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Jerry L. Johns
Northern Illinois University

Richard T. Vacca
Kent State University

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AN INQUIRY INTO SUMMER LOSS IN READING: GRADES 1-7

Jerry L. Johns
NORTHERN ILLINOIS UNIVERSITY

Richard T. Vacca
KENT STATE UNIVERSITY

How does a three month summer vacation affect student reading ability? This study focused on whether students in grades one through seven experienced a gain or loss over the summer months in vocabulary and/or comprehension as measured by a standardized reading survey test.

Perspective from Related Research

Over the years, several investigators have studied students' reading achievement levels before and after summer vacations, but their results are not in agreement. Morrison (1924), Mousley (1973), and Rude and Niquette (unpublished) found that reading achievement levels were maintained by first, second, and third graders over the summer months. Morrison (1924) measured reading achievement levels of 81 first, second, and third graders in the spring and fall using two standardized reading tests. Comparing pre-summer scores to post-summer scores let Morrison to conclude that these children experienced no significant loss in comprehension over the summer months.

Mousley's study (1973) was limited to third graders (N=64). These children were tested using alternate forms of the Stanford Reading Achievement Test. A t-test was used to determine if there was a statistically significant difference in pre-summer and post-summer reading scores for these students; the analysis revealed no significant difference in reading vocabulary, reading comprehension, or total reading ability. Mousley concluded that the students in his study did not suffer a loss in reading ability despite the lapse of 85 vacation days.

Rude and Niquette used alternate forms of the Gates-MacGinitie Reading Test before and after summer recess to determine overall reading ability of 78 first, second, and third grade students. They concluded that overall reading ability was maintained uniformly over the summer recess. The one exception was a significant ($p .01$) gain in reading comprehension at the first grade level.

Irmina (1928) measured the pre-summer and post-summer academic achievement of 1184 students in grades one through seven. She found that first graders showed a slight loss in reading achievement, while students in grades two through seven showed slight gains; however, none of the changes in reading achievement was significantly significant. Irmina concluded that summer vacation does not cause any appreciable change in the overall reading ability of a class.

Humphrey (1967) reported the results of a study designed in part to determine the reading loss or gain of 3957 first grade children over the summer months. The children were tested before and after summer vacation with alternate forms of the California Reading Test. Humphrey found that except for girl's comprehension score, first graders experienced significant losses in all areas of reading achievement during the summer. Elder (1927), however, concluded that ability in silent reading changes whether students are in school or not; the 203 third, fourth, fifth, and sixth graders he tested showed an average gain of .45 years over the summer.

Several investigators have examined the influence of such factors as intelligence, sex, and environment on the retention of students' reading skills over the summer months. Rude & Niquette concluded that sex and intelligence did not influence the retention of reading skills. Ross (1974), however, found a wide range of retention rates among 119 sixth grade students in low, middle, and upper reading groups. Students in the middle and upper reading groups gained four to nine months in reading over the summer; students in the low reading group lost ten months. Ross concluded that the summer regression phenomenon exists only among the low achievers in reading.

Turner (1972) found a significant ($p = .01$) connection between neighborhood/home background and the retention of reading ability for 226 eight-, nine-, and ten-year-old children. In addition, Turner concluded that younger children and/or children with low mental ability were most likely to be adversely affected by environmental factors.

The results of previous studies investigating students' retention of reading ability over the summer months are inconclusive. The present study was designed to explore this problem further.

Sample

Since most previous studies have been limited to specific grades, an overall picture of possible changes in reading ability during the summer months has been difficult to ascertain. The one study that involved grades one through seven was conducted over fifty years ago and involved an average of 169 students at each grade level.

The present study involved a total of 640 students in grades one through seven. For the entire sample, the number of boys and girls was approximately the same, although there were some differences in several grades (especially in grade four where there were 26 boys and 46 girls). The breakdown of the sample by grade and sex is presented in Table 1.

The students were all from a single school district that contained three elementary schools, a junior high school, and a high school. The total population from two elementary schools and the junior high was used in this study, provided pre- and post-summer test results were available. One of the elementary schools was located in a lower middle class area, while the other elementary school was described by school officials as being middle

Table 1
Comparison of Pre- and Postsummer Vocabulary
Grade Equivalent Scores by Grade and Sex

Grade /Sex	N	May Mean	Stand. Devia'n	Sept. Mean	Stand. Devia'n	t-value	2-t'd prob.	Direc'n of chng*
Gr. 1	73	2.87	.62	3.11	.90	-3.26	.002	+
Boys	40	2.92	.62	3.22	.90	-2.74	.009	+
Girls	33	2.80	.63	2.98	.89	-1.76	.088	0
Gr. 2	74	4.14	.85	4.21	1.01	-0.76	.450	0
Boys	37	4.09	.92	4.26	1.00	-1.34	.187	0
Girls	37	4.20	.79	4.15	1.02	0.44	.665	0
Gr. 3	61	4.81	1.05	4.97	1.41	-1.34	.185	0
Boys	37	4.64	1.22	4.86	1.68	-1.26	.217	0
Girls	24	5.07	.65	5.13	.83	-0.48	.638	0
Gr. 4	72	5.61	1.48	5.81	1.69	-1.19	.238	0
Boys	26	6.10	1.97	6.10	2.10	0.01	.991	0
Girls	46	5.34	1.03	5.64	1.41	-1.76	.084	0
Gr. 5	77	6.52	1.58	6.91	1.89	-2.47	.016	+
Boys	43	6.60	1.65	6.66	1.83	-0.26	.794	0
Girls	34	6.42	1.50	7.22	1.94	-3.57	.001	+
Gr. 6	136	7.67	1.91	7.83	2.38	-1.13	.259	0
Boys	75	7.62	1.79	7.62	2.28	0.01	.994	0
Girls	61	7.73	2.06	8.10	2.50	-1.55	.125	0
Gr. 7	147	8.15	2.19	8.24	2.37	-0.50	.618	0
Boys	64	8.01	2.23	8.17	2.14	-0.67	.504	0
Girls	83	8.27	2.17	8.30	2.55	-0.11	.910	0
Totals	640	6.18	2.44	6.36	2.63	-2.89	.004	+
Boys	322	6.11	2.44	6.23	2.54	-1.53	.126	0
Girls	318	6.26	2.45	6.49	2.71	-2.51	.013	+

* + significant positive gain 0 no significant change
- significant negative loss

class. Students from these schools later attend the junior high school. Reading achievement in the school district is generally at or above grade level as measured by the Gates-MacGinitie Reading Tests.

Data Collection

The school district in which this study was conducted systematically collects data on student reading achievement in May and September. Reading achievement is assessed in two dimensions: vocabulary and comprehension. Appropriate levels of the Gates-

Table 2
Comparison of Pre- and Postsummer Comprehension
Grade Equivalent Scores by Grade and Sex

Grade /Sex	N	May Mean	Stand. Devia'n	Sept. Mean	Stand. Devia'n	t- value	2-t'd prob.	Direc of Chng*
Gr. 1	73	2.87	.73	2.99	1.08	-1.27	.207	0
Boys	40	2.89	.71	3.03	1.13	-1.03	.310	0
Girls	33	2.84	.76	2.93	1.05	-0.74	.466	0
Gr. 2	74	3.98	1.00	4.22	1.24	-2.41	.018	+
Boys	37	3.99	1.00	4.19	1.44	-1.19	.242	0
Girls	37	3.96	1.02	4.26	1.02	-2.40	.022	0
Gr. 3	61	4.89	1.33	4.39	1.50	4.02	.001	-
Boys	37	4.70	1.56	4.37	1.82	1.87	.069	0
Girls	24	5.17	.80	4.43	.85	5.27	.001	-
Gr. 4	72	5.37	1.86	5.75	2.10	-2.07	.042	+
Boys	26	5.82	2.24	6.27	2.48	-1.31	.201	0
Girls	46	5.11	1.57	5.45	1.81	-1.58	.122	0
Gr. 5	77	6.76	2.14	7.22	2.35	-2.44	.017	+
Boys	43	6.36	1.70	7.15	2.39	-3.69	.001	+
Girls	34	7.26	2.53	7.32	2.32	-0.17	.866	0
Gr. 6	136	8.28	2.70	7.45	2.68	5.94	.001	-
Boys	75	7.94	2.80	7.27	2.64	3.44	.001	-
Girls	61	8.70	2.53	7.67	2.74	5.20	.001	-
Gr. 7	147	8.85	3.01	8.03	2.88	4.54	.001	-
Boys	64	8.70	2.82	7.82	2.94	3.04	.003	-
Girls	83	8.96	3.16	8.19	2.84	3.36	.001	-
Total	640	6.46	3.08	6.19	2.88	4.11	.001	-
Boys	322	6.26	2.96	6.07	2.88	2.00	.047	-
Girls	318	6.67	3.18	6.31	2.88	3.86	.001	-

* + significant positive gain 0 no significant change
- significant negative loss

MacGinitie Reading Tests are used in each grade. The vocabulary subtest samples the student's ability to identify the meaning of isolated words. The tests below fourth grade require the student to match words with their pictorial representations. The tests for grades four through seven require the student to choose which of five response words is most similar (synonymous) to the test word.

The comprehension subtest measures the student's ability to read and understand sentences (in grades one through three) and/or complete prose passages (in grades four through seven). Raw scores for all levels of this test can be converted into grade

equivalent scores, percentiles, or standard scores.

For this study, pre- and post-summer vocabulary and comprehension grade equivalent scores were compared by two-tailed dependent t-tests. Differences in grade scores were considered statistically significant if the t-value resulted in a probability level equal to or less than .05.

Results

Vocabulary. Table 1 contains the comparisons for the vocabulary subtest scores of the Gates-MacGinitie. The total sample showed a statistically significant gain in vocabulary. This gain appears largely due to the increased vocabulary scores for the girls.

When the data were analyzed by grade and sex, statistically significant gains in vocabulary occurred for boys in grades one and girls in five. In each of the other grades vocabulary scores increased; however, none of these gains was statistically significant.

Comprehension. Table 2 contains comparisons of the comprehension subtest scores. The total sample showed a statistically significant loss in comprehension. The same phenomenon was noticed when total sample was analyzed by sex.

When the data were analyzed by grade and sex, statistically significant gains in comprehension occurred in grades two, four, and five. Only boys in grade five, however, made statistically significant gains when the data were analyzed by sex.

Unlike the vocabulary gains over the summer, the comprehension scores significantly decreased in grades three, six, and seven. The scores for girls showed a statistically significant decrease in grade three. Scores for both boys and girls decreased significantly in grades six and seven.

Table 3
Significant (.05 level) Gains (+) or Losses (-)
Between Pre- and Postsummer Vocabulary and
Comprehension Grade Equivalent Scores by Grade

Grade	Vocabulary	Comprehension
1	+	0
2	0	+
3	0	-
4	0	+
5	+	+
6	0	-
7	0	-
Total Group	+	-

Discussion

Table 3 contains a concise summary of changes in vocabulary and comprehension for each of the seven grades. Vocabulary scores were either maintained or significantly improved in each of the grades. Comprehension scores, on the other hand, improved significantly in grades two, four, and five, and declined significantly in grades three, six, and seven. As a group, students experienced a statistically significant loss in reading comprehension over the summer.

Since comprehension should be the ultimate goal of any reading program, a more detailed analysis at each grade level where gains or losses in comprehension occurred is appropriate. Students made statistically significant gains in grade two (2.4 months), grade four (3.8 months), and grade five (4.6 months). The gains at grades four and five would seem to have practical significance in addition to statistical significance. Statistically significant losses in comprehension occurred in grade three (5 months), grade six (8.3 months), and grade seven (8.2 months). All these differences appear to have practical significance for teachers and school officials.

In some cases, different levels of the Gates-MacGinitie Reading Tests were used for May and September testing. For example, in May the Primary A level was used for first grade. In September these students, now in second grade, were given the Primary B level of the Gates-MacGinitie. While it may be tempting to explain gains or losses depending on whether different levels of the Gates-MacGinitie were used, such an explanation does not seem plausible. Different levels were used in grades one, two, three, and six. In these four grades students' vocabulary scores indicated only one significant change in vocabulary (+). In the remaining grades when a different form of the same test was used, students' vocabulary scores also indicated only one significant change in vocabulary (+).

When comprehension scores were analyzed in a similar manner, two grades showed positive changes, one showed a negative change, and one showed no change for those grades where different levels of the test were used. In those three grades where an alternate form of the same test was used, there were two positive gains and one negative change. An informal analysis of this sort makes it difficult to argue that the observed changes are due to different levels of the Gates-MacGinitie used in the study.

Similarly, it is difficult to explain the observed differences with regression effects. If regression effects are used to explain the significant loss in comprehension in grades six and seven, why were vocabulary scores in these grades stable over the summer months? As the data are studied, it becomes clear that some changes in reading achievement occur over the summer months; moreover, some of these changes appear to have practical significance.

Perhaps the observed differences are due to "good" or "poor" readers. Ross (1974) found that 119 sixth grade students in the middle and upper reading groups gained four to nine months in

reading while students in the low reading groups lost ten months. He concluded that the summer regression phenomenon was valid only for low achievers in reading. Data from the sixth graders in the present study made it possible to test this hypothesis in a similar manner.

The 136 sixth graders in the present study were separated into two groups according to their comprehension scores. One group ("poor" readers) was composed of 51 sixth graders whose comprehension scores were below grade level (6.8) at the time of the May testing. The other group ("good" readers) was composed of 85 sixth graders whose scores were at or above grade level (6.9) at the time of testing. When the pre- and post-summer scores were compared for each group by means of t-tests, the "poor" readers lost 2.7 months in comprehension—a loss that was not statistically significant. The "good" readers, on the other hand, lost over a year in comprehension—a difference significant beyond the .001 level. The claim that the regression phenomenon is valid only for poor readers is not supported by data analyzed in the present study.

Additional informal analyses at the other grades seem to suggest that it is, in fact, the student reading at or above grade level who experiences significant losses in reading achievement. If regression toward the mean is used to explain these findings, who do some "good" readers at certain grade levels show significant gains? Once again, there is reason to believe that the gains or losses some students experience over the summer months are independent of any limitations that a given standardized test may possess.

Conclusions

Is students' reading ability affected by a three-month summer vacation? The answer to that question cannot be reliably answered for the general population in our schools. Past research has given mixed findings. The present study, in assessing reading ability in vocabulary and comprehension for grades one through seven, found results that were also mixed.

Inasmuch as this study was the largest of its kind in five decades (in terms of grades involved) it may be useful to draw several conclusions that can be supported by the data.

First, vocabulary scores for this sample of 640 students improved significantly over the summer months. For practical purposes it would be best to say that overall, students in each grade maintained or improved vocabulary scores. Overall, girls did significantly better than boys; however, boys maintained or improved their pre-summer scores at each grade level.

Second, comprehension scores for this sample of students declined significantly over the summer months. Students in grades three, six, and seven are largely responsible for the loss in comprehension. Although there were significant increases in grades four and five, the total sample of students experienced a significant loss in comprehension.

Third, the belief that losses in vocabulary and comprehension are due only to "poor" readers was not supported by this study. Analysis of the data at each grade level suggests that students reading at or above grade level are more likely to experience regressions in reading over the summer months than "poor" readers.

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