the bridge between science and teacher practice

Based on Research, Supported by Evidence

Research has shown that **reading** requires a combination of decoding skills — that is, recognising whole words OR the code inside words and using it to sound out and pronounce words — and language comprehension skills.

Writing requires the ability to record (spell) the words we want to use to share ideas in print. Spelling relies on word retrieval skills — that is being able to remember what words look like – and being able to sound out and record the sounds in words not known by sight. Correct spelling requires knowledge of the spelling system that underpins written English.

The Problem

- A lack of knowledge of the alphabetic code has a negative impact on decoding (and therefore reading) and spelling (and therefore writing).
- Poor decoding and spelling skills are a cross-curricular problem, since reading and writing are the tools for accessing and expressing knowledge across the curriculum.
- Students with gaps in this foundation area of knowledge need explicit instruction to close the gaps.

The Approach

- Code-Ed resources were developed by educator and researcher Joy Allcock, M.Ed., as a response to these problems.
- They use oral language skills as a platform for teaching written language skills and knowledge.
- They teach students (and teachers) to understand how written English works—to understand the role of phonemes, graphemes, morphemes and spelling rules and conventions—in focused, 10-minutes-a-day lessons.

The Research

The unique approach developed by Joy Allcock was evaluated in a two-year research project—the *Shine* Literacy Project (2014-2016).

- The research project included 32 schools and was designed and evaluated by Professor James Chapman from Massey University, New Zealand.
- The research compared results from Trial groups, which used the Code-Ed approach (then called *Sounds Like Fun*), and Comparison groups with no intervention.
- The project was funded by donations from community organisations and philanthropic trusts.

Key Findings

- It is possible to accelerate students' progress even if they come to school without a solid foundation of early literacy knowledge.
- Regardless of other instructional programs being used, 10 minutes a day of targeted instruction can pull together the key skills and knowledge that are critical for literacy success.
- Success was not linked to students' ethnicity or socioeconomic status. The change in instruction used by Trial teachers levelled the playing field for all students.

Read on for the complete report from the *Shine* Literacy Project.

RESULTS FROM THE SHINE LITERACY PROJECT

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November 2016

Sample

Age

A total of 259 New Entrant children initially participated in the project between April and June 2014. Of these, 138 children were in Trial schools and 121 were in Comparison schools. Most of the children (92%) were 5 years old when they started school. Seven children were 1 month younger than 5 years, and 14 children were between 1 and 5 months older than 5 years on school entry. There was no difference in the mean age at school entry between children in the Trial group and those in the Comparison group: Trial Mean = 60.05 months; Comparison Mean = 60.13 months). Variations in sample size fluctuated during the study as a result of absences when assessments were undertaken, and attrition over the duration of the research.

Weeks in School

When the first assessments were conducted with the children, they had been in school for an average of 3 weeks and 3 ½ days. Because assessments began with the children in the Trial group slightly before those in the Comparison group, Comparison children had been in school on average for 4 more days than Trial children. This difference is unlikely to have been of educational significance.

Gender

There were more girls in the project than boys: 147 and 112 respectively. Similar proportions of boys and girls were in the Trial and Comparison groups: 43% (59) boys and 57% (79) girls in the Trial group; 44% (53) boys and 56% (68) girls in the Comparison group. These data are illustrated in Figure 1.

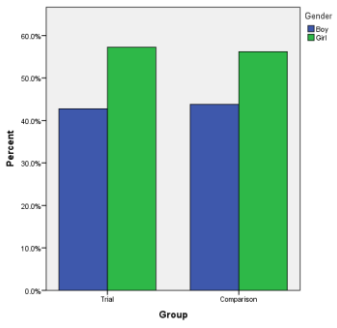


Figure 1. Percentages of boys and girls in the Trial and Comparison groups.

Ethnic Background

In terms of ethnic background, percentages (and numbers) for the total sample were as follows: Pakeha = 48% (124); Maori = 21% (55); Pasifika = 19% (48); Asian = 12% (30). Roughly similar percentages of Pakeha and Maori children were in the Trial and Comparison groups, however, there were disparities for Pasifika and Asian children: 22% Pasifika in the Trial group compared to 15% in the Comparison group; 8% Asian in the Trial group compared to 16% in the Comparison group. These data are illustrated in Figure 2.

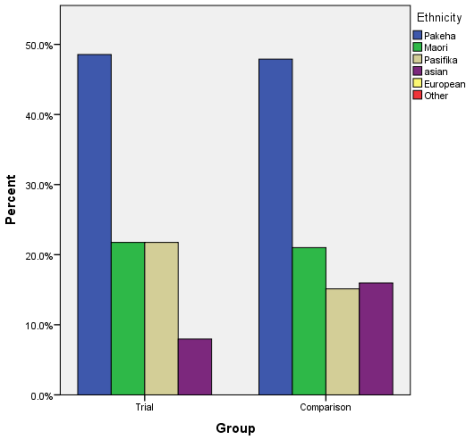


Figure 2. Percentages by ethnic background for Trial and Comparison groups.

ESOL Children

There were 56 children in the sample who had English as a second or other language (ESOL), which was 22% of the sample. Of the ESOL children, 11% were Pakeha, 9% were Maori, 48% were Pasifika, and 32% were Asian. For Asian ESOL children, 25% were in the Trial group and 39% were in the Comparison group. Of the Pakeha (including European) children, all were in the Trial group and comprised 21% of the group total. Smaller percentages of Maori children were considered to be ESOL learners, with 4% in the Trial group and 14% in the Comparison group.

Decile Ranking

A total of 32 schools participated in the study. Of these, 17 were Trial schools and 15 were Comparison schools. Nearly 51% of the sample was in decile 10 schools (24% Trial; 27% Comparison). No schools with decile rankings of 5, 6, 7, or 8 were represented in the study. Of the remainder, 20% were decile 1 (8% Trial, 12% Comparison), 15% were decile 2 (10% Trial, 5% Comparison), 7% were decile 3 (4% Trial, 3% Comparison), 4% were decile 4 (4% Trial, 0% Comparison), and 4% were decile 9 (4% Trial, 0% Comparison). These decile distributions are illustrated in Figure 3.

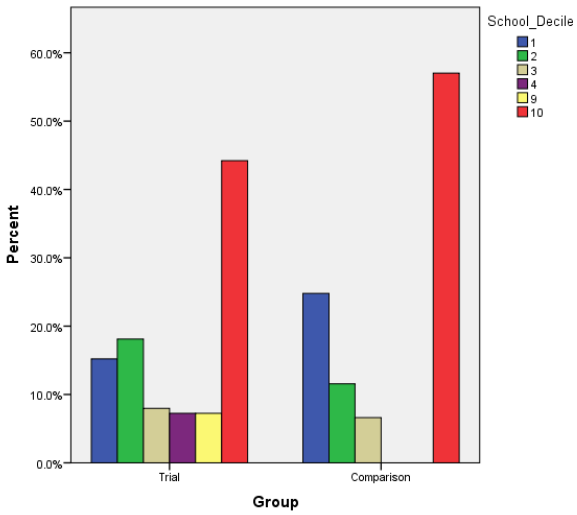


Figure 3. Percentage of children in each school decile ranking by group.

For ease of subsequent analyses, these decile rank distributions were combined into two decile bands: high (deciles 9 & 10; 46%) and low (deciles 1 to 4; 54%). The decile band distributions are illustrated in Figure 4. These data show that slightly more Comparison than Trial children were in the high decile band, and slightly fewer Comparison than Trial children were in the low decile band.

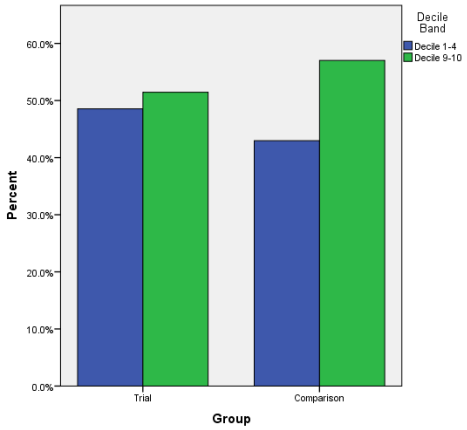


Figure 4. Percentage of children in each school decile band by group.

Assessments

A range of developmentally appropriate assessments was conducted at school entry (Time 1) and at four additional times throughout the project. The purpose of the assessments was to gauge the progress of the children during the course of the *Sounds Like Fun* (SLF) intervention. My main focus in this report is on the Time 1 assessments and those conducted at Time 4, 18 months from the start of the project.

At Time 1, the assessments included tests of receptive vocabulary, phonological awareness, word knowledge, letter sound and letter name knowledge, sound-to-alphabetic letter knowledge, and invented spelling. At Time 4, literacy performance tests assessed word identification, reading comprehension, reading accuracy, listening comprehension and spelling.

Research Questions

The following research questions provided a focus for the study and for the analysis of the data:

1. Did the *Sounds Like Fun* (SLF) approach result in better literacy learning outcomes for children in the Trial group compared to children in the Comparison group?
2. Did the SLF approach result in benefits in literacy learning outcomes for Maori and Pasifika children, and children from low decile schools?
3. Did the SLF approach result in benefits in literacy learning outcomes for ESOL children?
4. Which school entry variables best predicted literacy outcomes 18 months after school entry?

School Entry (Tine 1) Results

Gender

There were no statistically significant differences in mean scores on the key entry variables between boys and girls. This result means that boys and girls in this study start school with similar literacy-related abilities, regardless of whether they were in the Trial or Comparison group.

Decile Ranking

As expected, there were statistically significant differences for all key entry variables between children in low decile schools compared to those in high decile scores. In each case, scores for high decile children were considerably higher than those for low decile children. Also, high decile children were similarly high in both the Trial and Comparison groups, and the low decile children were similarly low in each of these two groups.

Ethnicity

Asian children in both groups had relatively high scores on all variables except receptive vocabulary. In a number of cases, Asian children in the Trial group obtained higher scores than Asian children in the Comparison group. Maori and Pasifika children in both the Trial and Comparison groups scored significantly lower than Pakeha children on all assessments, and significantly lower than Asian children on all tests except receptive vocabulary.

This result is consistent with numerous studies showing that Maori and Pasifika children tend to start school with fewer literacy-related skills than Pakeha children. The result is also interesting because Asian children appear to have mastered the basic elements of alphabet and word level knowledge prior to school entry.

Trial vs. Comparison Group

Time 1 entry assessments showed statistically significant differences for Letter Sound knowledge (upper and lower case), word identification, sound-to-letter knowledge, and invented spelling, with the Comparison group obtaining higher scores than the Trial group. The Comparison group has started the study with an advantage on these important literacy-related entry skills. The summary data for these analyses are presented in Table A of the Appendix, and illustrated in Figure 5 (with receptive vocabulary omitted to avoid distorting the graph).

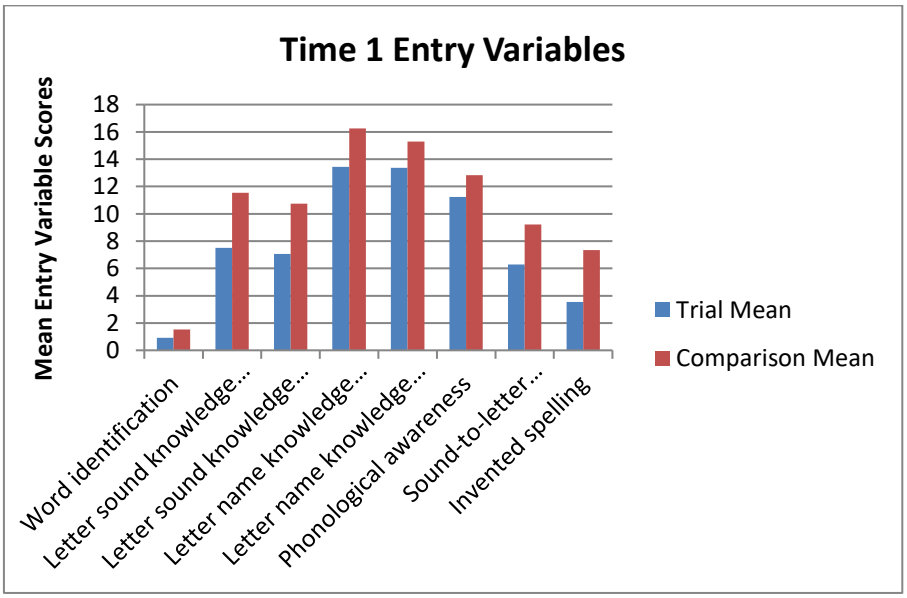


Figure 5. Summary Time 1 Entry Variables for Trial and Comparison children.

Summary of Time 1 Results

The results for Time 1 Entry assessments show that the Comparison group obtained higher scores overall on the entry assessments than the Trial group, and the Pakeha and Asian children obtained higher scores than the Maori and Pasifika children. Children in lower decile schools generally started school with fewer literacy-related knowledge than children in higher decile schools.

Results at Time 4 (18 Months Later) For Group and Ethnicity

Predictors of Time 4 Literacy Achievement

Because the Comparison group obtained significantly higher scores than the Trial group on a number of school entry assessments I examined correlations between these variables and the main outcome variables at Time 4 (reading comprehension and word identification). The results of the correlations analyses are presented in Table 1. Correlations can range from -1.0 to + 1.0. The importance of any correlation depends on the context. In this project, correlations of around .50 or higher can be considered to be reasonably strong predictors of subsequent reading and spelling performance.

The strongest correlations are for phonological awareness (.658), letter sound knowledge lower case (. 609), letter name knowledge upper case (.599), letter sound upper case (.587), and letter name lower case (.581).

	Time 4 Variables	
Time 1 Variables	Comprehension	Word identification
Vocabulary	.495	.439
Word identification	.484	.550
Letter Sound upper	.587	.615
Letter Sound lower	.609	.643
Letter Name upper	.599	.609
Letter Name lower	.581	.616
Phonological knowledge	.658	.603
Sound-letter knowledge	.545	.526
Invented spelling	.472	.469

Table 1. Correlations of Time 1 entry variables with key Time 4 outcome variables.

For the reason that the four letter knowledge assessments (names and sounds, upper and lower case) were highly predictive of reading outcome performances 18 months later, I formed a composite “Letter Knowledge” variable, which was the sum total of the four scores. In addition, because the Comparison group scored significantly higher than the Trial group at school entry on letter knowledge, in analysing the Time 4 results I used a statistical procedure that took into account this initial difference between the two groups (analysis of *covariance*). This procedure makes a correction for the initial difference

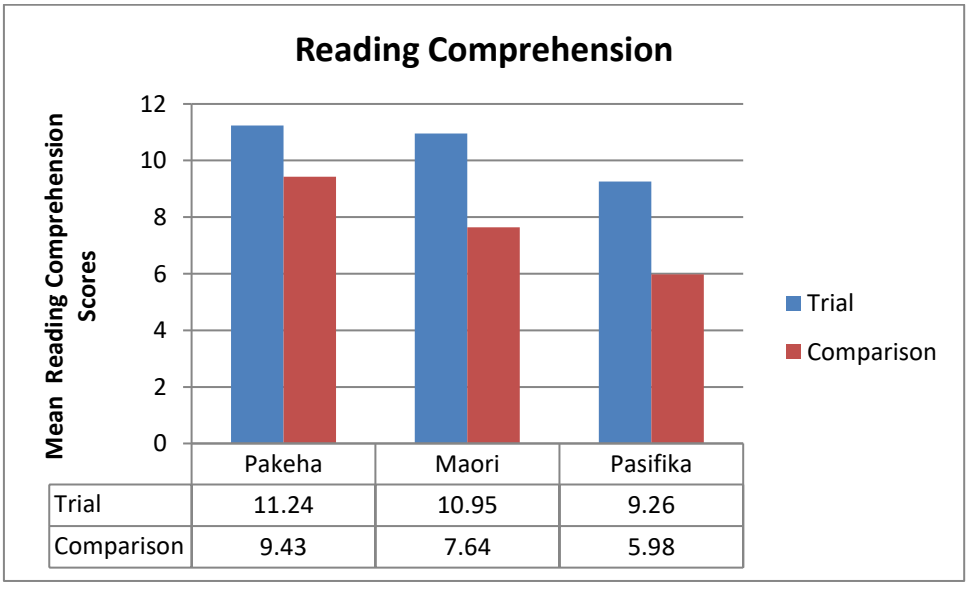
between the two groups, without which the Trial group would be disadvantaged because of the strong influence of letter knowledge on later reading and spelling performance.

Time 4 Results by Group and Ethnic Background

There is a range of possible ways to analyse the data from this project. An important focus of the study is on the literacy achievement of Maori and Pasifika children. Therefore, I decided that the main analysis design for treating the Time 4 results should include Group (Trial vs. Comparison) and Ethnicity (Pakeha vs. Maori vs. Pasifika). I deleted Asian children from this analysis design because they obtained relatively high scores at school entry and their inclusion would have obscured the results for Maori and Pasifika children, which are of primary interest. This decision rests on a technical issue relating to how the statistical method, analysis of variance, is carried out. Nonetheless, I have tested the results for Asian children, as well as for school decile, ESOL status and gender. Technical results from the main statistical analyses are presented in the Appendix.

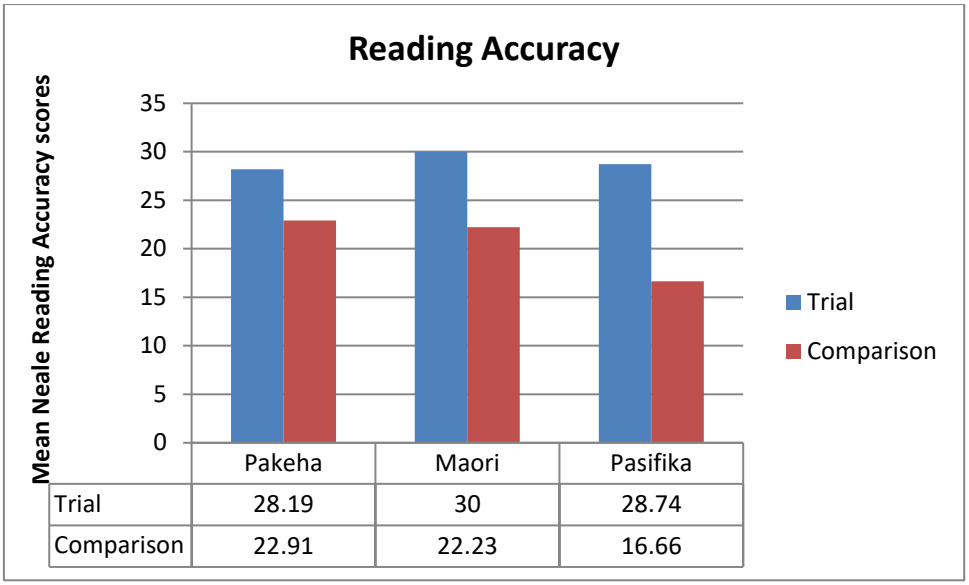
All Time 4 group comparison outcome scores, except listening comprehension, reached levels of statistical significance. The Trial group outperformed the Comparison group on the tests of word identification, reading comprehension, reading accuracy, and spelling. Maori and Pasifika children in the Trial group performed as well as Pakeha children in that there were no statistically significant differences within the Trial group as a result of ethnic background.

Also noteworthy is the finding that Pasifika Trial children obtained significantly higher scores for spelling than Pasifika Comparison children. The mean scores for Time 4 data are presented in Table B of the Appendix, and graphs are presented in Figures 6 to 10.



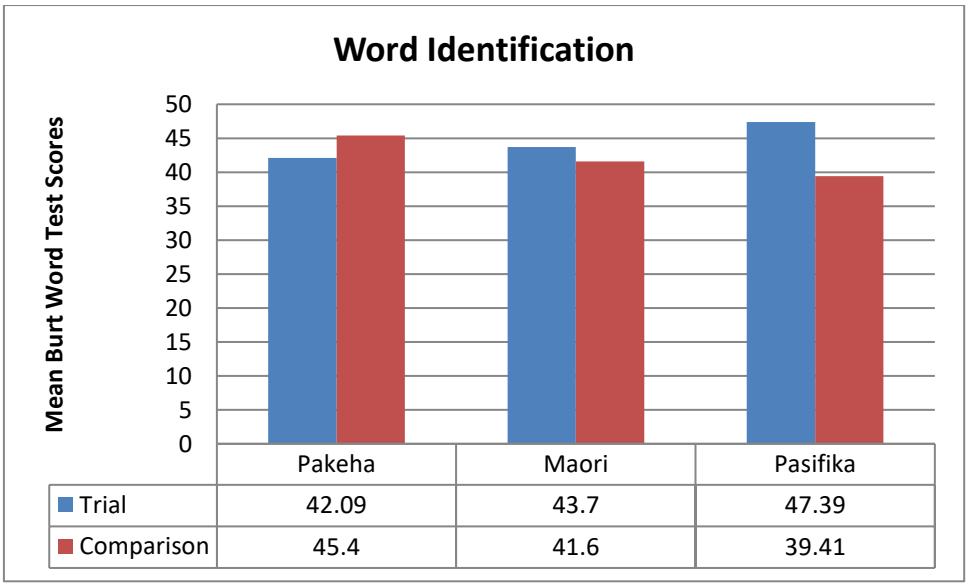
	Pakeha	Maori	Pasifika
Trial	11.24	10.95	9.26
Comparison	9.43	7.64	5.98

Figure 6. Group mean scores for reading comprehension.



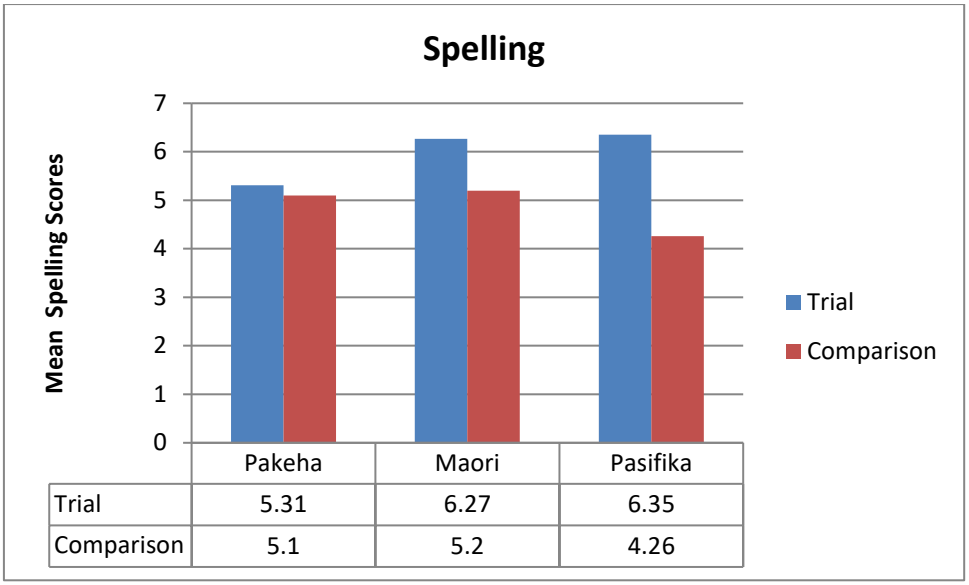
	Pakeha	Maori	Pasifika
Trial	28.19	30	28.74
Comparison	22.91	22.23	16.66

Figure 7. Group mean scores for reading accuracy.



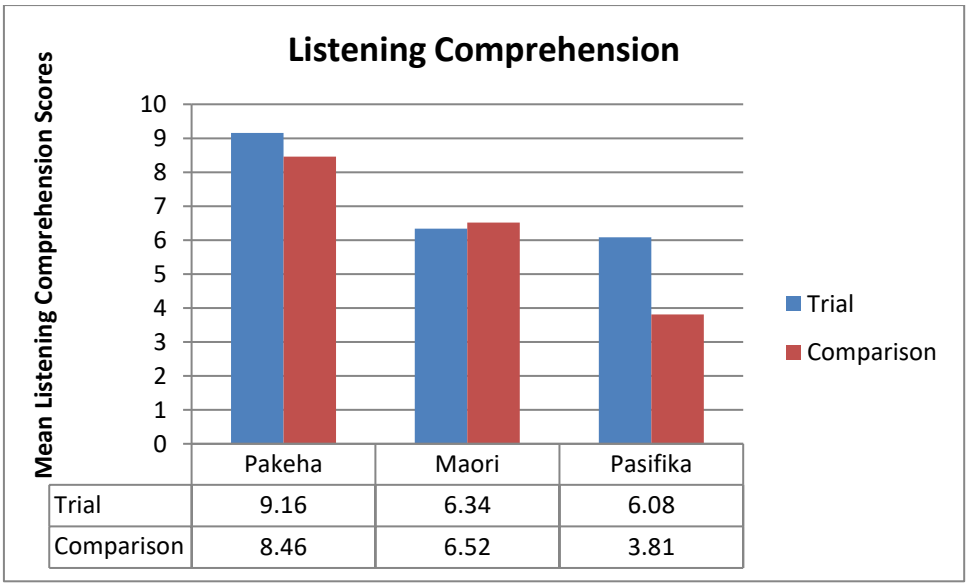
	Pakeha	Maori	Pasifika
Trial	42.09	43.7	47.39
Comparison	45.4	41.6	39.41

Figure 8. Group mean scores for word identification.



	Pakeha	Maori	Pasifika
Trial	5.31	6.27	6.35
Comparison	5.1	5.2	4.26

Figure 9. Group mean scores for spelling.



	Pakeha	Maori	Pasifika
Trial	9.16	6.34	6.08
Comparison	8.46	6.52	3.81

Figure 10. Group mean scores for listening comprehension.

Asian Children

Asian children were excluded from the main analyses involving Maori, Pasifika, and Pakeha children because an examination of school entry data indicated that their inclusion would skew the results and detract from a key focus of the study (i.e., Maori and Pasifika children). Nonetheless, it is important to report that on all literacy outcome measures at Time 4, Asian children in both the Trial and Comparison groups obtained the highest scores when compared to Maori, Pasifika and Pakeha for word identification, reading accuracy and

spelling, and close to the highest for reading comprehension. None was statistically significant. Mean scores were reasonably similar for Asian children in the Trial group compared to those in the Comparison group. At school entry, the Asian children were reasonably similar to the Maori and Pasifika children on the measure of receptive vocabulary. However, on all of the other entry variables, the Asian children were similar to Pakeha children, and generally higher (though not at levels of statistical significance) than Maori and Pasifika children.

This stronger performance for Asian children may have been the result of explicit instruction in alphabet knowledge, word identification and word-level decoding skills. Data for Asian children are included in the table of means presented in the Appendix (Table B).

Results at Time 4 for Decile Band

There were significant differences between low decile and high decile children on all variables at school entry. Unfortunately, this is a typical finding. There were no statistically significant differences between low decile children in the Trial group and those in the Comparison group.

The Time 4 results showed a significant overall difference between low and high decile children. An examination of data for each variable indicated that overall, high decile children obtained higher scores than low decile children for word identification, reading comprehension, reading accuracy, and listening comprehension. For word identification, reading comprehension and reading accuracy, the differences were largely due to the low decile Comparison children obtaining lower scores. Low decile Trial children performed close to as well as high decile Trial children. These results are illustrated in Figures 11 to 15.

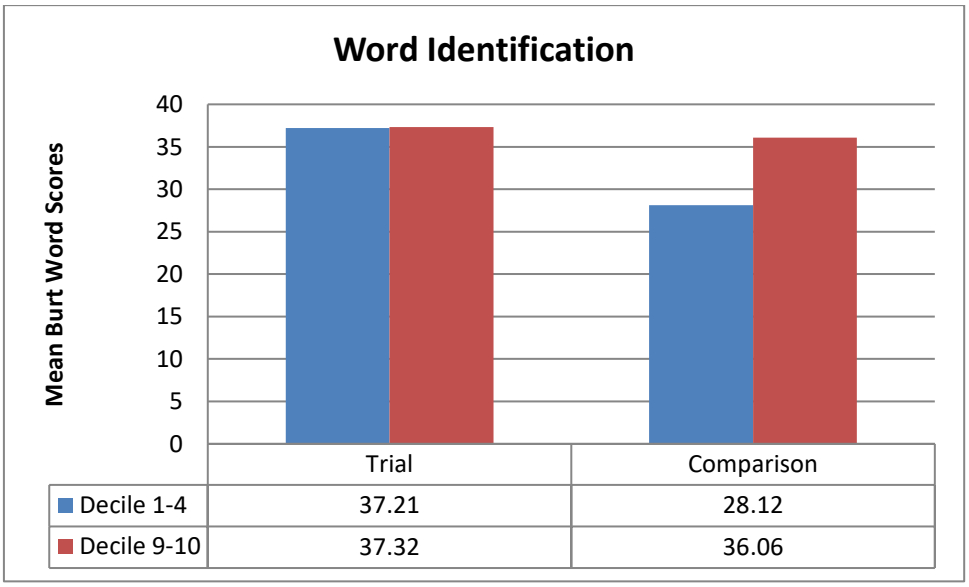


Figure 11. Group and Decile band means for the Burt word identification.

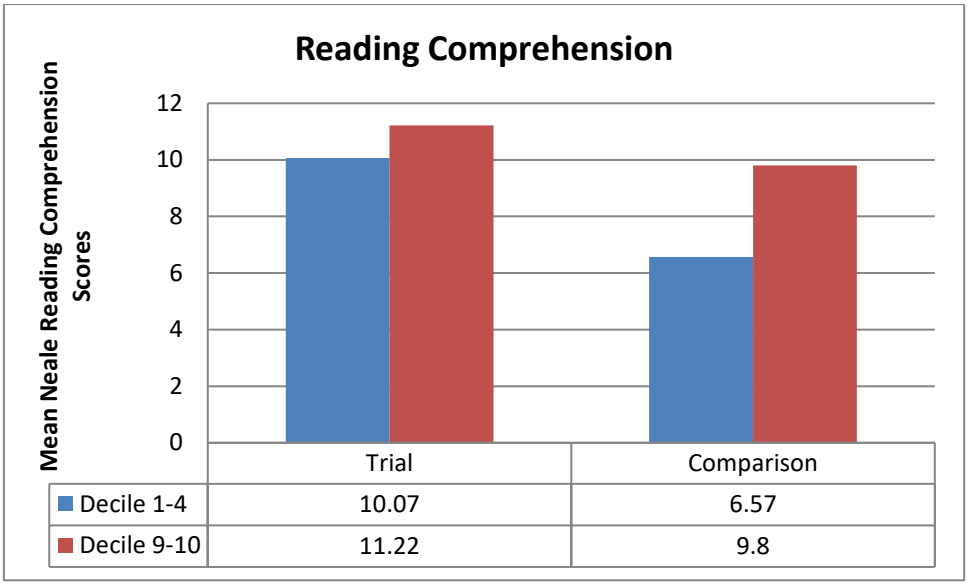


Figure 12. Group and Decile band means for the Neale reading comprehension.

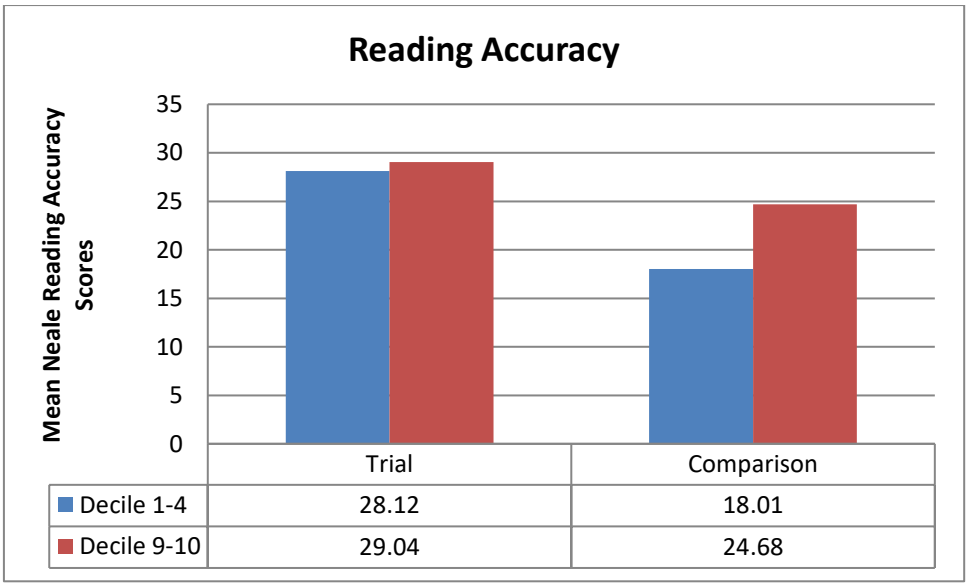


Figure 13. Group and Decile band means for the Neale reading accuracy.

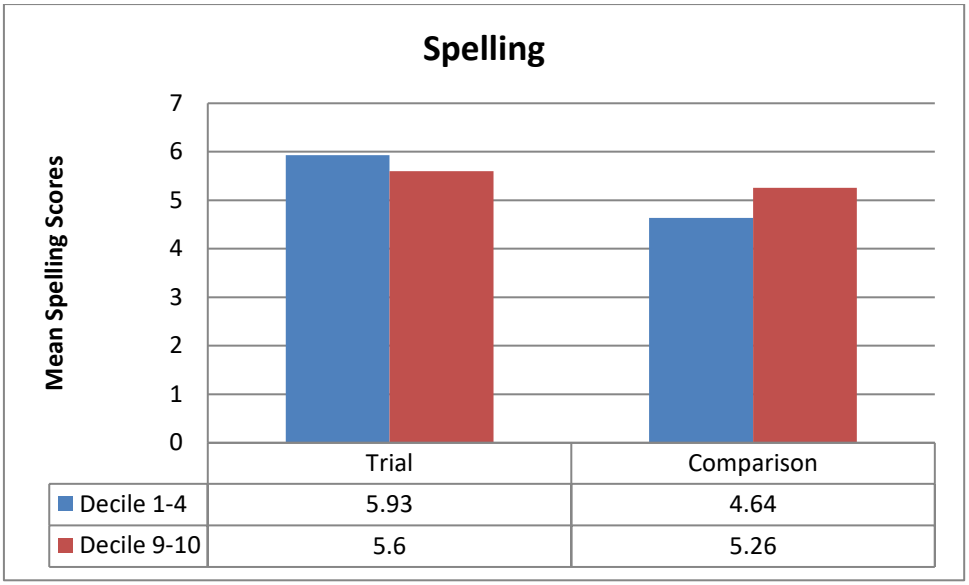


Figure 14. Group and Decile band means for the spelling.

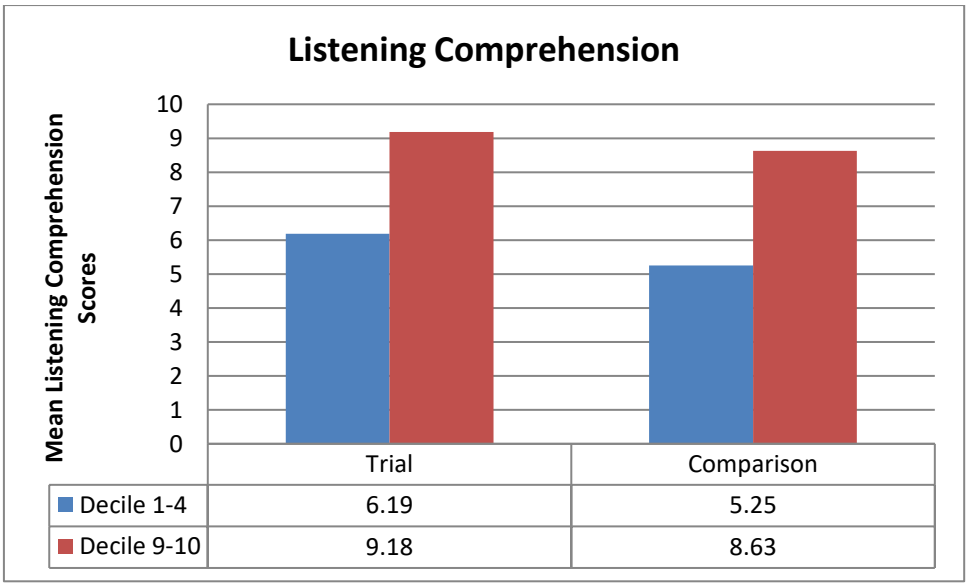


Figure 15. Group and Decile band means for listening comprehension.

ESOL Children

I examined scores for ESOL children in relation to group membership (Trial vs. Comparison). These analyses included all children; Asian children were not excluded from these analyses. At Time 1, ESOL children performed at levels that in general, were lower than non-ESOL children on all variables. They were significantly below non-ESOL children for receptive vocabulary, phonological awareness, letter knowledge, and sound-to-letter

awareness. There no differences between the ESOL children in the Trial group and the Comparison group.

The main Time 4 finding for ESOL children was that those in the Trial group obtained higher scores than ESOL children in the Comparison group for all variables except spelling, though the differences were not statistically significant. The results for Time 4 variables relating to ESOL children are illustrated in Figures 16 to 20.

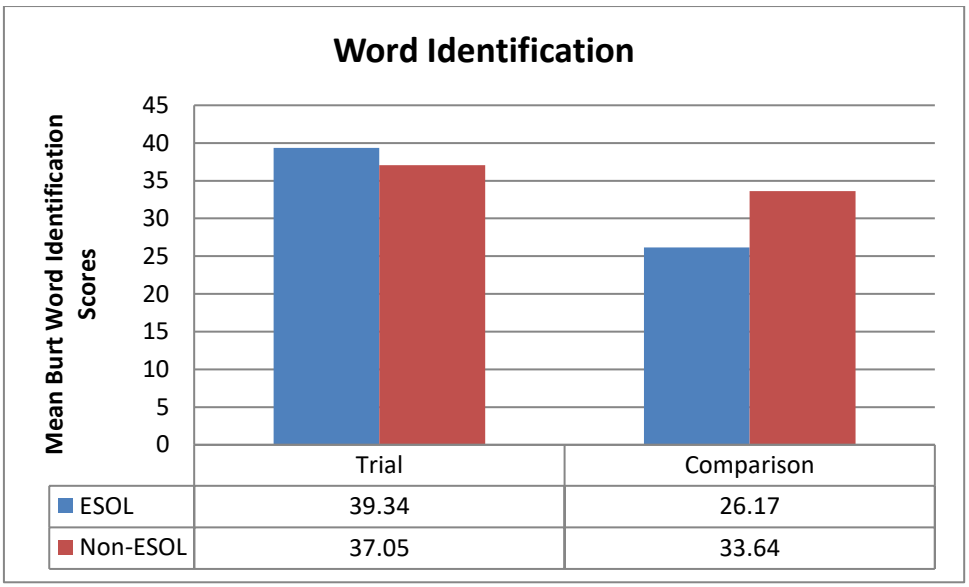


Figure 16. ESOL and non-ESOL mean scores for word identification.

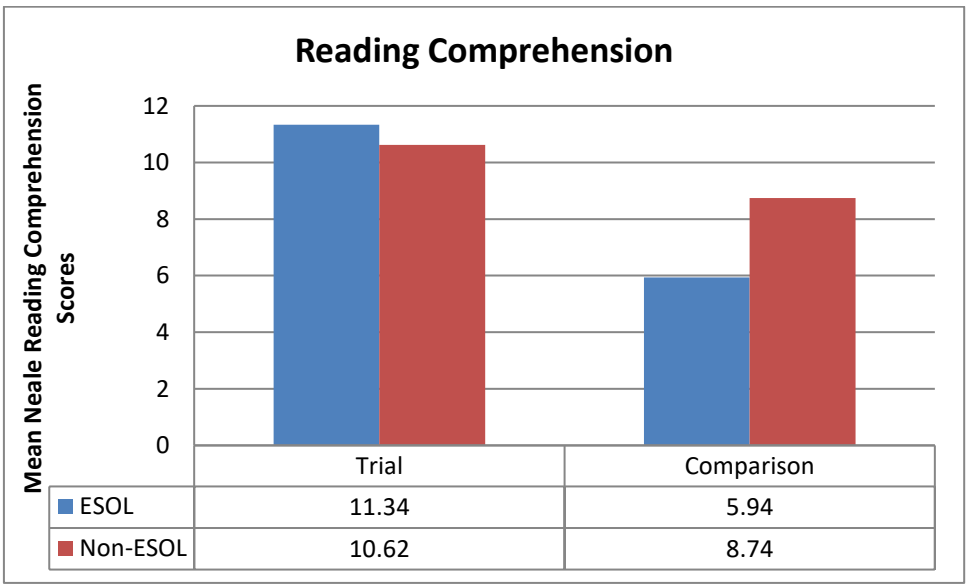


Figure 17. ESOL and non-ESOL mean scores for reading comprehension.

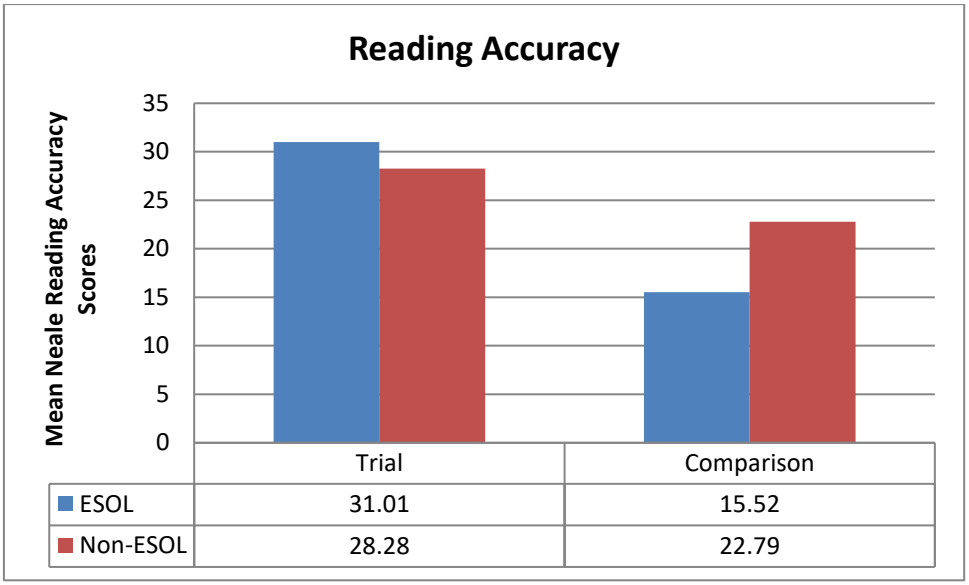


Figure 18. ESOL and non-ESOL mean scores for reading accuracy.

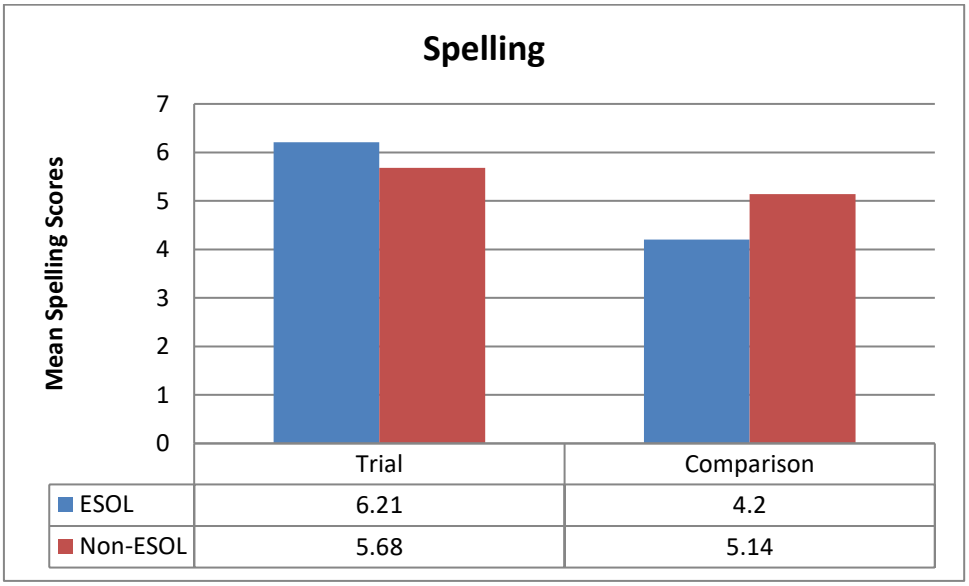


Figure 19. ESOL and non-ESOL mean scores for spelling.

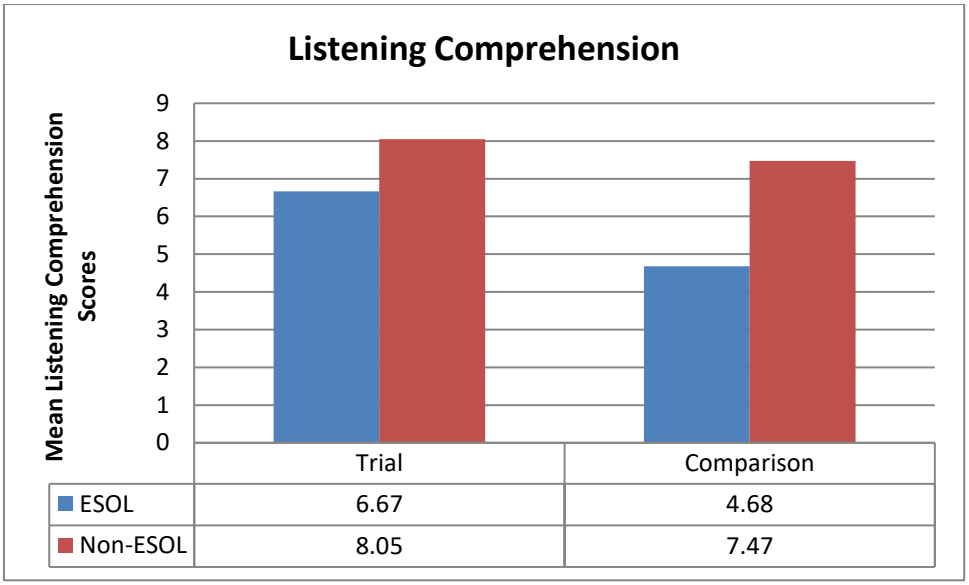


Figure 20. ESOL and non-ESOL mean scores for listening comprehension.

Examination of Variables Over Time

Two variables had repeated assessments over a number of assessment occasions during the 18 month research project; phonological awareness (Times 1, 2, 3), and the Burt word identification test (Times 3 and 4). Results for these two variables are presented in Figures 21and 22.

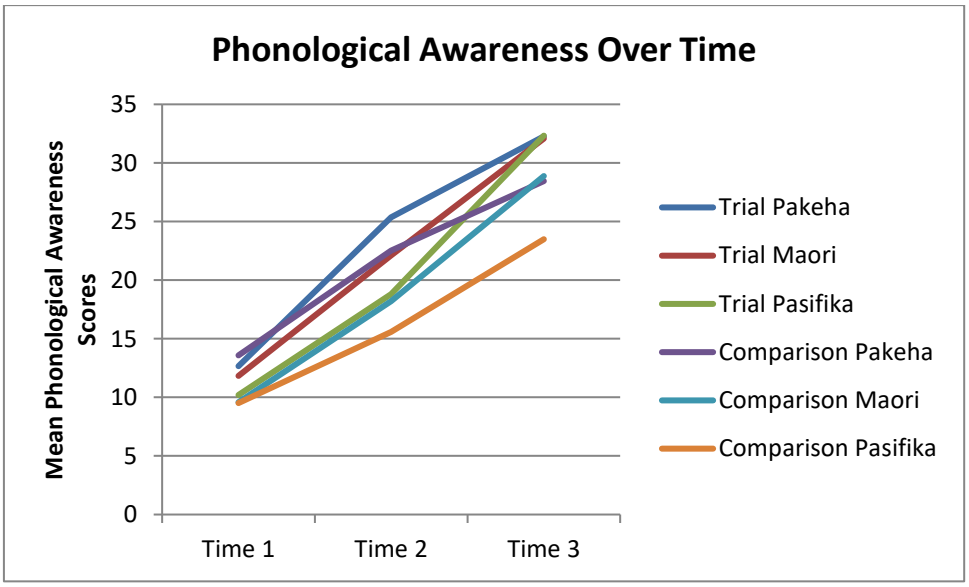


Figure 21. Time series for phonological awareness assessments.

Figure 21 illustrates the trend lines for the measure of phonological awareness. The graph should be interpreted with caution and in relation to the other results presented on this variable. Not all apparent differences in the lines on the graph are statistically

significant. Nonetheless, the Pasifika children in the Trial group show a trajectory that indicates gains on this measure relative to the Pasifika children in the Comparison group. Both Pasifika groups started out at similar levels, however the Trial Pasifika children have reached a level of phonological awareness at Time 3 that is similar to Pakeha and Maori Trial children. The Comparison Pasifika children have not made the same gains.

For the Burt test of word identification that was assessed at Times 3 and 4, the results are somewhat similar. Pakeha, Maori and Pasifika children in the Trial group show similar rates of progress, whereas Pasifika children in the Comparison group have made the least growth in terms of word identification.

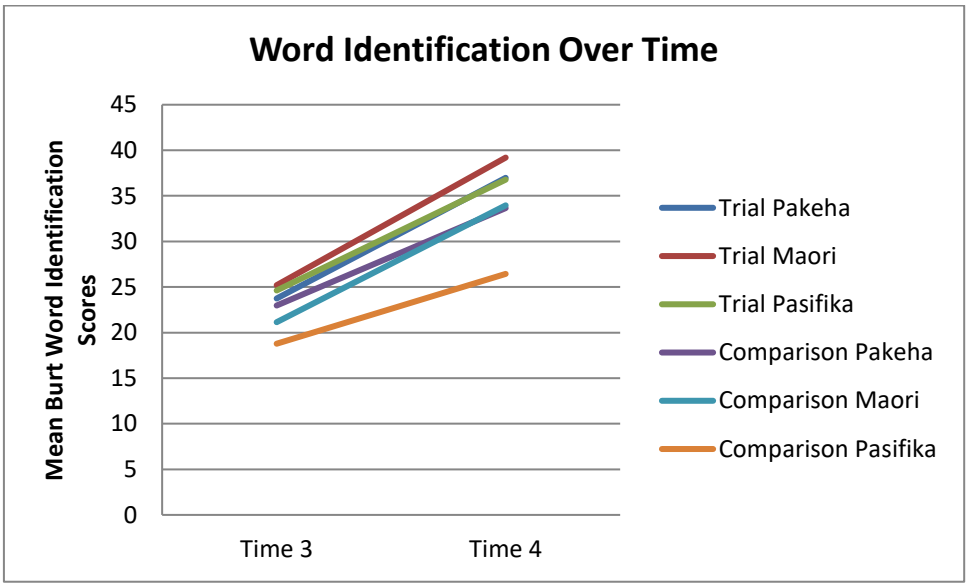


Figure 22. Time series for Burt word identification assessments.

A further set of analyses was performed on Time 5 outcome variables: reading comprehension, reading accuracy, word identification and spelling. Between Time 4 and Time 5, 34 of 41 low decile Comparison children and 41 of 64 high decile Comparison children were introduced the *Sounds Like Fun* approach. Whereas analyses of outcome variables at Time 4 resulted in significant differences between the Trial and Comparison groups for all but one of the five measures (reading comprehension, reading accuracy, word identification and spelling), only one Time 5 variable resulted in a statistically significant difference between the two groups, namely reading accuracy. This result suggests that differences in favour of the Trial group at Time 4 were starting to diminish at Time 5 as the Comparison children received that *SLF* instruction. This is a good outcome. Graphs illustrating these trends for variables that were assessed with the same test at Time 4 and Time 5 are presented in Figures 23 to 25.

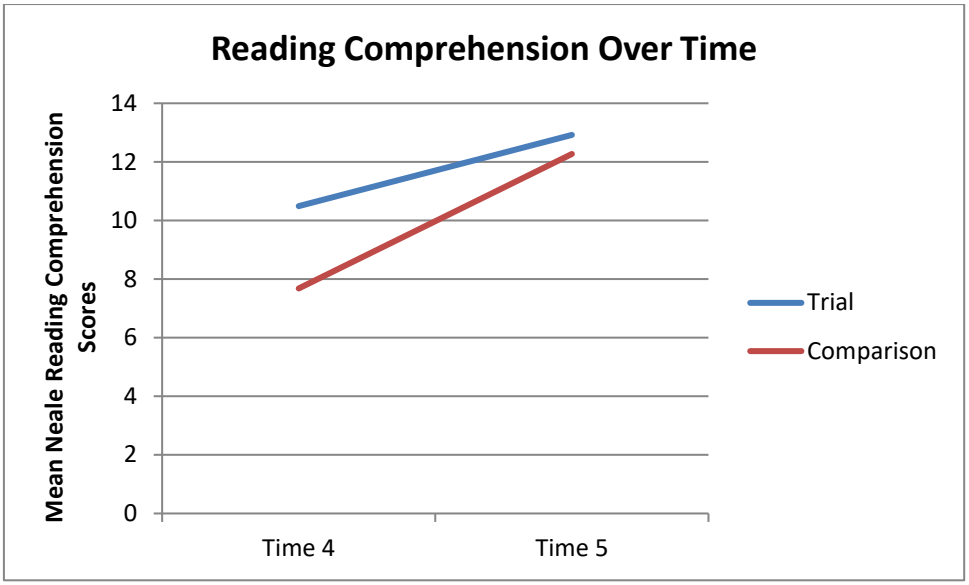


Figure 23. Changes in reading comprehension scores between Time 4 and Time 5.

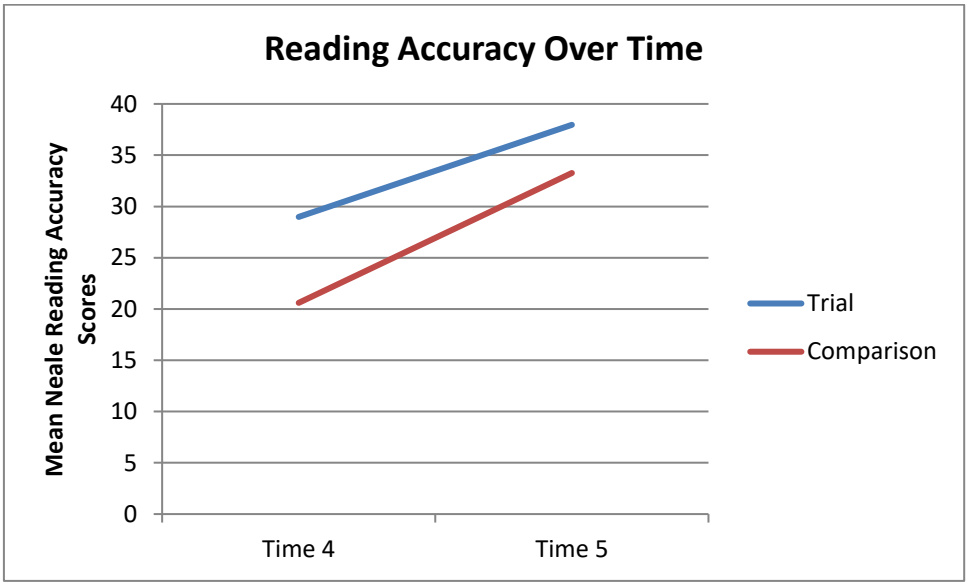


Figure 24. Changes in reading accuracy scores between Time 4 and Time 5.

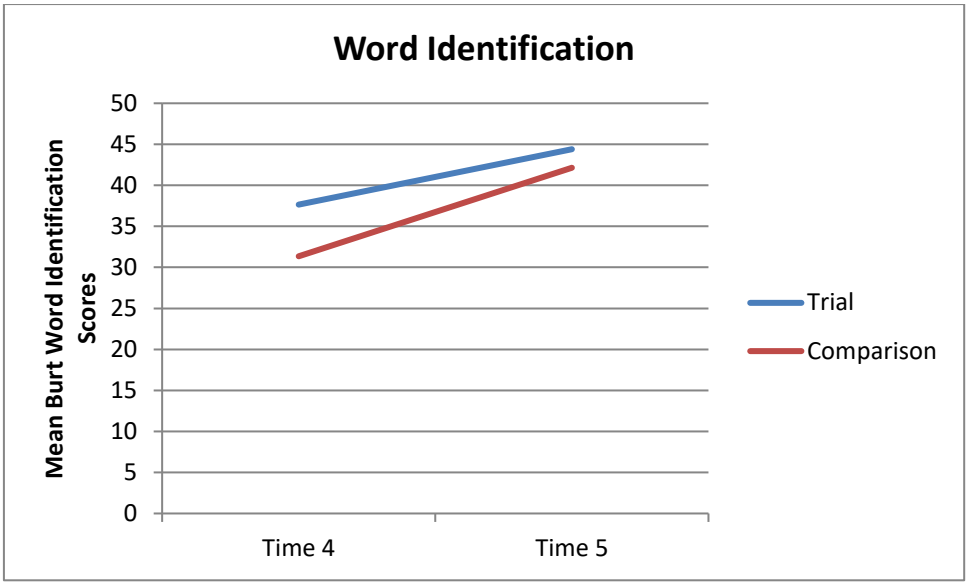


Figure 25. Changes in word identification scores between Time 4 and Time 5.

The results show that each ethnic group in the Comparison group started to close the gap and showed a greater rate of progress. Similarly, low decile children in the Comparison schools increased more or less in unison with high decile Comparison children.

Regarding "process" assessments at Time 5 (language components, phonological processing, non-word reading, & non-word spelling), the Trial group outperformed the Comparison group on these variables; all statistical tests for these variables were significant. Although there is some evidence that children in the Comparison group appeared to be closing the gap regarding reading performance, they have weaker foundational language process knowledge than the children in the Trial group, probably because they have not had the ongoing more intensive instruction that is part of the *SLF* approach. There were no significant differences related to Ethnicity. The results are illustrated in Figures 26 to 29.

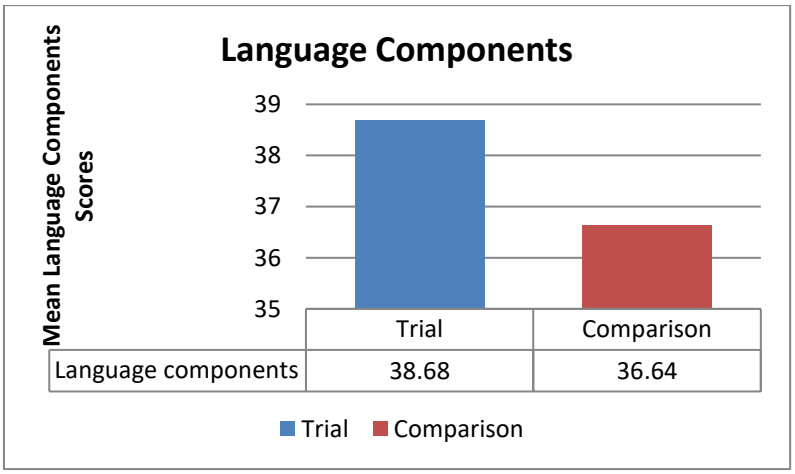


Figure 26. Trial and Comparison group means for Language Components.

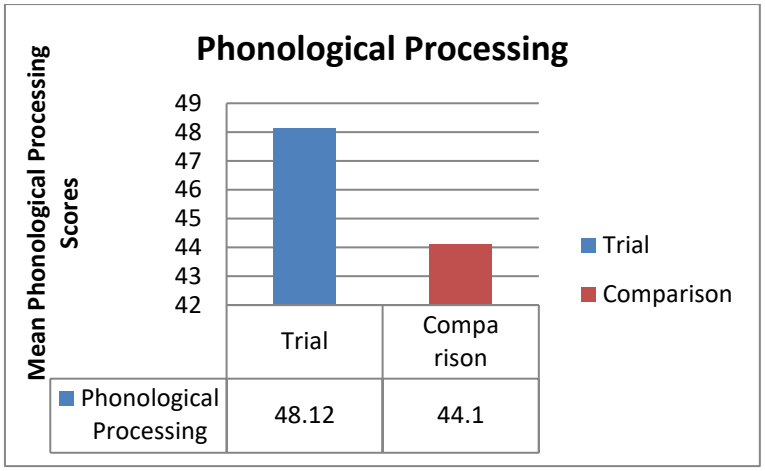


Figure 27. Trial and Comparison group means for Phonological Processing.

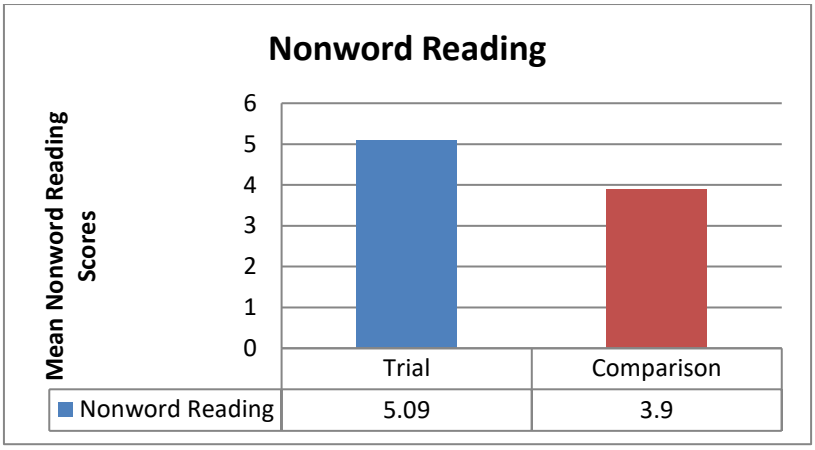


Figure 28. Trial and Comparison group means for Nonword Reading.

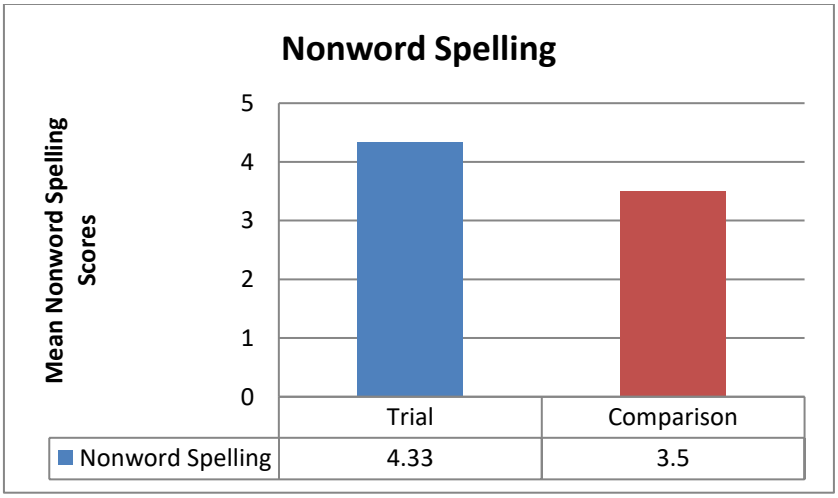


Figure 29. Trial and Comparison group means for Nonword Spelling.

Summary and Conclusion

At the outset of this report I listed the following research questions that we have endeavoured to answer as a result of the Shine Literacy Research Project, and I show the short answer to each question parenthetically in red font:

1. Did the *Sounds Like Fun* (SLF) approach result in better literacy learning outcomes for children in the Trial group compared to children in the Comparison group? (YES)
2. Did the SLF approach result in benefits in literacy learning outcomes for Maori and Pasifika children, and children from low decile schools? (YES)
3. Did the SLF approach result in benefits in literacy learning outcomes for ESOL children? (YES)
4. Which school entry variables best predicted literacy outcomes at the end of the 18 month project? (LETTER KNOWELDGE and PHONOLOGICAL KNOWLEDGE)

Group and Ethnic Background

The Trial group outperformed the Comparison group at Time 4 on assessments of word identification, reading comprehension, reading accuracy and spelling. This is an impressive outcome that corresponds with the Trial children having been exposed to the *SLF* approach for the first 18 months of their schooling. We can infer a causal relationship between *SLF* and superior literacy learning outcomes.

Equally impressive is the finding that Maori and Pasifika children in the Trial group performed at levels that were not significantly different than Pakeha Trial children. This result provides evidence that the typical gap in literacy performance between these groups has effectively been closed as a result of participating in the *SLF* teaching approach.

Asian Children

Asian children in general performed well in this study. At school entry, Asian children achieved mean scores on most assessments that were similar to those of Pakeha children. At the Time 4 assessments, Asian children scored higher on most variables than Pakeha, Maori and Pasifika children, though not all of the differences in means were statistically significant. There was no clear cut benefit for Asian children in the Trial group compared to those in the Comparison group. This stronger overall performance may have been the result of explicit instruction in alphabet and word identification prior to school entry, along with ongoing instruction or opportunities for practice at home as well as in school.

School Decile

At school entry, low decile children obtained lower scores on all assessments. Unfortunately, this has been a consistent finding reported from many studies. Low decile children in the Trial group performed at similar levels to their high decile counterparts in

that group, for assessments of word identification, reading comprehension, reading accuracy and spelling. These are good results.

ESOL Children

At school entry, ESOL children in both the Trial and Comparison groups performed at levels that were lower than non-ESOL children on all variables. The differences were particularly marked in terms of receptive vocabulary, phonological awareness, sound-to-letter awareness, and letter knowledge. At the end of the study, ESOL children in the Trial group performed significantly better than those in the Comparison group on the assessments of word identification, reading comprehension, reading accuracy and spelling. This is a very good result, especially considering that large numbers of ESOL children were from Pasifika backgrounds.

Relationship between Entry Variables and Reading/Spelling Outcome Variables

Consistent with other studies, school entry measures of alphabet letter knowledge and phonological awareness strongly predict later word identification and reading comprehension. Because of the consistency of such results, teachers can readily identify children at risk for struggling with literacy acquisition by simply administering Clay's letter identification test, along with a measure of phonological or phonemic awareness. Those with low scores are likely to struggle with literacy learning unless they receive systematic and explicit instruction in word-level decoding skills and the sounds in spoken language that are crucial for successful literacy learning.

***Sounds Like Fun* Intervention**

In conclusion, the data from this project indicate that the *Sounds Like Fun* approach is related to impressive gains made by the Trial group for key literacy outcome variables including reading comprehension, reading accuracy, word identification and spelling. In addition, Maori, Pasifika and ESOL children made important gains. Further, low decile children showed significant improvement on these key literacy outcome variables. Additional evidence in support of the effectiveness of the *SLF* approach is shown in the Comparison children starting to close the gap with the Trial children following the introduction of *SLF* in those schools.

The *Sounds Like Fun* approach is based on solid and contemporary research and has many features that are superior to the "standard" approach to literacy instruction adopted by most schools in New Zealand. Because the evidence and indications from this study point to improved literacy learning outcomes, schools would do well to consider replacing or supplementing their current approach to literacy instruction with the *Sounds Like Fun* approach.

Appendix

Technical Results of Statistical Analyses

Group by Ethnicity Analyses

I performed a Group (Trial vs. Comparison) by Ethnicity (Pakeha, Maori, Pasifika) multivariate analysis of covariance (MANCOVA) on the following Time 4 "outcome" variables: Neale Reading Comprehension and Accuracy; Burt word test; the WRAT spelling test; and listening comprehension. In addition, I performed a separate MANCOVA for the following Time 5 "process" variables: Non-word reading; Non-word spelling; SPAT (phonological awareness); and the total score for components of phonological awareness.

Results for the Time 4 outcome variables showed a significant multivariate effect for Group ($F(5,198) = 4.59$, $p = .001$), and a significant effect for Ethnicity ($F(10,398) = 4.10$, $p < .001$). The Group by Ethnicity interaction effect was not statistically significant ($F(10,398) = 1.25$, $p = .255$). An examination of the univariate analyses revealed significant Group effects for Reading Comprehension ($F(1, 202) = 15.30$, $p = .00$), Reading Accuracy ($F(1, 202) = 21.27$, $p < .001$), Burt word identification ($F(1, 202) = 12.01$, $p = .001$), and WRAT spelling ($F(1, 202) = 11.61$, $p = .001$), with the Trial group outperforming the Comparison group once the initial differences in Letter Sound knowledge were taken into account. For Listening Comprehension, the effect was not statistically significant ($F(1, 202) = 2.41$, $p = .123$), although the Trial group was "edging" higher than the Comparison group.

A significant main effect for Ethnicity was also observed for Reading comprehension, ($F(2, 202) = 4.93$, $p = .008$) and for Listening comprehension ($F(2, 202) = 15.55$, $p = .000$). Across the Trial and Comparison groups combined, Pakeha children outperformed Maori and Pasifika children.

One statistically significant Group by Ethnicity interaction effect was observed for scores on the WRAT spelling test, $F(2,202) = 3.13$, $p = .05$. This effect was due to the Pasifika children in the Trial group outperforming Pasifika children in the Comparison group.

The multivariate analysis of covariance performed on the Time 5 process variables resulted in a significant main effect for Group, $F(4,192) = 3.60$, $p < .01$. The Ethnicity and Group by Ethnicity effects were not statistically significant.

An examination of the univariate ANCOVAs revealed statistically significant differences between the Trial and Comparison groups on all four process variables: SPAT $F(1,195) = 11.82$, $p < .01$; Phonological components $F(1,195) = 8.16$, $p < .01$; Non-word reading $F(1,195) = 13.58$, $p < .01$; Non-word spelling $F(1,195) = 6.54$, $p = .01$. In each case, the Trial group obtained significantly higher scores than the Comparison group.

Decile Band Effects

I performed separate Group (Trial vs. Comparison) by Decile Band (Low vs High) multivariate analyses of covariance (MANCOVA) on the Time 4 reading outcome variables. Because I have reported Group results already, my focus here is on Decile band results.

There was a statistically significant multivariate effect for Decile Band ($F(5,200) = 5.81$, $p < .001$), but the Decile Band by Group interaction was not significant ($F(5,200) = 1.23$, $p = .298$. Children in high decile schools obtained higher scores than those in low decile schools. An examination of the univariate effects indicated statistically significant decile differences for word identification ($F(1,204)= 4.71$, $p = .02$), reading comprehension ($F(1,204) = 8.00$, $p < .00$), reading accuracy ($F(1,204) = 4.18$, $p = .04$), and listening comprehension ($F(1,204) = 26.16$, $p < .00$). With the exception of listening comprehension, the decile rank differences were largely due to the lower scores for the Comparison group low decile children, although only one variable showed a statistically significant interaction effect. This effect was for word identification, where the low decile Comparison children obtained significantly lower scores than both Trial decile groupings and the high decile Comparison group, $F(1,204) = 5.66$, $p = .02$. There was a marginally significant interaction effect for reading accuracy, due mainly to the low decile comparison children obtaining lower scores than the Trial children in both low and high decile groups, $F(1,204) = 3.05$, $p = .08$.

ESOL Students

I examined Time 4 scores for ESOL students in relation to group membership; Trial versus Comparison. These analyses included all students; Asian students were not excluded from the analyses.

In the overall multivariate analysis of covariance (controlling for Letter Sound at Time 1), there was no significant main effect for ESOL students ($F(5,200) = 1.54$, $p = .18$), and no statistically significant interaction effect for ESOL by Group ($F(5,200) = 1.14$, $p = .34$).

Interestingly, there were statistically significant univariate interaction effects for word identification ($F(1,204) = 5.00$, $p = .03$), reading comprehension ($F(1,204) = 4.07$, $p = .05$), reading accuracy ($F(1,204) = 5.31$, $p = .02$), and spelling ($F(1,204) = 3.06$, $p = .07$). In each case, the Trial ESOL children performed significantly better than the Comparison ESOL children.

Table A. Summary Entry Level (Time 1) Assessment Data

	Trial (n=138)		Comparison (n=120)	
	Mean	SD	Mean	SD
Receptive vocabulary	99.75	12.98	98.70	13.38
Word identification	0.92	2.22	1.53	2.73
Letter sound knowledge upper case	7.50	8.30	11.54	8.99
Letter sound knowledge lower case	7.05	8.54	10.74	9.67
Letter name knowledge upper case	13.44	8.94	16.26	8.49
Letter name knowledge lower case	13.37	9.01	15.29	9.31
Phonological awareness	11.23	7.66	12.83	8.44
Sound-to-letter knowledge	6.29	10.72	9.21	12.12
Invented spelling	3.54	9.42	7.34	13.60

	Trial								Comparison							
	Pakeha = 62		Maori = 28		Pasifika = 29		Asian = 10		Pakeha = 51		Maori = 22		Pasifika = 17		Asian = 17	
Variables	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Burt word	36.98	11.69	39.20	11.88	36.78	11.96	40.63	11.90	33.66	12.42	33.96	11.71	26.44	11.70	41.44	11.88
Comprehension	11.24	4.60	10.95	4.68	9.26	4.71	11.42	4.60	9.43	4.89	7.64	4.62	5.98	4.61	9.87	4.59
Accuracy	28.19	11.68	30.00	11.87	28.74	11.96	32.40	11.95	22.91	12.42	22.23	11.71	16.66	11.70	30.20	11.93
Spelling	5.31	2.13	6.27	2.16	6.35	2.18	6.62	2.28	5.10	2.26	5.20	2.13	4.25	2.13	6.53	2.28
Listening comprehension	9.16	3.86	6.34	3.92	6.08	3.95	7.90	3.91	8.46	4.10	6.52	3.86	3.81	3.86	7.04	3.90
Language Components	39.09	4.53	38.29	4.57	38.66	4.62	39.60	4.53	36.63	4.77	38.19	4.55	35.09	4.57	37.91	4.48
Non-word reading	4.88	2.06	4.84	2.08	5.56	2.10	6.08	2.05	3.67	2.17	4.50	2.07	3.51	2.08	5.63	2.02
Non-word spelling	4.53	2.05	4.02	2.07	4.44	2.09	4.87	2.09	3.97	2.16	3.91	2.06	2.63	2.07	3.54	2.07

Table B. Summary Assessment Data at Time 4 for Group and Ethnicity.

Declaration of Interest

I declare that I have no commercial interest in the Sounds Like Fun publications or in any other products related to this work. My interest is solely academic, and based on the fact that the author of Sounds Like Fun, Joy Allcock, is a Masters graduate from the former College of Education at Massey University. Her work is an example of theory and research acquired in part from her post-graduate studies at Massey, being translated into practice. Such activity warrants research attention.

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