



Results of Statistical Analysis on Reading & Rhythm

Executive Summary:

Independent statistical analysis¹ clearly demonstrates the significant beneficial impact of our Reading & Rhythm (R&R) Program on children's reading fluency and comprehension. Specifically, fluency for 2nd grade student groups receiving the R&R Program is almost twice as fast compared to those who do not receive the R&R Program. Fluency is also much faster among 5th grade student groups after the R&R Program. Similarly, testing results of 293 children from detention camps and family centers show that fluency increases by 55% (from 94.5 to 146.5 words per minute) for those receiving the R&R Program. Finally, the R&R Program results in 20% average increase in comprehension for a 4th grade student group in 4 weeks.

Exhibit 1A – fluency with control groups - Westminster Avenue Elementary School (Venice, CA)

Methods - Mean post minus pre fluency change was compared by *Reading & Rhythm* program intervention (vs control), ethnicity and gender using an analysis of variance (ANOVA) model after confirming that the fluency change data followed the normal distribution. Separate analyses were carried out for 2nd and 5th grade. Gender and ethnicity adjusted mean fluency change is reported.

Results - Exhibit A1 shows that the overall mean post minus pre change in fluency in 2nd graders, is 32.3 words per minute for R & R compared to 18.2 words per minute in controls. This mean difference of 14.1 units is statistically significant (beyond chance) with $p = 0.0182$.

While the mean fluency change was not identical by ethnicity or gender, the effects of ethnicity and gender were not statistically significant at $p < 0.05$.

The effect of teacher is confounded with R&R vs control.

In 5th graders, the mean fluency change is 49.6 units for R&R compared to 4.6 units in controls, $p < 0.0001$. We do not know if ethnicity, gender or other factors are the same in the two groups of 5th graders.

Exhibit B1A – dataset of 293 children – detention camps and family centers (Los Angeles County)

Methods- Overall descriptive statistics on all 293 children are given and p values for comparing pre versus post means were computed using the paired t test.



Results - The mean fluency increased from 94.5 words per minute to 146.5 words per minute ($p < 0.001$) and the mean (lack of) accuracy improved from 4.5 words to 1.2 words ($p < 0.001$).

Exhibit C – comprehension – Charles C. Cashman Elementary School (Amesbury, MA)

Method - Paired t test used to compute p value.

Results - The pre to post change in comprehension in the 25 students in Cashman elementary school is significant as the mean increases from 22.6 to 27.2 ($p < 0.001$, paired t test).

ⁱ *Drumming for Your Life Institute* hired **Jeff Gornbein DrPH-Senior Statistician at the UCLA Statistical Bio-mathematical Consulting Clinic** to provide a statistical analysis of the *Reading & Rhythm* program.