significant**

Table 38 shows the Pairwise Comparisons for Emotional Intelligence among the Experimental Group in Before, After and Follow-up Phases. There is clear indication that the therapy was effective between Before and After phases of administration among the Experimental Group. The therapy had been effective in enhancing the Emotional Intelligence of the Learning Disabled adolescents but the effect reduced after a gap of one month. It is imperative that the effect of therapy remained positive while the Emotional Intelligence test was administered but declined after a gap of one month. Therefore, it is clear that the therapy needs to be continued or the adolescents need to practice the therapy in order to get the full benefit of the intervention throughout life.

Table 39
Pairwise Comparisons for Emotional Intelligence (EI) in the Waitlist Control Group
during Pre-test, Post-test and Follow-up Phases

Phases(I)	Phases(J)	Mean Difference (I-J)	Standard Error
Pre	Post	-0.48NS	1.17
	Follow-up	0.09NS	1.58
Post	Pre	0.48NS	1.17
	Follow-up	0.58NS	1.75
Follow-up	Pre	-0.09NS	1.58
	Post	-0.58NS	1.75

NS = Not Significant

Table 39 shows the Pairwise Comparisons for Emotional Intelligence among the Waitlist Control Group in Pre, Post and Follow-up Phases. The result shows that there is no significant difference between Pre-test, Post-test and Follow-up phases among waitlist control group. Since there is no change in Emotional Intelligence among the waitlist control group, it can be assumed that the participants might be less self-aware, less motivated, low in self-regulation.

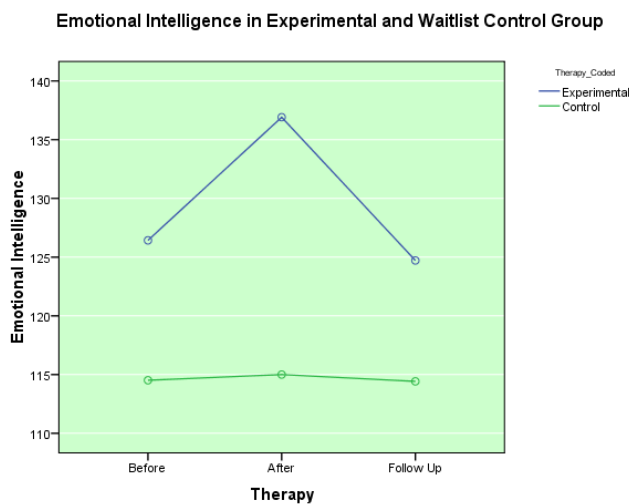


Figure 43. Emotional Intelligence (EI) in Experimental and Waitlist Control Group
during Before, After and Follow-up Phases

Figure 43 shows the difference between Before, After and Follow-up Phases in Emotional Intelligence among Experimental and Waitlist Control Group during Pre, Post and Follow-up Phases. The Graph shows that the therapy had been effective among the

Experimental group than the Waitlist Control group. Hence, the hypothesis **H28**, “**There will be significant difference during before, after and follow-up phases in emotional intelligence among learning disabled adolescents**” is accepted. This shows that the therapy has made an impact on the self-awareness, self-regulation and motivational level of the experimental group. After the therapy, the participants in the experimental group were able to show empathy and regulate their emotions to handle stress and anxiety efficiently when compared to waitlist control group.

Table 40
Mean and Standard Deviation of Social Competence in the Experimental Group during Before, After and Follow-up Phases

Group	Phases	Mean	Standard Deviation
Experimental Group	Before	128.49	15.67
	After	131.63	19.44
	Follow-up	123.60	17.33

Table 40 presents the Mean and Standard Deviation of Social Competence among the Experimental Group in Before, After and Follow-up Phases. The result indicates a slight mean difference between the Before (M=128.49) and After (M=131.63) Phases of therapy and there is a decline in the mean between After (M=131.63) and Follow-up (M= 123.60) Phases. Tang(2023) conducted a study on autistic children of age 6 to 9 years and identified the efficacy of Expressive Arts Therapy towards communication skills especially self-expression. The current study can be compared with the above study and can be shared that a noticeable mean difference in social competence is observed before and after therapy. The learning disabled adolescents were able to self-express themselves, gain social cognition and social skills through the study.

Table 41
Mean and Standard Deviation of Social Competence in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases

Group	Phases	Mean	Standard Deviation
Waitlist Control Group	Pre	126.71	13.95
	Post	126.81	13.95
	Follow-up	126.68	13.94

Table 41 shows the Mean and Standard Deviation of Social Competence among the Waitlist Control Group in Pre, Post and Follow-up Phases and the result shows same score. Since the waitlist control group did not receive the therapy, there is no mean difference in pre, post and follow-up phases.

Table 42

Repeated Measures ANOVA for Social Competence in the Experimental and Waitlist Control Group during Before, After and Follow-up Phases

Source		Sum of Squares	df	Mean Square	F
Phases	Sphericity Assumed	554.710	2	277.355	5.88**
	Greenhouse-Geisser	554.710	1.900	291.895	5.88**
	Huynh-Feldt	554.710	1.988	279.095	5.88**
	Lower-bound	554.710	1.000	554.710	5.88*
Phases * Therapy	Sphericity Assumed	521.882	2	260.941	5.54**
	Greenhouse-Geisser	521.882	1.900	274.620	5.54**
	Huynh-Feldt	521.882	1.988	262.578	5.54**
	Lower-bound	521.882	1.000	521.882	5.54**

** = Significant at 0.01 level

* = Significant at 0.05 level

Table 42 presents the results of Repeated Measures ANOVA for Social Competence among the Experimental and Waitlist Control Group in Before, After and Follow-up Phases. The result shows that Expressive Arts Therapy and Brain Gym were significant in enhancing the Social Competence among Learning Disabled Adolescents. It is imperative that the therapy has had a profound impact in improving the social skills and social cognition of the participants. This means that the learning disabled adolescents gained to share their emotions and subjective feelings with others and stay active in interacting with their peer mates.

Table 44 presents the Pairwise Comparisons for Social Competence among the Waitlist Control Group in Pre, Post and Follow-up Phases and the result shows that there was no significant change during those time periods. The participants of the waitlist control group identified to be timid and introverted, remained the same throughout the study. The initial observation common to both experimental group and waitlist control group was identified to be lack of motivation to interact within their peer mates and poor emotional expression. This tendency continued for the waitlist control group although there was a significant improvement in experimental group.

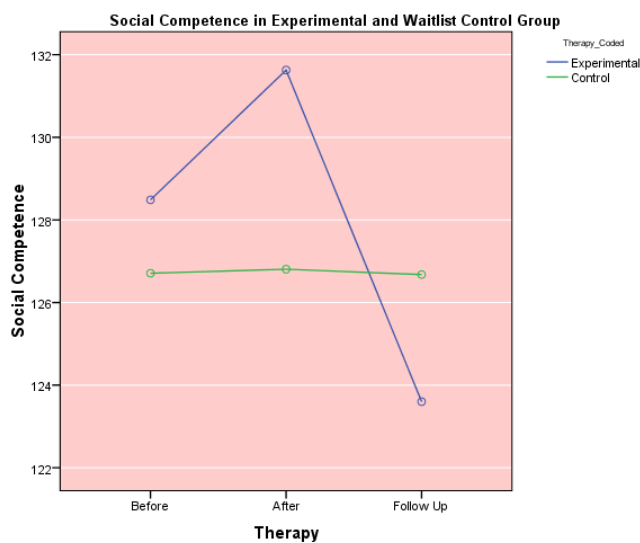


Figure 44. Social Competence in Experimental and Waitlist Control Group during Before, After and Follow-up Phases

From the above graph, it is imperative that Expressive Arts Therapy and Brain Gym had been effective in enhancing the Social Competence skill among the participants in the Experimental group. Thus, the hypothesis **H29, “There will be significant difference during before, after and follow-up phases in social competence among learning disabled adolescents”** is accepted. Hence, the therapy had been effective in motivating the experimental group participants to actively interact with each other and express their emotions, whereas, waitlist control group remained the same with no emotional expression and interaction skills.

Table 45
Mean and Standard Deviation of Attention in the Experimental Group during Before, After and Follow-up Phases

Group	Phases	Mean	Standard Deviation
Experimental Group	Before	64.94	8.05
	After	66.74	8.90
	Follow-up	65.09	8.26

Table 45 shows the Mean and Standard Deviation for Attention of the Experimental Group during Before, After and Follow-up Phases and the result implies that there is a slight improvement in the mean score of Attention during Before and After Phases. Thus, the intervention was effective in increasing the score of Attention and the score sustained in the Follow-up Phase. Learning disabled adolescents identified to have poor attention gained a slight improvement through the therapy. Expressive Arts Therapy and Brain Gym techniques were able to enhance concentration and focus among the participants.

Table 46
Mean and Standard Deviation of Attention in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases

Group	Phases	Mean	Standard Deviation
Waitlist Control Group	Pre	61.32	4.56
	Post	61.35	4.64
	Follow-up	61.52	4.50

Table 46 shows the Mean and Standard Deviation of Attention among the Waitlist Control Group in Pre-test, Post-test and Follow-up Phases. The result shows that there is no change in the Attention score between Pre-test, Post-test and Follow-up Phases. The tendency to pay attention and stay concentrated remains a challenge for learning disabled adolescents and it is evident from the results that the therapy is very effective in enhancing the attention level.

Table 47
Repeated Measures ANOVA for Attention in Experimental and Waitlist Control Group during Before, After and Follow-up Phases

Source		Sum of Squares	df	Mean Square	F
Phases	Sphericity Assumed	31.278	2	15.639	1.20 NS
	Greenhouse-Geisser	31.278	1.916	16.329	1.20 NS
	Huynh-Feldt	31.278	2.000	15.639	1.20 NS
	Lower-bound	31.278	1.000	31.278	1.20 NS
Phases * Therapy	Sphericity Assumed	35.258	2	17.629	1.35 NS
	Greenhouse-Geisser	35.258	1.916	18.406	1.35 NS
	Huynh-Feldt	35.258	2.000	17.629	1.35 NS
	Lower-bound	35.258	1.000	35.258	1.35 NS

NS = Not Significant

Table 47 shows the Repeated Measures ANOVA for Attention in the Experimental and Waitlist Control Group during Before, After and Follow-up Phases and it clearly implies that there is no significant difference between phases. Though, there is a mean difference in attention after administering Expressive Arts Therapy and Brain Gym, the results are not statistically significant. One possible reason to explain this outcome remains in the nature of the questionnaire. The questionnaire is a teacher-rated questionnaire and hence there are chances for biased answers. This could have impacted the result and the possible explanation for no significant difference in the administration of the therapy.

Table 48
Pairwise Comparisons for Attention in the Experimental Group during Before, After and Follow-up Phases

(I) Phases	(J) Phases	Mean Difference (I-J)	Standard Error
Before	After	-1.80NS	1.27
	Follow-up	-0.14NS	1.05
After	Before	1.80NS	1.27
	Follow-up	1.66NS	1.22
Follow-up	Before	0.143NS	1.05
	After	-1.66NS	1.22

NS = Not Significant

Table 48 shows the Pairwise Comparisons in Attention for the Experimental Group during Before, After and Follow-up Phases and it is not significant in all three levels – Before, After and Follow-up Phases. It could be due to the impact of teacher-rated attention tests explains the reason for not significant difference. Since, the age group of the participants was restricted to 11 years to 16 years, the study recommended teacher-rated questionnaire for an extensive variable like attention. However, further studies are recommended to measure the influence of the therapy in attention using self-rated questionnaire.

Table 49
Pairwise Comparisons for Attention in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases

Phases(I)	Phases(J)	Mean Difference (I-J)	Standard Error
Pre	Post	-0.03 NS	0.06
	Follow-up	-0.19 NS	0.10
Post	Pre	0.03 NS	0.06
	Follow-up	-0.16 NS	0.12
Follow-up	Pre	0.19 NS	0.10
	Post	0.16 NS	0.11

NS = Not Significant

Table 49 shows the Pairwise Comparisons for Attention in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases. The results indicated that there is no significant difference between Pre-test, Post-test and Follow-up phase among the Waitlist Control Group.

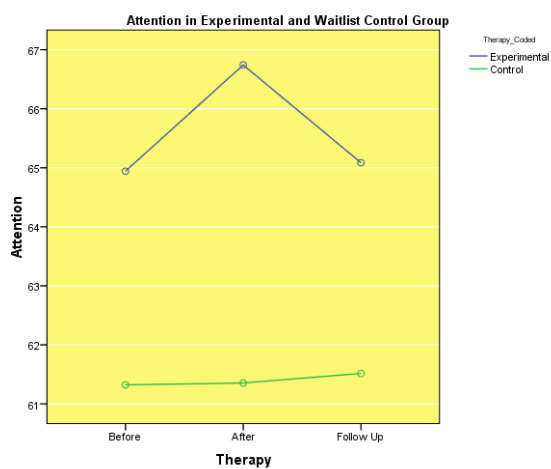


Figure 45. Attention in Experimental and Waitlist Control Group during Before, After and Follow-up Phases

The above graph shows a pattern of slight improvement in the Attention score, however they are not significant. Thus, the effect of Expressive Arts Therapy and Brain Gym to enhance Attention among the Learning Disabled Adolescents are minimal to support the empirical findings. Hence, the hypothesis **H30, “There will be significant difference during before, after and follow-up phases in attention among learning disabled adolescents”** is rejected. Further robust statistical control methods are recommended to validate the effect of the therapy and ignore the effect of extraneous variables. The therapy aimed to improve cognitive functioning is minimally justified as it specializes in emotional expression. However, brain gym could have made a slight impact with the slight change in attention.

Table 50
Mean and Standard Deviation of Working Memory in the Experimental Group during Before, After and Follow-up Phases

Group	Phases	Mean	Standard Deviation
Experimental Group	Before	8.57	2.94
	After	9.74	2.91
	Follow-up	7.94	2.44

Table 50 shows the Mean and Standard Deviation of Working Memory in the Experimental Group during Before, After and Follow-up Phases and the result shows an increase in the mean score after therapy and decline in the Follow-up Phase. The qualitative study by Vaartio-Rajalin et al.(2021) posits the efficacy of Expressive Arts Therapy in enhancing memory, attention, visuo-spatial abilities and executive functions. Thus, in line with the above study, the current study has proven the therapy to be effective in improving working memory among the experimental group.

Table 51
Mean and Standard Deviation of Working Memory in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases

Group	Phases	Mean	Standard Deviation
Waitlist Control Group	Pre	6.90	1.64
	Post	6.94	1.63
	Follow-up	7.00	1.67

Table 51 presents the Mean and Standard Deviation of Working Memory among the Waitlist Control Group in Pre-test, Post-test and Follow-up Phases. The result shows a negligible difference in the mean score between the three phases. Since the participants did not receive the therapy, there is no significant change in the working memory of the waitlist control group.

Table 52
Repeated Measures ANOVA for Working Memory in the Experimental and Waitlist Control Group during Before, After and Follow-up Phases

Source		Sum of Squares	df	Mean Square	F
Phases	Sphericity Assumed	25.994	2	12.997	9.74**
	Greenhouse-Geisser	25.994	1.98	13.161	9.74**
	Huynh-Feldt	25.994	2.00	12.997	9.74**
	Lower-bound	25.994	1.00	25.994	9.74**
Phases * Therapy	Sphericity Assumed	29.044	2	14.522	10.89**
	Greenhouse-Geisser	29.044	1.98	14.706	10.89**
	Huynh-Feldt	29.044	2.00	14.522	10.89**
	Lower-bound	29.044	1.00	29.044	10.89**

**** = Significant at 0.01 level**

Table 52 presents the Repeated Measures ANOVA for Working Memory among the Experimental and Waitlist Control Group during Before, After and Follow-up Phases. The result indicates that there is a significant difference in the Working Memory between the Experimental and Waitlist Control group. Hence, it can be concluded that Expressive Arts Therapy and Brain Gym had been effective in improving the Working Memory scores among the participants. The results share an evident impact of expressive arts therapy in the experimental group. The participants have gained the ability to recall and recognize the stimulus effectively contributing towards their academic performance.

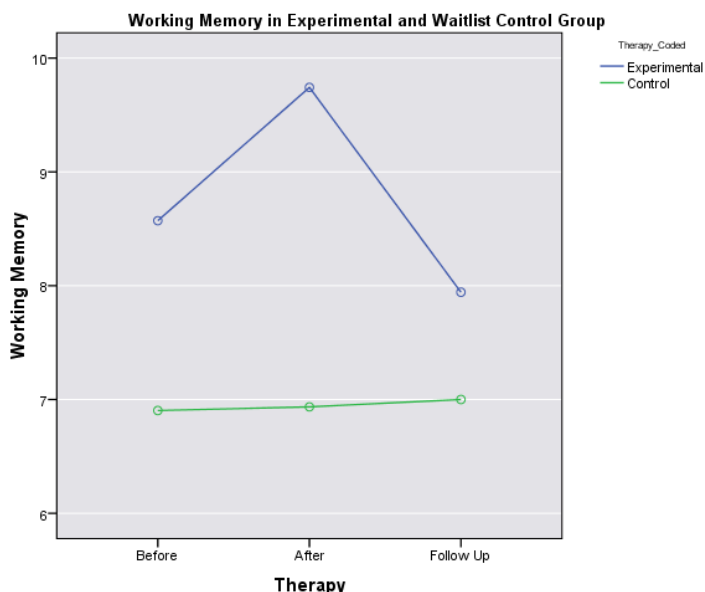


Figure 46. Working Memory in Experimental and Waitlist Control Group during Before, After and Follow-up Phases

The above graph shows an improvement in the Working Memory of the Experimental Group during Before and After Phases of the therapy. In conclusion, it is imperative from the graph that Expressive Arts Therapy and Brain Gym had been effective in enhancing Working Memory among the participants in the Experimental Group. Hence, the hypothesis **H31**, “There will be significant difference during before, after and follow-up phases in working memory among learning disabled adolescents” is accepted. Thus, it can be concluded that the therapy can be advocated to improve executive functioning of the participants. Further research in similar area is recommended.

Table 55
Mean and Standard Deviation of Academic Achievement in the Experimental Group during Before, After and Follow-up Phases

Group	Phases	Mean	Standard Deviation
Experimental Group	Before	51.09	21.28
	After	54.11	20.85
	Follow-up	48.06	21.17

Table 55 shows the Mean and Standard Deviation of Academic Achievement in the Experimental Group during Before, After and Follow-up Phases and the result indicates an improvement in the academic achievement of the participants. It can be concluded that the

Expressive Arts Therapy and Brain Gym had been effective in enhancing the academic achievement of the Experimental group. Jones (2023) analyzed the efficacy of mentoring programmes in enhancing overall well-being, social functioning and academic achievement. The mentoring programmes included Expressive Arts Therapy and it was effective in enhancing the academic performance after the implementation.

Table 56
Mean and Standard Deviation of Academic Achievement in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases

Group	Phases	Mean	Standard Deviation
Waitlist Control Group	Pre	55.10	22.14
	Post	55.03	20.30
	Follow-up	53.61	20.44

Table 56 presents the Mean and Standard Deviation of Academic Achievement in the waitlist control group during pre-test, post-test and follow-up phases. The result shows that the Academic Achievement remained the same in all three phases. Since the participants in waitlist control group did not receive the therapy, there is no significant change in the scores.

Table 57
Repeated Measures ANOVA for Academic Achievement in the Experimental and Waitlist Control Group during Before, After and Follow-up Phases

Source		Sum of Squares	df	Mean Square	F
Phases	Sphericity Assumed	466.034	2	233.017	9.99**
	Greenhouse-Geisser	466.034	1.951	238.854	9.99**
	Huynh-Feldt	466.034	2.000	233.017	9.99**
	Lower-bound	466.034	1.000	466.034	9.99**
Phases * Therapy	Sphericity Assumed	183.367	2	91.684	3.93**
	Greenhouse-Geisser	183.367	1.951	93.980	3.93**
	Huynh-Feldt	183.367	2.000	91.684	3.93**
	Lower-bound	183.367	1.000	183.367	3.93*

** = Significant at 0.01 level

* = Significant at 0.05 level

Table 59

Pairwise Comparisons for Academic Achievement in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases

Phases(I)	Phases(J)	Mean Difference (I-J)	Standard Error
Pre	Post	0.07NS	1.72
	Follow-up	1.48NS	1.04
Post	Pre	-0.07NS	1.72
	Follow-up	1.42NS	1.26
Follow-up	Pre	-1.48NS	1.04
	Post	-1.42NS	1.26

NS = Not Significant

Table 59 shows the Pairwise Comparisons for Academic Achievement in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases and the results shows no significant difference between the 3 phases because they have not received the therapy.

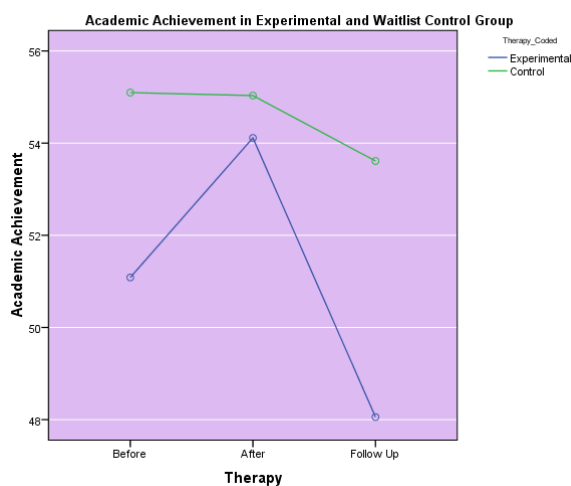


Figure 47. Academic Achievement in Experimental and Waitlist Control Group during Before, After and Follow-up Phases

The above graph shows an elevated pattern of improvement in the Academic Achievement score between Before and After phases among the participants in the Experimental group and a decline in the score between After and Follow-up Phases. Expressive Arts Therapy and Brain Gym activities administered were effective in enhancing the Academic Achievement and the decline after Follow-up. Thus, the hypothesis **H32**, “**There will be significant difference during before, after and follow-up phases in academic achievement among learning disabled adolescents**” is accepted. This demands continued practice of therapy for effective academic performance.

Table 60**Mean and Standard Deviation of Quality of Life (QoL) in the Experimental Group during Before, After and Follow-up Phases**

Group	Phases	Mean	Standard Deviation
Experimental Group	Before	1.60	0.50
	After	1.54	0.51
	Follow-up	1.49	0.51

Table 60 shows the Mean and Standard Deviation of Quality of Life (QoL) in the Experimental Group during Before, After and Follow-up Phases. It shows that there is a negligible decline in the mean score between the Before and After phases indicating that the therapy was not effective in improving the scores of Quality of life among the participants in the Experimental group. Since quality of life scale measured the introspective analysis of the participants' learning disability condition, the associated implications in everyday life and significant awareness about the disorder, it was identified that the young participants were not aware of their existing learning disability condition.

Table 61**Mean and Standard Deviation of Quality of Life (QoL) in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases**

Group	Phases	Mean	Standard Deviation
Waitlist Control Group	Pre	1.13	0.34
	Post	1.10	0.30
	Follow-up	1.16	0.37

Table 61 presents the Mean and Standard Deviation of Quality of Life (QoL) in the Waitlist Control Group during Before, After and Follow-up Phases and the result implies that a negligible difference in the mean score at all three levels. The waitlist control group participants also exhibited poor quality of life due to lack of awareness about this disorder.

Table 62**Repeated Measures ANOVA for Quality of Life (QoL) in the Experimental and Waitlist Control Group during Before, After and Follow-up Phases**

Source		Sum of Squares	df	Mean Square	F
Phases	Sphericity Assumed	0.252	2	0.126	1.69NS
	Greenhouse-Geisser	0.252	1.516	0.167	1.69NS
	Huynh-Feldt	0.252	1.569	0.161	1.69NS
	Lower-bound	0.252	1.000	0.252	1.69NS
Phases * Therapy	Sphericity Assumed	0.192	2	0.096	1.29NS
	Greenhouse-Geisser	0.192	1.516	0.127	1.29NS
	Huynh-Feldt	0.192	1.569	0.122	1.29NS
	Lower-bound	0.192	1.000	0.192	1.29NS

NS = Not Significant

Table 62 shows the Repeated Measures ANOVA results for Quality of Life in the Experimental and Waitlist Control Group during Before, After and Follow-up Phases and the result indicate no significant difference between the three levels. The therapy was not effective in bringing a change to their insights about learning disability. The participants are not aware that they study in special school. Parents, teachers and management also remained confident not to reveal the disorder to the participants. Hence, the therapy could not improve quality of life.

Table 63 Pairwise Comparisons for Quality of Life (QoL) in the Experimental Group during Before, After and Follow-up Phases

(I) Phases	(J) Phases	Mean Difference (I-J)	Standard Error
Before	After	0.06NS	0.04
	Follow-up	0.11NS	0.06
After	Before	-0.06NS	0.04
	Follow-up	0.06NS	0.04
Follow-up	Before	-0.11NS	0.06
	After	-0.06NS	0.04

NS = Not Significant

Table 63 shows the Pairwise Comparisons for Quality of Life (QoL) in the Experimental Group during Before, After and Follow-up Phases and the results show no significant difference during Before, After and Follow-up Phases due to lack of knowledge about the disability.

Table 64
Pairwise Comparisons for Quality of Life (QoL) in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases

Phases(I)	Phases(J)	Mean Difference (I-J)	Standard Error
Pre	Post	0.03NS	0.03
	Follow-up	-0.03NS	0.07
Post	Pre	-0.03NS	0.03
	Follow-up	-0.07NS	0.07
Follow-up	Pre	0.03NS	0.07
	Post	0.07NS	0.07

NS = Not Significant

Table 64 presents the Pairwise Comparisons for Quality of Life (QoL) in the Waitlist Control Group during Pre-test, Post-test and Follow-up Phases and the result demonstrates that there is no significant difference due to no administration of the therapy.

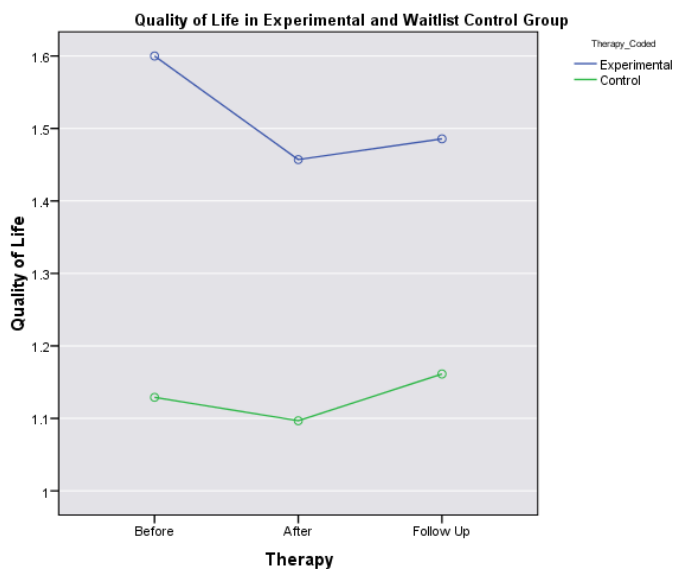


Figure 48. Quality of Life (QoL) in Experimental and Waitlist Control Group during Before, After and Follow-up Phases

The above graph shows that the scores of Quality of Life sustained in the Experimental group. It can be concluded that the Expressive Arts Therapy and Brain Gym was less effective in improving the Quality of Life among the Learning Disabled Adolescents. Hence, the hypothesis **H33, "There will be significant difference during before, after and follow-up phases in quality of life among learning disabled adolescents"** is rejected.

Summary

The Percentage analysis of the Demographic Data of the study shows that 55% participants were boys, 24% were 14 years old, 41% were enrolled in Pre-Secondary class, 64% were from urban area, 56% belonged to joint family, 39% had a reading age of 7 years and 27% had a spelling age of 6 years.

Descriptive Statistics for gender difference in Emotional Intelligence, Social Competence, Working Memory, Attention, Academic Achievement and Quality of Life shows a mean difference in Emotional Intelligence between Boy (M = 124.83, SD = 14.45) and Girl (M=116.03, SD = 19.30) learning disabled adolescents.

There was a homogeneity of variances between groups, as assessed by Levene's test for equality of variances ($p > 0.05$) in Emotional Intelligence, Social Competence, Working Memory and Attention. Welch-Satterthwaite test was used to adjust the df value for unequal variances of Academic Achievement and Quality of Life and the results doesn't provide strong evidence for heterogeneity.

Coefficient of Correlation to find out the relation between Emotional Intelligence with Social Competence, Attention, Working Memory, Academic Achievement and Quality of Life ($r = -0.20, p = .10$; $r = 0.20, p = 0.11$; $r = 0.16, p = 0.19$, $r = -0.14, p = 0.28$ and $r = 0.24, p = 0.05$ respectively); Social Competence with Attention, Working Memory, Academic Achievement and Quality of Life ($r = 0.08, p = 0.53$; $r = -0.20, p = 0.11$; $r = 0.15, p = 0.25$ and $r = 0.04, p = 0.74$); Attention with Working Memory, Academic Achievement and Quality of Life ($r = 0.01, p = 0.92$; $r = 0.15, p = 0.24$ and $r = 0.05, p = 0.68$); Working Memory with Academic Achievement and Quality of Life ($r = 0.19, p = 0.13$; $r = 0.18, p = 0.14$) and Academic Achievement with Quality of Life ($r = 0.06, p = 0.66$) shows that there is no significant relationship between the variables and suggests the absence of multicollinearity among the variables. This recommends computing higher level statistical analysis using these variables.

ANOVA statistics results for Experimental group and Waitlist Control group in Emotional Intelligence ($F(1, 64) = 8.74, p = 0.00$), Social Competence ($F(1, 64) = 0.01, p = 0.93$), Working Memory ($F(1, 64) = 3.45, p = 0.07$), Attention ($F(1, 64) = 4.76, p = 0.03$), Academic Achievement ($F(1, 64) = 0.58, p = 0.45$) and Quality of Life ($F(1, 64) = 8.98, p = 0.00$) shows that there is significant relationship between Experimental Group and Waitlist Control Group in Emotional Intelligence, Attention and Quality of Life.

Repeated Measures of ANOVA, Post-hoc Pair wise comparison Before, After and Follow-up Phases to find out the efficacy of Expressive Arts Therapy and Brain Gym in Emotional Intelligence ($F(2, 1.783) = 35.37, p < 0.01$), Social Competence ($F(2, 1.900) = 5.88, p < 0.01$), Attention ($F(2, 1.916) = 1.20, p = 0.31$), Working Memory ($F(2, 1.98) = 9.74, p < 0.01$), Academic Achievement ($F(2, 1.951) = 9.99, p < 0.01$) and Quality of Life ($F(2, 1.516) = 1.69, p = 0.19$) shows a significant difference during before, after and follow-up phases in Emotional Intelligence, Social Competence, Working Memory and Academic Achievement among Learning Disabled Adolescents and Expressive Arts Therapy and Brain Gym had been effective in enhancing Emotional Intelligence, Social Competence, Working Memory and Academic Achievement in the Experimental group.

The Major Findings of the Study

Learning Disabled adolescents were diagnosed with poor intelligence, poor reading ability and poor writing ability. These were identified as a major causal factor to develop psychological disorders such as poor self-awareness, poor social interaction, decreased academic performance, altogether affecting their quality of life. Considering the impact of intelligence and reading and writing scores on academic performance, emotional intelligence, social competence, working memory, attention and quality of life, this study delves deeper to study the characteristics of these variables on gender, relationship between them and to identify the effect of Expressive Arts Therapy.

The results of the study shows that the group is homogenous as the sample of the schools (Saraswathi Kendra Learning Centre for Children, Chennai and Wisdomms Special School and Learning Centre, Chennai) had uniform NIOS Curriculum, age group of students allotted to classes, examinations and syllabus. This facilitated the experimenter to conduct the therapy at both the centers.

The ANOVA results on the influence of gender on the variables shows that there was a significant difference in Emotional Intelligence among Learning Disabled Boy and Girl

Adolescent students. It is imperative that due to internalization of emotions, girls tend to suppress expressing emotions and that affects their tendency to be self-aware, self-regulate, stay motivated.

The correlation study among the variables shows that there is no correlation among the variables and hence there is no multicollinearity. This is important as the variables stand unique and independent which is a requirement to conduct the therapy.

Expressive Arts Therapy and Brain Gym were effective in enhancing Emotional Intelligence, Social Competence, Working Memory and Academic Achievement. Expressing emotions through art is a gateway to relax out body and mind. Learning Disabled adolescents were identified to possess internalizing problems, poor social interaction beyond school and decreased academic performance. The therapy had been effective in enriching the emotional intelligence, social competence, working memory and academic achievement among the participants.

As the students were asked to gain knowledge on emotions, engage in individual activity and group activity to express their emotions, initiate interactions, the group gained an ecosystem of experiences to share and reflect emotions. Art and exercise as a medium of expression brought in favourable conditions to self-reflect emotions during the therapy session. Few activities that had critical thinking and logical thinking component created a venue to engage the participants with full concentration and attention. Quick decisions and spontaneous answers created a unique environment to work on their ability to recall and recognize, thus contributing to improve working memory. The participants were asked to gain awareness on their overall well-being by analyzing their learning disability condition and their readiness to learn to measure and identify quality of life through introspecting activities.

Altogether, the Expressive Arts Therapy and Brain Gym catered to two categories of activities. One that helped to improve the cognitive measures such as attention, working memory and affective measures such as improve emotional intelligence, social competence and quality of life. These cognitive measures and affective measures become the significant contributing factor for academic achievement. The results show that the participants had enriching experiences in both the cognitive measures and affective measures. This reflects in the result with significant improvement in Emotional Intelligence, Social Competence, Working Memory and Academic Achievement.

The variables such as attention and quality of life demands further studies to identify the impact of Expressive Arts Therapy and Brain Gym. This may be due to fact that the measurement used for the variable attention is a teacher-rated questionnaire and thus the influence of bias could be one factor to address the lack of improvement in attention. Quality of life aims to introspect the conditions of learning disability and its impact on their readiness to learn. This too experienced biased results from participants as many were unaware of their learning disabled condition, neither were they ready to accept the relation of poor academic achievement is due to the existing condition. This lack of insight over their learning disabled condition might be the reason for no improvement in quality of life.

Brief Findings of the Variables

The study identified gender difference in emotional intelligence as the girl learning disabled adolescents reported internalization of emotions. Due to internalization of emotions, the girl participants possessed low emotional intelligence before the therapy while after the therapy there was a significant improvement

The variables, emotional intelligence, social competence, attention, working memory, academic achievement and quality of life were not correlated and there was no presence of multicollinearity between them. This lack of multicollinearity is important to administer therapy as it demands to prove that the variables are not related and independent.

There was mean difference among emotional intelligence, attention and quality of life between experimental group and waitlist control group. This highlights that the variables had a significant difference between the groups. The reasons for this difference was identified to be the educational background, income level of the parents in case of emotional intelligence; teacher-rated questionnaire for attention and biased introspection for quality of life.

Brief Findings of the Therapy

Expressive Arts Therapy and Brain Gym has immensely contributed in increasing the Emotional Intelligence among Learning Disabled Adolescents. The therapy had been effective in enhancing their self-awareness, self-regulation, motivation, empathy and social skills.

Expressive Arts Therapy and Brain Gym has been effective in increasing the Social Competence among Learning Disabled Adolescents. The therapy had been effective in enhancing their social skills, communication, decision making, empathy, social awareness, problem solving and emotion regulation.

Expressive Arts Therapy and Brain Gym has enhanced the Working Memory among Learning Disabled Adolescents. The therapy had been effective in enhancing their ability to recall and recognize the emotions. The tendency to recall and recognize emotions has an impact in balancing mind and body which is an important contributing factor to enhance academic performance.

Expressive Arts Therapy and Brain Gym made a good impact in improving the academic achievement among Learning Disabled Adolescents. The therapy, which catered to body-mind balance, created a significant effect on improving the academic performance of the participants. The effect of therapy before the examination and after the examination made a profound impact on the participants to score better in their examination.