CHAPTER IX

IMPACT OF REDUCTION IN READING DIFFICULTIES ON INTELLIGENCE AND ACADEMIC ACHIEVEMENT

The main aim of this chapter was to determine whether reduction in reading difficulties may exert a positive effect on IQ and academic achievement of dyslexic children. The following hypotheses would be tested in this chapter.

1. Reduction in reading difficulties would result in IQ gains.
2. Reduction in reading problems would enhance academic achievement of dyslexic children.

TESTING OF HYPOTHESIS 1

Results

The first hypothesis, mentioned above has been tested with the help of Tables 9.1.1 to 9.1.7.

Table 9.1.1 represents means, SDs and mean differentials of pre- and post-test scores of Verbal Intelligence Quotient (VIQ), Performance Intelligence Quotient (PIQ) and Full-Scale Intelligence Quotient (FSIQ). For VIQ $M_1$, $M_2$, $SD_1$, $SD_2$ and t-value of $EG_1$ were 96.16, 103.00, 7.08, 7.42 and 1.63 respectively. $M_1$, $M_2$, $SD_1$, $SD_2$ and t-value of $EG_2$ were 97.66, 102.00, 2.73, 3.09 and 2.56 ($p<0.05$) respectively. $M_1$, $M_2$, $SD_1$, $SD_2$ and t-value of $EG_3$ were 99.00, 105.00, 4.19, 4.28 and 2.44 ($p<0.05$) respectively. $M_1$, $M_2$, $SD_1$, $SD_2$ and t-value of $EG_4$ were
Table 9.1.1
Mean Differentials between Pre- and Post-test for VIQ of different Experimental Groups

<table>
<thead>
<tr>
<th>Groups</th>
<th>$M_1$</th>
<th>$M_2$</th>
<th>$SD_1$</th>
<th>$SD_2$</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG(_1)</td>
<td>96.16</td>
<td>103.00</td>
<td>7.08</td>
<td>7.42</td>
<td>1.63</td>
</tr>
<tr>
<td>EG(_2)</td>
<td>97.66</td>
<td>102.00</td>
<td>2.73</td>
<td>3.09</td>
<td>2.56**</td>
</tr>
<tr>
<td>EG(_3)</td>
<td>99.00</td>
<td>105.00</td>
<td>4.19</td>
<td>4.28</td>
<td>2.44**</td>
</tr>
<tr>
<td>EG(_4)</td>
<td>96.16</td>
<td>105.33</td>
<td>5.19</td>
<td>5.04</td>
<td>3.10*</td>
</tr>
</tbody>
</table>

* Significant at 0.01 level
** Significant at 0.05 level

$M_1$ is the mean of pre-test scores of different EGs

$M_2$ is the mean of post-test scores of different EGs

VIQ = Verbal Intelligence Quotient

$SD_1$ = Pre-test

$SD_2$ = Post-test
Figure 9.1.1

Mean Differentials between Pre- and Post-test for IQ of different EGs (VIQ)

EGs = Experimental Groups, VIQ = Verbal Intelligence Quotient
Note: The origin on Y-Axis is not starting from 0
96.16, 105.33, 5.19, 5.04 and 3.10 (p<0.01) respectively. Figure 9.1.1 presented graphically the mean differences between pre- and post-test scores for VIQ of different EGs.

Further Table 9.1.2 shows that \(M_1, M_2, SD_1, SD_2\) and t-value for PIQ of EG\(_1\) were 107.00, 112.83, 9.03, 8.84 and 1.13 respectively. \(M_1, M_2, SD_1, SD_2\) and t-value of EG\(_2\) were 105.66, 108.16, 3.38, 4.12 and 1.13 respectively. \(M_1, M_2, SD_1, SD_2\) and t-value of EG\(_3\) were 105.00, 108.50, 4.28, 4.37 and 1.40 respectively. \(M_1, M_2, SD_1, SD_2\) and t-value of EG\(_4\) were 106.83, 112.50, 5.26, 3.61 and 2.17 (p<0.05) respectively. Figure 9.1.2 highlights the mean differences of pre- and post-test scores for PIQ of different EGs.

Mean differentials for Full Scale IQ were presented in Table 9.1.3. \(M_1, M_2, SD_1, SD_2\) and t-value of EG\(_1\) were 101.83, 107.66, 7.52, 7.17 and 1.37 respectively. \(M_1, M_2, SD_1, SD_2\) and t-value of EG\(_2\) were 101.66, 105.00, 2.16, 3.03 and 2.19 respectively. \(M_1, M_2, SD_1, SD_2\) and t-value of EG\(_3\) were 102.00, 106.66, 4.09, 4.22 and 1.94 respectively. \(M_1, M_2, SD_1, SD_2\) and t-value of EG\(_4\) were 101.50, 108.83, 3.33, 3.60 and 3.66 (p<0.01) respectively. Figure 9.1.3 shows the mean differential of pre- and post-test scores of different EGs for FSIQ.
Table 9.1.2
Mean Differentials between Pre- and Post-test for PIQ of different Experimental Groups

<table>
<thead>
<tr>
<th>Groups</th>
<th>M₁</th>
<th>M₂</th>
<th>SD₁</th>
<th>SD₂</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG₁</td>
<td>107.00</td>
<td>112.83</td>
<td>9.03</td>
<td>8.84</td>
<td>1.13</td>
</tr>
<tr>
<td>EG₂</td>
<td>105.66</td>
<td>108.16</td>
<td>3.38</td>
<td>4.21</td>
<td>1.13</td>
</tr>
<tr>
<td>EG₃</td>
<td>105.00</td>
<td>108.50</td>
<td>4.28</td>
<td>4.37</td>
<td>1.40</td>
</tr>
<tr>
<td>EG₄</td>
<td>106.83</td>
<td>112.50</td>
<td>5.26</td>
<td>3.61</td>
<td>2.17</td>
</tr>
</tbody>
</table>

* Significant at 0.01 level
** Significant at 0.05 level

M₁ is the mean of pre-test scores of different EGs
M₂ is the mean of post-test scores of different EGs
PIQ = Performance Intelligence Quotient
SD₁ = Pre-test
SD₂ = Post-test
Figure 9.1.2

Mean Differentials between Pre- and Post-test for IQ of different EGs (PIQ)

EGs = Experimental Groups, PIQ = Performance Intelligence Quotient

Note: The origin on Y-Axis is not starting from 0
### Table 9.1.3
Mean Differentials between Pre- and Post-test for FSIQ of different Experimental Groups

<table>
<thead>
<tr>
<th>Groups</th>
<th>$M_1$</th>
<th>$M_2$</th>
<th>$SD_1$</th>
<th>$SD_2$</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG₁</td>
<td>101.83</td>
<td>107.66</td>
<td>7.52</td>
<td>7.17</td>
<td>1.37</td>
</tr>
<tr>
<td>EG₂</td>
<td>101.66</td>
<td>105.00</td>
<td>2.16</td>
<td>3.03</td>
<td>2.19</td>
</tr>
<tr>
<td>EG₃</td>
<td>102.00</td>
<td>106.66</td>
<td>4.09</td>
<td>4.22</td>
<td>1.94</td>
</tr>
<tr>
<td>EG₄</td>
<td>101.50</td>
<td>108.83</td>
<td>3.33</td>
<td>3.60</td>
<td>3.66*</td>
</tr>
</tbody>
</table>

* Significant at 0.01 level  
** Significant at 0.05 level  

$M_1$ is the mean of pre-test scores of different EGs  
$M_2$ is the mean of post-test scores of different EGs  
FSIQ = Full scale Intelligence Quotient  
$SD_1$ = Pre-test  
$SD_2$ = Post-test
Figure 9.1.3

Mean Differentials between Pre- and Post-test for IQ of different EGs (FSIQ)

Note: The origin on Y-Axis is not starting from 0

EGs = Experimental Groups, FSIQ = Full Scale Intelligence Quotient
Table 9.1.4 represents mean differentials between the post-tests for VIQ between different EGs and CG. Means of EG₁, EG₂, EG₃, EG₄ and control group for VIQ were 103.00, 102.00, 105.00, 105.33 and 97.66 and their SDs were 7.42, 3.09, 4.28, 5.04 and 6.28 respectively. The t-values computed of post-tests of VIQ between EG₁ and CG, EG₂ and CG, EG₃ and CG and EG₄ and CG were found to be 1.34, 1.51, 2.36 (p<0.05), 2.33 (p<0.05) respectively. Figure 9.1.4 corresponding to table 9.1.4 has been prepared to show the mean differential for post-test scores of different EGs and CG for VIQ.

Table 9.1.5 shows that means of EG₁, EG₂, EG₃ and EG₄ and control group for PIQ were 112.83, 108.16, 108.50, 112.50 and 106.00 and their SDs were 9.03, 3.38, 4.28, 5.26 and 5.57 respectively. The t-values computed of post-tests of PIQ between EG₁-CG, EG₂-CG, EG₃-CG, EG₄-CG were found to be 1.52, 0.64, 0.74 and 2.27 (p<0.05) respectively. It shows that out of four t-values computed between post-tests only one t-value of EG₄ was significant at 0.05 level. Figure 9.1.5 has been prepared to highlight the differences of post-test scores of different EGs with CG with regard to PIQ.
### Table 9.1.4
Mean Differentials of Post-test scores between Different EGs and Control Group with regard to VIQ

<table>
<thead>
<tr>
<th>Groups</th>
<th>$M_1$</th>
<th>$M_2$</th>
<th>$SD_1$</th>
<th>$SD_2$</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$EG_1$-CG</td>
<td>103.00</td>
<td>97.66</td>
<td>7.72</td>
<td>6.28</td>
<td>1.34</td>
</tr>
<tr>
<td>$EG_2$-CG</td>
<td>102.00</td>
<td>97.66</td>
<td>3.09</td>
<td>6.28</td>
<td>1.51</td>
</tr>
<tr>
<td>$EG_3$-CG</td>
<td>105.00</td>
<td>97.66</td>
<td>4.28</td>
<td>6.28</td>
<td>2.36**</td>
</tr>
<tr>
<td>$EG_4$-CG</td>
<td>105.33</td>
<td>97.66</td>
<td>5.04</td>
<td>6.28</td>
<td>2.33**</td>
</tr>
</tbody>
</table>

** Significant at 0.05 level

$M_1$ is the mean of post-test scores of different EGs

$M_2$ is the mean of post-test scores of control group

VIQ = Verbal Intelligence Quotient

$SD_1$ = Pre-test

$SD_2$ = Post-test
Figure 9.1.4

Mean differentials of post-test scores between different EGs and CG with regard to VIQ

EG1-CG
Post-test of EG 103
Post-test of EG 102
Post-test of EG 105
Post-test of EG 105.33
Post-test of CG 97.66
Post-test of CG 97.66
Post-test of CG 97.66
Post-test of CG 97.66

EG3-CG
EG2-CG
EG4-CG

Post-test of EGs
Post-test of CG

EGs = Experimental Groups, CG = Control Group, VIQ = Verbal Intelligence Quotient
<table>
<thead>
<tr>
<th>Groups</th>
<th>$M_1$</th>
<th>$M_2$</th>
<th>$SD_1$</th>
<th>$SD_2$</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$BG_1$-CG</td>
<td>112.83</td>
<td>106.00</td>
<td>9.03</td>
<td>5.57</td>
<td>1.52</td>
</tr>
<tr>
<td>$BG_2$-CG</td>
<td>108.16</td>
<td>106.00</td>
<td>3.38</td>
<td>5.57</td>
<td>0.64</td>
</tr>
<tr>
<td>$BG_3$-CG</td>
<td>108.50</td>
<td>106.00</td>
<td>4.28</td>
<td>5.57</td>
<td>0.74</td>
</tr>
<tr>
<td>$BG_4$-CG</td>
<td>112.50</td>
<td>106.00</td>
<td>5.26</td>
<td>5.57</td>
<td>2.27**</td>
</tr>
</tbody>
</table>

** Significant at 0.05 level

$M_1$ is the mean of post-test scores of different EGs

$M_2$ is the mean of post-test scores of control group

PIQ = Performance Intelligence Quotient

$SD_1$ = Pre-test

$SD_2$ = Post-test
Figure 9.1.5
Mean differentials of post-test scores between different EGs and CG with regard to PIQ

Post-test of EG 112.83
Post-test of CG 106
EG1-CG

Post-test of EG 108.1
Post-test of CG 106
EG2-CG

Post-test of EG 108.5
Post-test of CG 106
EG3-CG

Post-test of EG 112.5
Post-test of CG 106
EG4-CG

Post-test of EGs
Post-test of CG

EGs = Experimental Groups, CG = Control Group, PIQ = Performance Intelligence Quotient
Entries in Table 9.1.6 shows that means of EG₁, EG₂, EG₃, EG₄ and CG for FSIQ were 107.66, 105.00, 106.66, 108.33 and 101.50 and their SDs were 7.17, 3.03, 4.22, 3.60 and 6.47 respectively. The t-values computed of post-tests of FSIQ between EG₁-CG, EG₂-CG, EG₃-CG, EG₄-CG were 1.56, 1.19, 1.63 and 2.42 respectively. It clearly shows that out of four t-values computed only one t-value of EG₄ was significant at 0.05 level, all other three t-values were insignificant. Mean differentials of post-test scores between different EGs and CG with regard to FSIQ has been shown in Figure 9.1.6.

Table 9.1.7 represents means, SDs and mean differentials of pre- and post-test scores of VIQ, PIQ and FSIQ of all EGs. M₁ of VIQ, PIQ and FSIQ were 97.25, 106.12 and 101.75 respectively and their M₂ were recorded as 103.83, 110.50 and 107.04 respectively. SD₁ of VIQ, PIQ and FSIQ were 4.86, 5.56, 4.40 and their SD₂ were recorded as 5.06, 5.72 and 4.68 respectively. The mean differentials (t-values) of VIQ, PIQ and FSIQ were recorded as 2.54, 1.60 and 2.40 respectively. The mean differentials of VIQ and FSIQ were significant at 0.05 level but for PIQ the t-value was not significant at any level. The significant t-values indicate the positive side effects of intervention provided for reducing reading difficulties of the children. The subjects could not gain significantly in Performance IQ. Figure 9.1.7 presented graphically the mean differences between pre- and post-test scores of all EGs with regard to IQ.
Table 9.1.6
Mean Differentials of Post-test scores between Different EGs and Control Group with regard to FSIQ

<table>
<thead>
<tr>
<th>Groups</th>
<th>$M_1$</th>
<th>$M_2$</th>
<th>$SD_1$</th>
<th>$SD_2$</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG$_1$-CG</td>
<td>107.66</td>
<td>101.50</td>
<td>7.17</td>
<td>6.47</td>
<td>1.56</td>
</tr>
<tr>
<td>EG$_2$-CG</td>
<td>105.00</td>
<td>101.50</td>
<td>3.03</td>
<td>6.47</td>
<td>1.19</td>
</tr>
<tr>
<td>EG$_3$-CG</td>
<td>106.66</td>
<td>101.50</td>
<td>4.22</td>
<td>6.47</td>
<td>1.63</td>
</tr>
<tr>
<td>EG$_4$-CG</td>
<td>108.83</td>
<td>101.50</td>
<td>3.60</td>
<td>6.47</td>
<td>2.42**</td>
</tr>
</tbody>
</table>

** Significant at 0.05 level

$M_1$ is the mean of post-test scores of different EGs
$M_2$ is the mean of post-test scores of control group
FSIQ = Full scale Intelligence Quotient

Table 9.1.7
Mean Differentials of all EGs with regard to IQ

<table>
<thead>
<tr>
<th>Variables</th>
<th>$M_1$ (N=24)</th>
<th>$M_2$ (N=24)</th>
<th>$SD_1$</th>
<th>$SD_2$</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIQ</td>
<td>97.25</td>
<td>103.83</td>
<td>4.86</td>
<td>5.06</td>
<td>2.54**</td>
</tr>
<tr>
<td>PIQ</td>
<td>106.12</td>
<td>110.50</td>
<td>5.56</td>
<td>5.72</td>
<td>1.60</td>
</tr>
<tr>
<td>FSIQ</td>
<td>101.75</td>
<td>107.04</td>
<td>4.40</td>
<td>4.68</td>
<td>2.40**</td>
</tr>
</tbody>
</table>

** Significant at 0.05 level

$M_1$ is the mean of pre-test scores of different EGs
$M_2$ is the mean of post-test scores of different EGs
VIQ = Verbal Intelligence Quotient
PIQ = Performance Intelligence Quotient
FSIQ = Full scale Intelligence Quotient
SD$_1$ = Pre-test
SD$_2$ = Post-test
Figure 9.1.6

Mean differentials of post-test scores between different EGs and CG with regard to FSIQ

EGs = Experimental Groups, CG = Control Group, FSIQ = Full Scale Intelligence Quotient
Figure 9.1.7
Mean differentials between Pre- and Post-test Scores of all EGs with regard to IQ

EGs = Experimental Groups, IQ = Intelligence Quotient, VIQ = Verbal Intelligence Quotient, PIQ = Performance Intelligence Quotient, FSIQ = Full Scale Intelligence Quotient

Note: The origin on Y-Axis is not starting from 0
Discussion of Results

Results obtained from Table 9.1.1 showed significant mean differentials between pre- and post-test scores of VIQ. It suggests that treatment provided for reducing reading difficulties resulted in verbal IQ gain too except EG_1. Table 9.1.2 further shows that t-values for first three groups were insignificant for PIQ but mean differentials of pre- and post-test scores of EG_4 (trained through ECM) were significant at 0.05 level of confidence. It shows that children of EG_4 could gain significantly on PIQ.

Table 9.1.3 further shows the mean differentials between pre- and post-test for FSIQ. For EG_1, EG_2 and EG_3 t-values were not significant at any level. It indicates that due to reduction in reading difficulties significant FSIQ gain of the EG_4 was observed.

Results recorded in Table 9.1.4 show the differences between post-test scores of different EGs and control group for VIQ. The comparison of EG_1 and EG_2 with CG gave insignificant t-values where as of the EG_2 and EG_4 with CG gave t-values which were significant at 0.05 level. It shows that there was gain in Verbal IQ of two groups. For Performance IQ (table 9.1.5) out of four t-values worked out only one (EG_4) was significant at 0.05 level. It shows that there was no improvement in Performance IQ of other three groups. Table 9.1.6 further shows that for Full Scale IQ,
out of four t-values worked out only one (EG4) was significant at 0.05 level. It shows that there was not much change in Performance IQ and Full Scale IQ when compared with control group.

Table 9.1.7 show mean differentials between pre- and post-test scores of all EGs with regard to Verbal IQ, Performance IQ and Full Scale IQ. Out of three t-values, two t-values (for VIQ and FSIQ) were significant (p<0.05). It shows that PIQ was not improved significantly.

On the basis of above discussion it is quite clear that intervention provided to the dyslexic children of EG4 (Eclectic method) for reduction of reading difficulties resulted in an increase in the Verbal IQ, Performance IQ as well as Full Scale IQ of these children. Though IQ gains were observed in the dyslexic children of other groups as well but these gains were not significant at any level. Hence, the hypothesis namely "Reduction in reading difficulties would result in IQ gain" stands partially verified.

Present results do not confirm the findings of Siegel (1989), Stanovich (1988a,b) here who have reported that reading disability is independent of intelligence. The present study is also inconsistent with the results of the study of Hurford et al. (1994) in which it is reported that IQ scores remained static when children with reading disability were given training for phonological and reading skills.
TESTING OF HYPOTHESIS 2

2. Reduction in reading problems would improve academic achievement of dyslexic children.

The second hypothesis has been tested with the help of Tables 9.2.1 and 9.2.2 and 9.2.3.

Table 9.2.1 represents means, SDs and t-values between pre- and post-tests for academic achievement of different experimental groups (EGs). This table shows that $M_1$, $M_2$, $SD_1$, $SD_2$ and t-value between pre- and post-tests of EG$_1$ were 28.66, 47.66, 10.01, 10.38 and 3.22 respectively. $M_1$, $M_2$, $SD_1$, $SD_2$ and t-value of EG$_2$ were 28.16, 41.66, 7.60, 8.14 and 2.96 respectively. Further Table 9.2.1 shows that $M_1$, $M_2$, $SD_1$, $SD_2$ and t-value of EG$_3$ were 29.00, 45.66, 8.69, 7.94 and 3.46 respectively. $M_1$, $M_2$, $SD_1$, $SD_2$ and t-value of EG$_4$ were 28.33, 53.00, 6.47, 9.07 and 5.42 respectively. Out of the four t-values three were found significant at 0.01 level of confidence and the rest one was significant at 0.05 level of confidence. Hence, it is clear from Table 9.1.2 that the means of post-tests for academic achievement of all EGs were significantly higher than the means of pre-tests of all EGs. These results are in consonance with the expectations of the investigator. Figure 9.2.1 has been prepared to show the mean differences between pre- and post-test scores of different EGs with regard to academic achievement.
Table 9.2.1
Mean Differentials between Pre- and Post-test scores with regard to Academic Achievement of different EGs

<table>
<thead>
<tr>
<th>Groups</th>
<th>$M_1$</th>
<th>$M_2$</th>
<th>$SD_1$</th>
<th>$SD_2$</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG₁</td>
<td>28.66</td>
<td>47.66</td>
<td>10.01</td>
<td>10.38</td>
<td>3.22*</td>
</tr>
<tr>
<td>EG₂</td>
<td>28.16</td>
<td>41.66</td>
<td>7.60</td>
<td>8.14</td>
<td>2.96**</td>
</tr>
<tr>
<td>EG₃</td>
<td>29.00</td>
<td>45.66</td>
<td>8.69</td>
<td>7.94</td>
<td>3.46*</td>
</tr>
<tr>
<td>EG₄</td>
<td>28.33</td>
<td>53.00</td>
<td>6.47</td>
<td>9.07</td>
<td>5.42*</td>
</tr>
</tbody>
</table>

* p<0.01 level  
** p<0.05 level  

$M_1$ is the mean of pre-test scores of different EGs  
$M_2$ is the mean of post-test scores of different EGs
Figure 9.2.1
Mean differentials between Pre- and Post-test Scores with regard to Academic Achievement of different EGs

EGs = Experimental Groups
Table 9.2.2
Mean Differentials of Post-test scores between Different EGs and Control Group with regard to Academic Achievement

<table>
<thead>
<tr>
<th>Groups Compared</th>
<th>$M_1$</th>
<th>$M_2$</th>
<th>$SD_1$</th>
<th>$SD_2$</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>EG₁-CG</td>
<td>47.66</td>
<td>28.33</td>
<td>10.38</td>
<td>4.84</td>
<td>4.13*</td>
</tr>
<tr>
<td>EG₂-CG</td>
<td>41.66</td>
<td>28.33</td>
<td>8.14</td>
<td>4.84</td>
<td>3.44*</td>
</tr>
<tr>
<td>EG₃-CG</td>
<td>45.66</td>
<td>28.33</td>
<td>7.94</td>
<td>4.84</td>
<td>4.56*</td>
</tr>
<tr>
<td>EG₄-CG</td>
<td>53.00</td>
<td>28.33</td>
<td>9.07</td>
<td>4.84</td>
<td>5.87*</td>
</tr>
</tbody>
</table>

* $p<0.01$ level

$M_1$ is the mean of post-test scores of different EGs
$M_2$ is the mean of post-test scores of control group

Table 9.2.3
Mean Differentials between Pre- and Post-test scores of all Experimental Groups with regard to Academic Achievement

<table>
<thead>
<tr>
<th>Variable</th>
<th>$M_1$</th>
<th>$M_2$</th>
<th>$SD_1$</th>
<th>$SD_2$</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>(n=24)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Achievement</td>
<td>28.54</td>
<td>47.00</td>
<td>7.74</td>
<td>9.32</td>
<td>4.70*</td>
</tr>
</tbody>
</table>

* $p<0.01$ level

$M_1$ is the mean of pre-test scores of different EGs
$M_2$ is the mean of post-test scores of all EGs
Figure 9.2.2
Mean Differentials of Post-test Scores between EGs and CG with regard to Academic Achievement

EGs = Experimental Groups, CG = Control Group
Figure 9.2.3

Mean Differentials between Pre- and Post-test Scores of all treatment groups with regard to Academic Achievement

Pre-test 28.54
Post-test 47
ALL EGs

Pre-test  Post-test

EGs = Experimental Groups
prepared to highlight the difference between pre- and post-test score of all EGs with regard to academic achievement.

DISCUSSION OF RESULTS

Results obtained from 9.2.1 shows that significant differences existed between the pre- and post-tests for academic achievement of experimental groups. The t-values were significant at 0.01 level except of EG2 which was significant at 0.05 level. Table 9.2.2 also shows significant differences between the post-tests for academic achievement of experimental groups and the control group. All the four t-values worked out were significant at 0.01 level of confidence.

Again, Table 9.2.3 shows the mean differentials between pre- and post-test scores of all experimental groups (n=24) with regard to academic achievement. Its t-value was much beyond 0.01 level of confidence. It is evident from these t-values that reduction in reading difficulties of dyslexic primary school children caused significant improvement in their academic achievement.

It is clear from the above discussion that reduction in reading difficulties results in improvement of academic achievement. This improvement in academic achievement can be attributed to the fact that with the reduction in reading difficulties, children develop more positive attitude towards their other subjects. They do more
needful to grasp more knowledge about other subjects in the
class. Thus, the second hypothesis, namely, "Reduction in
reading difficulties would enhance academic achievement"
stands verified.

To sum up the discussion of results of both hypotheses, it can be safely concluded that reduction in
reading problems results in (verbal) IQ gain and improvement
in academic achievement. It is quite likely that these
training programmes could also be used to increase the
children's different skills for other subjects also.