

Norms for New Zealand students in two age groups for the Observation Survey

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Introduction

The New Zealand Council for Educational Research (NZCER) was contracted by The Marie Clay Literacy Trust (MCLT) to produce New Zealand norms for five tasks in *An Observation Survey of Early Literacy Achievement* (Concepts About Print; Letter Identification; Word Reading, Writing Vocabulary, and Hearing and Recording Sounds in Words Augmented version, 2018), as well as the Burt Word Reading Test. It is common practice to use this assessment alongside the Observation Survey tasks in schools.

This report focuses on the achievement information for two specific age groups of students:

1. Students that are in their first three weeks of schooling.
2. Students within a month either side of their sixth birthday at the time of assessment.

Similar achievement information for students between five and seven years old is described in *Renorming five tasks of the Observation Survey for New Zealand*. The data informing these two reports was collected at the same time, but the current report can be read independently of *Renorming five tasks of the Observation Survey for New Zealand*.

Creating the achievement information described in this report will enhance data at the system level regarding the initial responses students make in reading and writing in the weeks following school entry; and after about one year of schooling around age six.

Methodology

Sampling and participation

There were two distinct target populations for this study:

1. Students in their first three weeks of schooling
2. Students within a month either side of their sixth birthday

The following groups were excluded:

1. Students receiving literacy instruction exclusively in Māori medium at the time of selection.
2. Students who are in Special Education according to the Special Education Ongoing Resourcing Scheme.
3. Students who have 'Minimal English' as determined by The Application for ESOL funding rating for Listening and/or Speaking. These students would be unable to understand the simple instructions of the Observation Survey tasks.

Because of the practicalities of sampling and the data collection process, the precise definition of a student being in their first three weeks of schooling is that data was collected from them in their first four weeks at school and that they were aged less than 5:4:0 at this time.

For similar reasons, the precise definition of a student being within a month either side of their sixth birthday is that their birthday was between 1 May 2012 and 30 June 2012.

Sampling was carried out in two stages. First, schools were sampled. Then, once schools had agreed to participate in the study, students within each school were sampled randomly.

The sampling frame

The sampling frame was all NZ schools with more than 20 students in each of Years 1 to 3. Schools that exclusively offer Māori medium education were excluded from the sample frame as were special schools and the correspondence school.

Sampling schools

In New Zealand, a school's *decile* is a number between 1 and 10 expressing the socio-economic status of the school's student community. Decile 1 schools are the 10% of schools with the highest proportion of students from low socio-economic backgrounds, whereas decile 10 schools are the 10% of schools with the lowest proportion of students from low socio-economic backgrounds.

High decile schools tend to have larger rolls. To account for this, the sample of schools was stratified by school quintile. Quintile 1 schools are those with decile 1 or 2, quintile 2 schools are those with decile 3 or 4, and so on. Schools were sampled using a ‘probability-proportional to size’ sampling method. In particular, the probability of inclusion of a school into the sample was proportional to the number of students at the school in Years 1 to 3 according to Ministry of Education administrative data.

A total of 160 schools were included in the school sample. Associated with each school in the sample were two replacement schools with similar characteristics (should the school and its first replacement decline to participate).

Sampling students

Each school provided a list of all students in the target populations. Selections were made from this list based on the birthdays of the selected students.

First, two students in their first three weeks of schooling at the time of sampling were randomly selected for participation. If there was only one student in this age group at the school, then that student was selected. Following this, two students within a month either side of their sixth birthday were randomly selected for participation. Again, if there was only one student in this age group at the school, then that student was selected.

Selected students were replaced if:

- they were absent on the day of assessment
- they declined to participate on the day of assessment
- they did not wish to continue the assessment after starting

Students in their first three weeks of schooling were replaced with randomly selected students in the same age group as required. Similarly, students within a month of their sixth birthday were replaced with randomly selected students in the same age group.

The achieved sample

This section describes the achieved sample. Data provided by this sample of students was used to estimate the stanines and other statistics in this report. The achieved sample treated as two independent subsamples (one of students in their first three weeks of schooling, and the other of students within a month either side of their sixth birthday).

The achieved sample was made up of 520 students from a total of 160 schools. A total of 199 students were in their first three weeks of schooling and 321 students were within a month either side of their sixth birthday. Sampled schools were broadly representative of the sample frame according to school decile (see Table 1). The achieved sample was approximately evenly split between boys and girls in each of the age groups of interest (see Table 2). It was broadly representative of the sample frame according to ethnic group (see Table 3 and Table 4) and was likewise broadly representative of the sample frame according to quintile for each age group of interest (see Table 5 and Table 6).

Table 1 **Schools in the achieved sample by school decile**

| Decile | Schools in sample (n) | Schools in sample (%) | Schools in frame (%) |
|--------|--------------------------|--------------------------|-------------------------|
| 1 | 14 | 8.8 | 9.8 |
| 2 | 16 | 10.0 | 8.5 |
| 3 | 15 | 9.4 | 9.4 |
| 4 | 15 | 9.4 | 9.1 |
| 5 | 15 | 9.4 | 9.5 |
| 6 | 13 | 8.1 | 8.2 |
| 7 | 16 | 10.0 | 9.9 |
| 8 | 16 | 10.0 | 10.2 |
| 9 | 18 | 11.2 | 11.1 |
| 10 | 22 | 13.8 | 14.1 |

Table 2 **Students in the achieved sample by student gender and age group**

| Gender | Students in their first three weeks of schooling | Students within a month of their sixth birthday |
|--------------|---|--|
| Boy | 105 | 170 |
| Girl | 94 | 151 |
| Total | 199 | 321 |

Table 3 **Students in their first three weeks of schooling in the achieved sample by student ethnic group and gender**

| Ethnic group | Boys (n) | Girls (n) | Total |
|--------------|----------|-----------|------------|
| Māori | 14 | 23 | 37 |
| Pākehā | 57 | 52 | 109 |
| Asian | 17 | 14 | 31 |
| Pasifika | 18 | 10 | 28 |
| Other | 11 | 10 | 21 |

Table 4 **Students within a month either side of their sixth birthday in the achieved sample by student ethnic group and gender**

| Ethnic group | Boys (n) | Girls (n) | Total |
|---------------------|-----------------|------------------|--------------|
| Māori | 52 | 25 | 77 |
| Pākehā | 90 | 83 | 173 |
| Asian | 26 | 20 | 46 |
| Pasifika | 12 | 21 | 33 |
| Other | 16 | 13 | 29 |

Students could identify with more than one of the ethnic groups summarised in Table 3 and Table 4. The columns in these tables will therefore not sum to give the numbers of boys and girls in each population. The results are broadly representative of New Zealand’s population.

Table 5 and Table 6 show that overall, the sample slightly over-represented students in Quintile 2 schools and slightly under-represented students in Quintile 5 schools. In these tables, ‘Sample frame Year 1’ describes the distribution of Year 1 students in the sampling frame according to quintile. Similarly for ‘Sample frame Year 2’. The percentages in these tables may not add to 100% due to rounding error.

Table 5 **Students in the achieved sample in their first three weeks of schooling by school quintile**

| Quintile | Sample (n) | Sample (%) | Sample frame Year 1 (%) | Sample frame Year 2 (%) |
|-----------------|-------------------|-------------------|--------------------------------|--------------------------------|
| 1 | 37 | 18.6 | 17.5 | 17.2 |
| 2 | 47 | 23.6 | 16.8 | 17.0 |
| 3 | 31 | 15.6 | 16.3 | 16.2 |
| 4 | 39 | 19.6 | 21.1 | 21.2 |
| 5 | 45 | 22.6 | 28.2 | 28.5 |

Table 6 **Students in the achieved sample within a month either side of their sixth birthday by school quintile**

| Quintile | Sample (n) | Sample (%) | Sample frame Year 1 (%) | Sample frame Year 2 (%) |
|-----------------|-------------------|-------------------|--------------------------------|--------------------------------|
| 1 | 56 | 17.4 | 17.5 | 17.2 |
| 2 | 60 | 18.7 | 16.8 | 17.0 |
| 3 | 60 | 18.7 | 16.3 | 16.2 |
| 4 | 65 | 20.2 | 21.1 | 21.2 |
| 5 | 80 | 24.9 | 28.2 | 28.5 |

Administration of the Observation Survey and data quality assurance

The data for this research was collected by experienced literacy educators with high levels of expertise in administering the assessments used. The research assistants administered and scored the observation tasks following the directions in *An Observation of Early Literacy Achievement 3rd edition* (2013), along with the instructions for the revised Hearing and Recording the Sounds in Words task, and for the Burt Word Reading test. They also recorded details such as student gender, ethnic group, and age together with the assessment date. To secure standardization of the procedures each research assistant completed a carefully designed quality assurance retraining. This involved studying the reference material and two on-line video demonstrations of administering the Survey, rehearsing with students in schools, viewing colleagues and discussing refinements to delivery.

Records of reading continuous text were administered to a sub-group of students within a month either side of their sixth birthday with the purpose of identifying the Instructional text level (that is the highest text able to be read with 90% or above accuracy) for each student (Clay, 2013). The Ready to Read series of levelled texts (Ministry of Education) were used for this task. This instructional reading series is provided free of charge to all schools for use in the first three years of schooling. Detailed written instructions were provided to ensure research assistants followed a consistent procedure for identifying the Instructional text level using these books.

The Ready to Read texts are levelled in a gradient of difficulty determined by a comprehensive set of criteria in combination with school-based trialing. Each level is identified by a colour code. In this study a numerical system was used alongside the colour levels. Level One, identified as No score (beginning level) is the first step in the numerical gradient. Children identified at Level One were unable to read a New Magenta text at an instructional level (90% or above accuracy). Level 2 signifies that the highest text level children were able to read at 90% or above accuracy was New Magenta. Similarly, Level 3 corresponds with Red 1 in the colour code. The levels continue as shown.

Table 7 **Colour and numerical gradient of difficulty of Ready to Read books for Renorming Study**

| Colour level | Numerical level |
|----------------------------|------------------------|
| No score (Beginning level) | 1 |
| New Magenta | 2 |
| Red 1 | 3 |
| Red 2 | 4 |
| Red 3 | 5 |
| Yellow 1 | 6 |
| Yellow 2 | 7 |
| Yellow 3 | 8 |
| Blue 1 | 9 |
| Blue 2 | 10 |
| Blue 3 | 11 |
| Green 1 | 12 |
| Green 2 | 13 |
| Green 3 | 14 |
| Orange 1 | 15 |
| Orange 2 | 16 |
| Turquoise 1 | 17 |
| Turquoise 2 | 18 |
| Purple 1 | 19 |
| Purple 2 | 20 |
| Gold 1 | 21 |
| Gold 2 | 22 |
| School Journals | 23+ |

Recorded data was reviewed centrally, and Research Assistants were asked to resubmit any questionable data where, for example, student task scores were outside the range of possible scores, or date information was improbable given the parameters of the study.

Achievement in five tasks of the Observation Survey and the Burt Word Reading Test for students in their first three weeks of schooling

This section provides, for students in their first three weeks of schooling, stanines and summary statistics for five of the Observation Survey tasks and for the Burt Word Reading Test. It also presents Observation Survey task score correlations and achievement distributions for each task.

Note that there is no maximum score for the Writing Vocabulary task, but 24 is the highest score recorded in this data collection. This value is used to describe the score range for Writing Vocabulary in the relevant table below.

Stanines for five Observation Survey tasks for students in their first three weeks of schooling

Table 8 **Letter Identification: stanines for students in their first three weeks of schooling**

| Score | 0 | 1 - 2 | 3 - 6 | 7 - 12 | 13 - 26 | 27 - 42 | 43 - 50 | 51 - 53 | 54 |
|---------------|---|-------|-------|--------|---------|---------|---------|---------|----|
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 199; Range: 0 – 54; Median = 17; Mean = 23.0; SE = 1.28; SD = 18.2)

Table 9 **Concepts About Print: stanines for students in their first three weeks of schooling**

| Score | 0 - 2 | 3 - 4 | 5 - 6 | 7 - 9 | 10 - 11 | 12 - 12 | 13 - 14 | 15 - 16 | 17 - 24 |
|---------------|-------|-------|-------|-------|---------|---------|---------|---------|---------|
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 199; Range: 0 – 24; Median = 10; Mean = 9.4; SE = 0.29; SD = 4.1)

Table 10 **Clay Word Reading: stanines for students in their first three weeks of schooling**

| Score | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 3 - 6 | 7 - 15 |
|---------------|---|---|---|---|---|---|---|-------|--------|
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 199; Range: 0 – 15; Median = 0; Mean = 1.1; SE = 0.17; SD = 2.4)

Table 11 **Writing Vocabulary: stanines for students in their first three weeks of schooling**

| | | | | | | | | | |
|----------------------|---|---|---|---|---|-------|-------|--------|-----|
| Test Score | 0 | 0 | 0 | 1 | 2 | 3 - 4 | 5 - 6 | 7 - 12 | 13+ |
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 199; Range: 0 – 24; Median = 2; Mean = 2.8; SE = 0.27; SD = 3.9)

Table 12 **Hearing and Recording Sounds in Words (Revised): stanines for students in their first three weeks of schooling**

| | | | | | | | | | |
|----------------------|---|---|---|---|-------|-------|--------|---------|---------|
| Test Score | 0 | 0 | 0 | 1 | 2 - 4 | 5 - 8 | 9 - 17 | 18 - 24 | 25 - 50 |
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 199; Range: 0 – 50; Median = 2; Mean = 5.3; SE = 0.55; SD = 7.7)

Table 13 **Burt Score: stanines for students in their first three weeks of schooling**

| | | | | | | | | | |
|----------------------|---|---|---|---|---|---|---|-------|----|
| Test Score | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 4 - 8 | 9+ |
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 199; Range: 0 – 97; Median = 0; Mean = 1.4; SE = 0.28; SD = 3.9)

Task correlations and achievement distributions for five Observation Survey tasks and Burt for students in their first three weeks of schooling

Table 14 Correlations between five Observation Survey task scores for students in their first three weeks of schooling

| | LI | CAP | CWR | WV | HRSW | BURT |
|------|----|------|------|------|------|------|
| LI | 1 | 0.65 | 0.54 | 0.67 | 0.71 | 0.45 |
| CAP | | 1 | 0.44 | 0.61 | 0.60 | 0.41 |
| CWR | | | 1 | 0.74 | 0.58 | 0.82 |
| WV | | | | 1 | 0.79 | 0.73 |
| HRSW | | | | | 1 | 0.60 |
| BURT | | | | | | 1 |

Figure 1 Letter Identification: achievement distribution for students in their first three weeks of schooling (N=199)

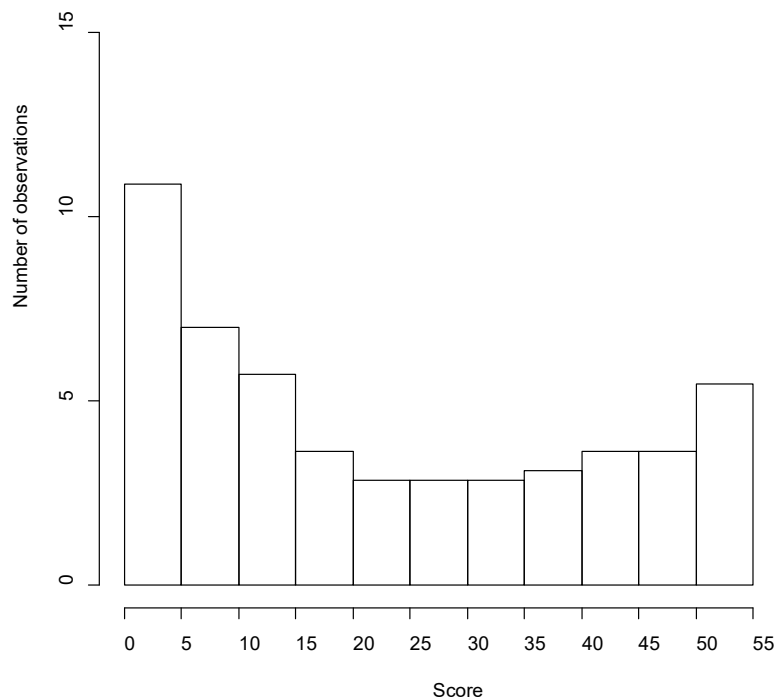


Figure 2 **Concepts About Print: achievement distribution for students in their first three weeks of schooling (N=199)**

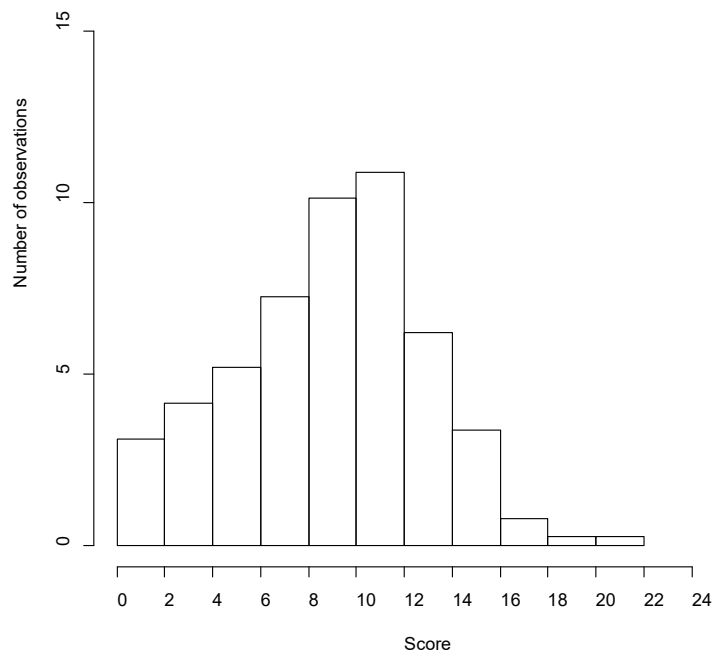


Figure 3 **Clay Word Reading: achievement distribution for students in their first three weeks of schooling (N=199)**

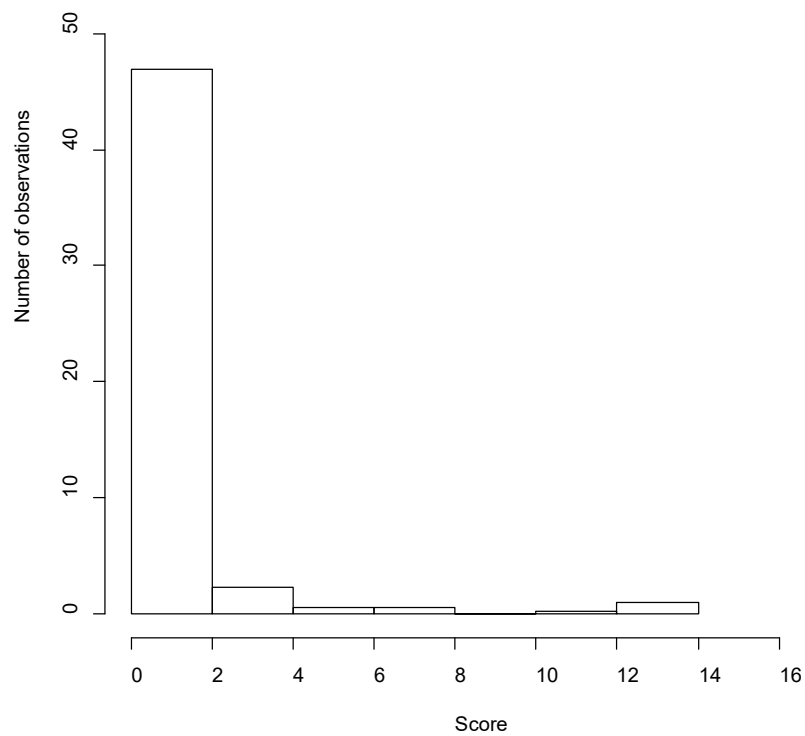


Figure 4 **Writing Vocabulary: achievement distribution for students in their first three weeks of schooling (N=199)**

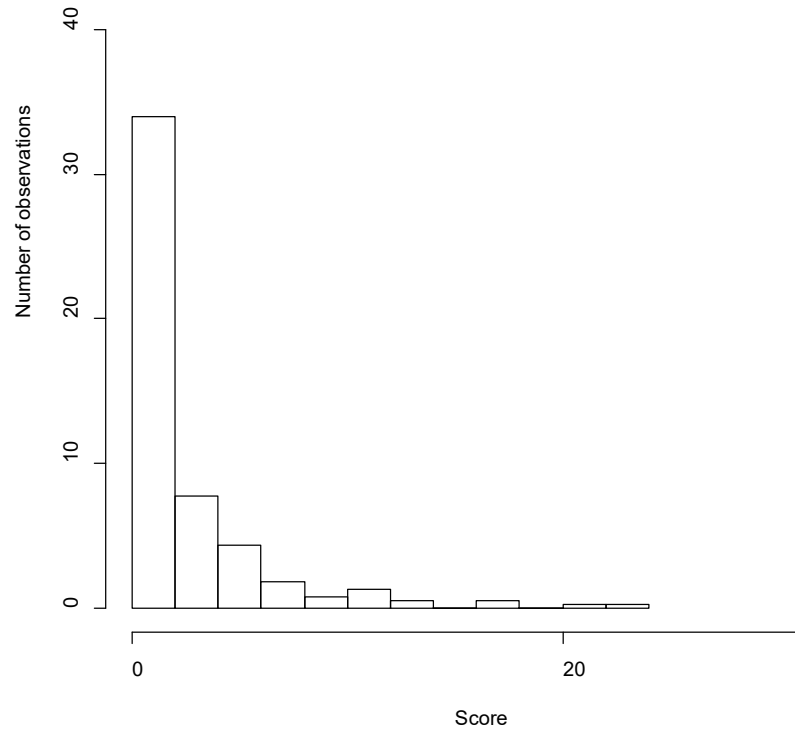
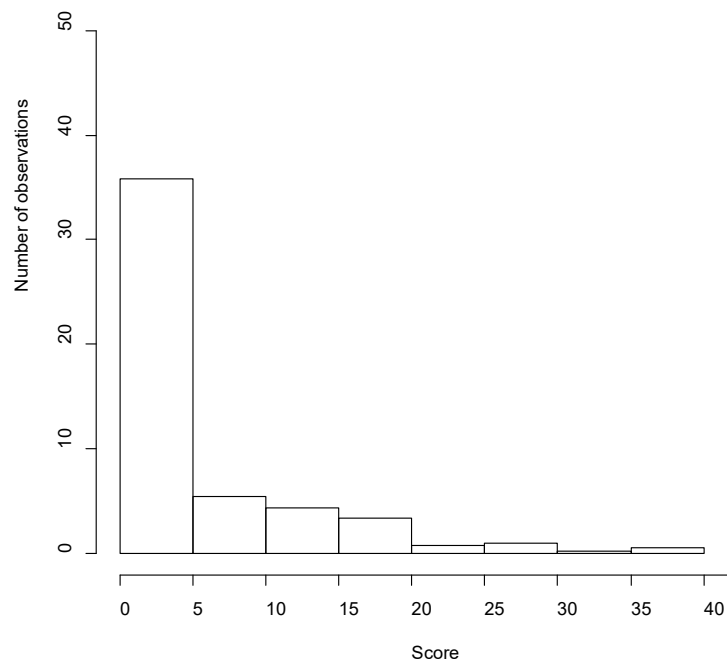


Figure 5 **Hearing and Recording Sounds in Words (Revised): achievement distribution for students in their first three weeks of schooling (N=199)**



Achievement in all six of the Observation Survey tasks and the Burt Reading Test for students within a month either side of their sixth birthday

This section provides, for students within a month either side of their sixth birthday, stanines and summary statistics for all six of the Observation Survey tasks (i.e. including the Running Records task) and for the Burt Word Reading test. It also presents Observation Survey task score correlations and achievement distributions for all six of the Observation Survey tasks. Note that there is no maximum score for the Writing Vocabulary task, but 96 is the highest score recorded by students within a month either side of their sixth birthday in this data collection. This value is used to describe the score range for Writing Vocabulary in the relevant table below.

Finally, this section presents the distribution of achievement on Running Records at instructional text reading level (highest level read with 90% or above accuracy) using the MOE Ready to Read series.

Stanines for Observation Survey tasks for students within a month either side of their sixth birthday

Table 15 **Letter Identification: stanines for students within a month either side of their sixth birthday**

| Score | 0 - 22 | 23 - 37 | 38 - 47 | 48 - 51 | 52 - 53 | 54 | 54 | 54 | 54 |
|---------------|--------|---------|---------|---------|---------|----|----|----|----|
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 321; Range: 0 – 54; Median = 52; Mean = 48.0; SE = 0.53; SD = 9.5)

Table 16 **Concepts About Print: stanines for students within a month either side of their sixth birthday**

| Score | 0 - 10 | 11 - 12 | 13 - 14 | 15 - 16 | 17 - 18 | 19 | 20 | 21 - 22 | 23 - 24 |
|---------------|--------|---------|---------|---------|---------|----|----|---------|---------|
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 321; Range: 0 – 24; Median = 16; Mean = 16.4; SE = 0.20; SD = 3.6)

Table 17 **Clay Word Reading: stanines for students within a month either side of their sixth birthday**

| Score | 0 - 1 | 2 - 3 | 4 - 6 | 7 - 9 | 10 - 12 | 13 - 14 | 15 | 15 | 15 |
|---------------|-------|-------|-------|-------|---------|---------|----|----|----|
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 321; Range: 0 – 15; Median = 11; Mean = 9.9; SE = 0.25; SD = 4.5)

Table 18 **Writing Vocabulary: stanines for students within a month either side of their sixth birthday**

| Score | 0 - 3 | 4 - 6 | 7 - 13 | 14 - 24 | 25 - 32 | 33 - 43 | 44 - 51 | 52 - 64 | 65+ |
|---------------|-------|-------|--------|---------|---------|---------|---------|---------|-----|
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 321; Range: 0 – 96; Median = 27; Mean = 29.1; SE = 1.02; SD = 18.2)

Table 19 **Hearing and Recording Sounds in Words (Revised): stanines for students within a month either side of their sixth birthday**

| Score | 0 - 4 | 5 - 13 | 14 - 24 | 25 - 31 | 32 - 38 | 39 - 42 | 43 - 46 | 47 - 48 | 49 - 50 |
|---------------|-------|--------|---------|---------|---------|---------|---------|---------|---------|
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 321; Range: 0 – 50; Median = 35; Mean = 32.2; SE = 0.69; SD = 12.4)

Table 20 **Burt Score: stanines for students within a month either side of their sixth birthday**

| Score | 0 - 1 | 2 - 4 | 5 - 8 | 9 - 13 | 14 - 20 | 21 - 26 | 27 - 34 | 35 - 44 | 45+ |
|---------------|-------|-------|-------|--------|---------|---------|---------|---------|-----|
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 321; Range: 0 – 97; Median = 17; Mean = 18.3; SE = 0.68; SD = 12.2)

Table 21 **Running Records: stanines for students within a month either side of their sixth birthday**

| Score | 1 | 2 | 3 - 4 | 5 - 6 | 7 - 10 | 11 - 12 | 13 - 17 | 18 - 20 | 21 - 23 |
|---------------|---|---|-------|-------|--------|---------|---------|---------|---------|
| Stanine Group | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

(N = 306; Range: 1 – 23; Median = 8; Mean = 8.57; SE = 0.32; SD = 5.7)

The scores in Table 21 represent the ranks of the reading level colours shown in Figure 11. For example, 1 represents ‘No score’, 2 represents ‘New Magenta’, 3 represents ‘Red 1’ and so on, as in Table 7. Note that 306 of the 321 students within a month either side of their sixth birthday were administered the Running Records task.

Task correlations and achievement distributions for six Observation Survey tasks and Burt for students within a month either side of their sixth birthday

Table 22 **Correlations between six Observation Survey task scores and the Burt Word Reading Test for students within a month of their sixth birthday**

| | LI | CAP | CWR | WV | HRSW | RR | BURT |
|-------------|-----------|------------|------------|-----------|-------------|-----------|-------------|
| LI | 1 | 0.64 | 0.71 | 0.60 | 0.74 | 0.55 | 0.59 |
| CAP | | 1 | 0.68 | 0.65 | 0.71 | 0.68 | 0.69 |
| CWR | | | 1 | 0.77 | 0.76 | 0.79 | 0.82 |
| WV | | | | 1 | 0.76 | 0.80 | 0.82 |
| HRSW | | | | | 1 | 0.71 | 0.74 |
| RR | | | | | | 1 | 0.88 |
| BURT | | | | | | | 1 |

Figure 6 **Letter Identification: achievement distribution for students within a month either side of their sixth birthday (N= 321)**

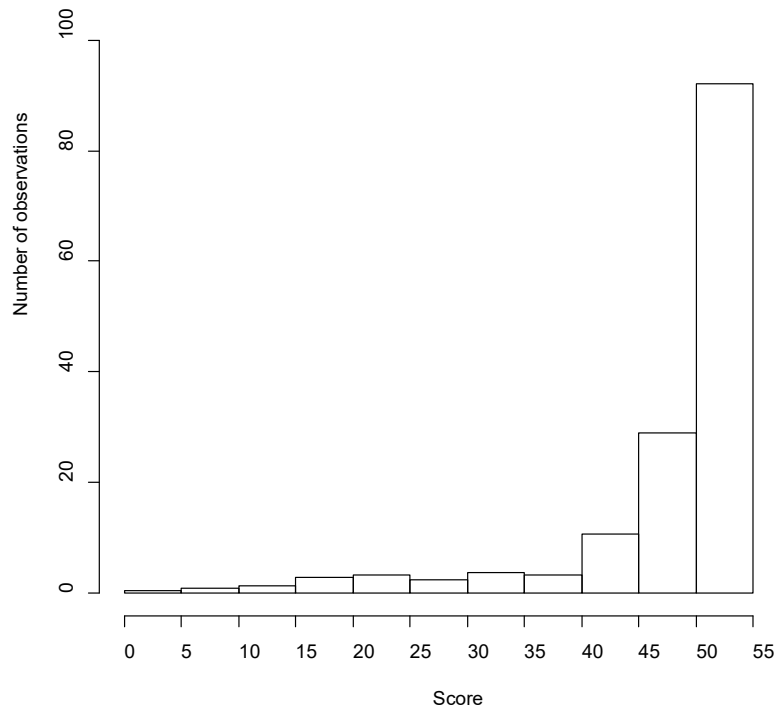


Figure 7 **Concepts About Print: achievement distribution for students within a month either side of their sixth birthday (N= 321)**

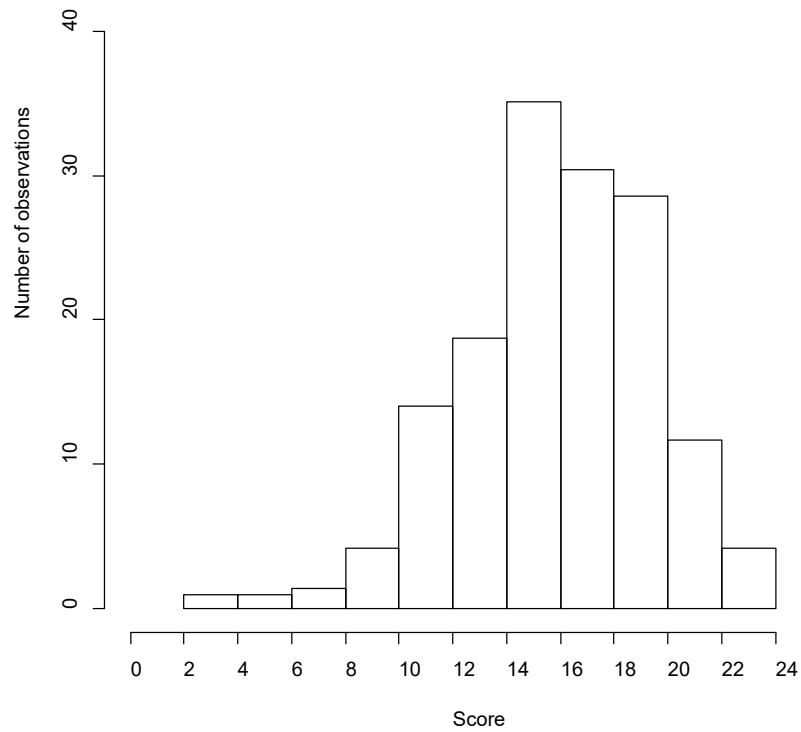


Figure 8 **Clay Word Reading: achievement distribution for students within a month either side of their sixth birthday (N= 321)**

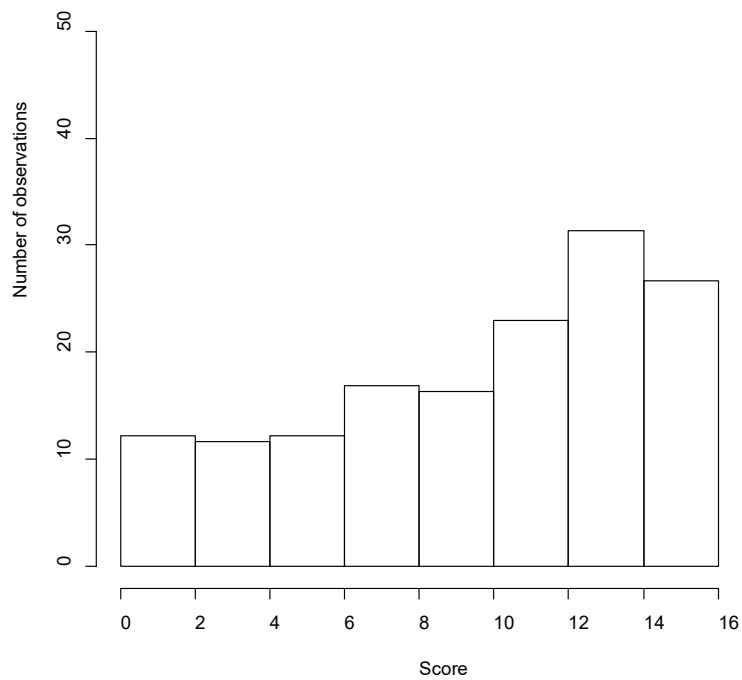


Figure 9 **Writing Vocabulary: achievement distribution for students within a month either side of their sixth birthday (N= 321)**

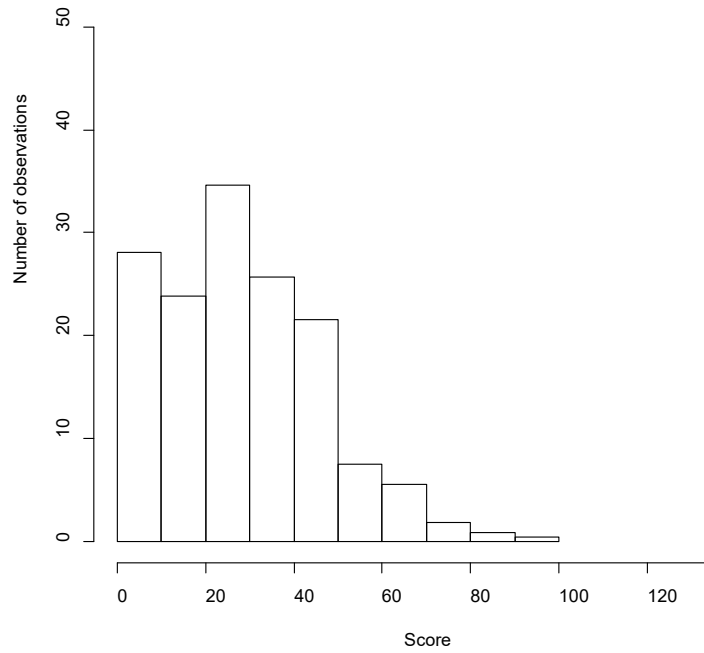
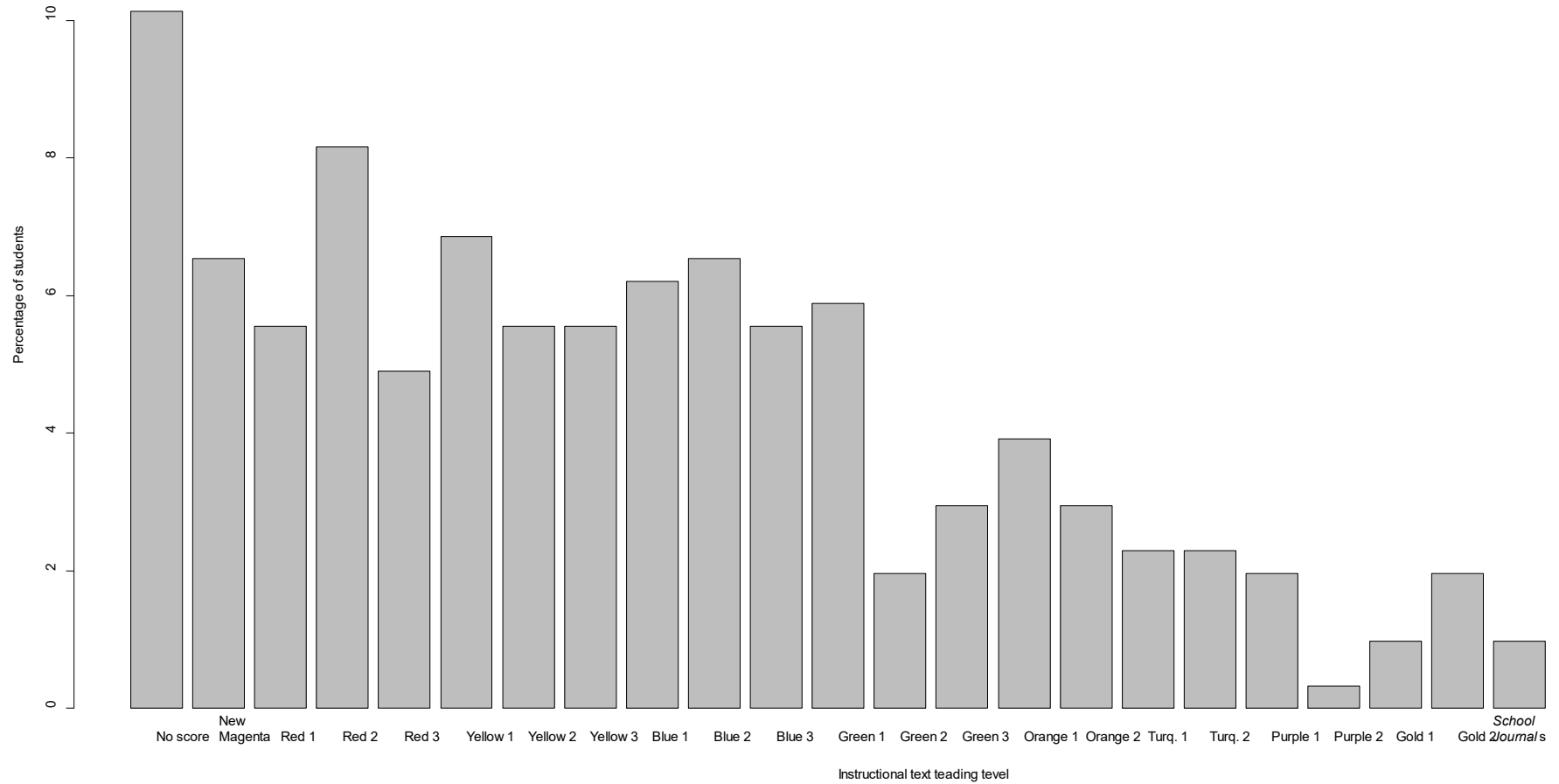


Figure 10 **Hearing and Recording Sounds in Words (Revised): achievement distribution for students within a month either side of their sixth birthday (N= 321)**

Figure 11 Achievement distribution for students within a month either side of their sixth birthday on Running Records at instructional text reading level (highest level read with 90% or above accuracy) using the MOE Ready to Read series (N= 306)



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