A study of the effect of programmed reading vs. basal reading on spelling achievement

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A study of the effect of programmed reading vs. basal reading on spelling achievement

Abstract
The problem of spelling has concerned educators since the late nineteenth century. "How well children learn to spell is affected by what is done in reading, in written work, in handwriting, in speaking, in addition to what is done in periods devoted specifically to spelling. Recognizing the fact that spelling is an integral part of the many facets of language, considerable amounts of research have been compiled taking many different approaches. Leonard Cahen (1971) in his survey of the research of spelling difficulties cited more than 100 studies just in the area of attempting to predict spelling difficulty. Those did not even focus, as other studies have, on characteristics of good and poor spellers, methods of spelling instruction, relationships of spelling and reading abilities, etc. This vast amount of research has revealed a few factors accepted as attributable to spelling success, but many questions are still unanswered or are in general disagreement.
A STUDY OF THE EFFECT OF PROGRAMMED READING VS. BASAL READING ON SPELLING ACHIEVEMENT

A Research Paper
Presented to
the Department of School Administration and Personnel Services
University of Northern Iowa

In Partial Fulfillment of the Requirements for the Degree Master of Arts in Education

by
Kathleen Ann Callan
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ENTITLED: A STUDY OF THE EFFECT OF PROGRAMMED READING VS. BASASL READING ON SPELLING ACHIEVEMENT

has been approved as meeting the research paper requirement for the Degree of Master of Arts in Education.

Norman McCumsey

Date Approved

Date Received

Graduate Faculty Adviser

Donald L. Hanson

Head, Department of School Administration and Personnel Services
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Chapter 1

INTRODUCTION

The problem of spelling has concerned educators since the late nineteenth century. "How well children learn to spell is affected by what is done in reading, in written work, in handwriting, in speaking, in addition to what is done in periods devoted specifically to spelling." Recognizing the fact that spelling is an integral part of the many facets of language, considerable amounts of research have been compiled taking many different approaches. Leonard Cahen (1971) in his survey of the research of spelling difficulties cited more than 100 studies just in the area of attempting to predict spelling difficulty. Those did not even focus, as other studies have, on characteristics of good and poor spellers, methods of spelling instruction, relationships of spelling and reading abilities, etc. This vast amount of research has revealed a few factors accepted as attributable to spelling success, but many questions are still unanswered or are in general disagreement.

One aspect that has been documented is the correlation between success in reading and success in spelling. Nellie Peake (1940) established a high positive correlation (.814) between test scores in reading and spelling. Leo Fay reported a similar relationship in 1971, but discovered that the correlation did not hold true in all instances. He indicated that poor readers are poor spellers and good readers are either good spellers or poor spellers. Fay's findings coupled with Horn's previous statement, "How well children learn to spell is affected by what is done in reading...", focused the direction of this study in examining a student's success in spelling in relation to the instructional methods employed in his reading.

Teachers should recognize that good readers are normally good spellers and that children's reading status usually governs their level of spelling... Lower achievement in spelling among superior readers should be closely examined in order that inhibiting anomalies can be identified.

The extent to which the range of word analysis skills, including auditory and visual discrimination, structural and phonemic analysis and phoneme-grapheme relationships are employed in a reading program, could well, in fact, affect the degree of success a student has in spelling.

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Tanyzer and Alpert, in their study comparing three basal reading programs in 1965, found that students using the Lippincott series did significantly better in vocabulary and spelling than students in either the Scott Foresman series or a reading series employing the initial teaching alphabet. This study is one of a very limited number of research studies done involving reading and spelling, according to Marie Hussey Pepe in her study done in 1979, comparing reading and spelling in eighth grade. Thus, even though we have seen many studies evaluating and comparing spelling programs, as well as innumerable studies evaluating the successfulness of reading programs on reading achievement, there is a definite lack of research studying the affect of specific reading programs on spelling achievement.

The focus of this study was to investigate the affect of two specific reading programs, one a programmed and one a basal approach, on the spelling achievement of third grade students.

Statement of the Problem

This research study attempted to answer the question: "What is the effect of the Sullivan Associates Programmed Reading Program vs. Ginn & Company Basal Reading Series on the spelling achievement of third grade students?"

The emphasis was to compare the overall spelling achievement level of students participating in programmed
reading versus those in a basal reading series. It was limited to third grade students, who had only been exposed to one or the other of the reading programs. All, likewise, had participated in the same spelling program.

The students were categorized into groups of good readers and poor readers, since it is known that poor readers are poor spellers and would naturally bring down the mean achievement of the total group. Due to the uncertainty of how reading and spelling are affected by the sex of the student, equal numbers of males and females were included in each reading category.

Based upon the findings of a review of the literature, we assumed that phonic generalizations and structural analysis techniques, especially syllabication, were important in the early stages of schooling in order to insure a student's success with spelling. Also, emphasis on both auditory and visual perception abilities were critical in influencing both spelling and reading.

Based on personal observations, it appeared that the management of the programmed reading series lent itself less to direct instruction by the teacher in all of these phonic, structural, auditory and visual areas. The students had less opportunity to orally read and hear the sounds (phonemes) they need to match with symbols (graphemes) for spelling words. There was less oral emphasis on vocabulary and consequently less directed attention to word meanings. The programmed approach
appeared to provide less opportunity for those superior readers who are reading from context to be focused by the teacher to "structure" and consequently to better spelling achievement.

These personal observations prompted the interest in this study. Based upon these observations, the following was hypothesized:

Third grade students participating in the Sullivan Associates Programmed Reading Series will show a lower overall level of spelling achievement than third grade students participating in the Ginn Basal Reading Series at the .05 level of significance, as measured by the Iowa Test of Basic Skills.

The null hypothesis to be tested was:

There will be no significant difference at the .05 level between the spelling achievement of third grade students participating in the Sullivan Associates Programmed Reading Program and those participating in Ginn & Company Basal Reading Series, as measured by the Iowa Test of Basic Skills.

Importance of the Problem

The outcome of this study could be influenced in:

1) Stimulating more research analyzing the specific components of reading programs and how these, in turn, affect spelling scores;

2) Stimulating more studies comparing the spelling scores of students participating in various reading programs;

3) Affecting school officials, who purchase or use either Sullivan or Ginn programs, to alter their
choices or to evaluate their existing programs in terms of spelling achievements;

4) Stimulating book companies to include different or additional components into either their reading or spelling series; and

5) Stimulating similar studies at other grade levels to identify more generalizable findings.

Assumptions

1) Poor readers are poor spellers.

2) Good readers are either good spellers or poor spellers.

3) Auditory and visual perception abilities influence reading and spelling success.

4) Training in phonics and structural analysis techniques often increases spelling success.

5) Girls sometimes score higher than boys in spelling and reading.

6) I.Q. sometimes correlates positively, but not strongly with reading ability.

Limitations of the Study

1) **Size of the Sample.** Due to a limited number of schools using the programmed reading approach, the size of the sample was restricted.

2) **Use of only one standardized test.** The results may have been affected by the use of only the Iowa Test of Basic Skills test in determining the level of spelling, as well as reading achievement.
3) **Limited to one grade level.** The results are less generalizable due to the use of only the third grade. This single grade selection was made to add the control of a homogeneous grouping.

4) **Lack of randomization.** Using intact classes made randomizing impossible and consequently affect the validity of the results.

5) **Arbitrary choice of criteria in determining good and poor readers.** Another choice of criteria may have affected the overall level of spelling achievement of one of the groups. The generalizability of the results are limited to those situations using similar criteria in determining good and poor readers.

**Definitions of Terms**

**Good Readers.** -- were those who scored at the 3.0 grade-equivalent level or above in reading on the Iowa Test of Basic Skills.

**Grapheme** -- an alphabetic symbol (letter) used to represent a sound.

**Phoneme** -- the "sound" unit for distinguishing meaning; i.e., the sound /k/ in kill and cat constitutes one phoneme.

**Phonics or Phonetics** -- (used interchangeably) the branch of language study dealing with speech sounds, their production and combination, and their representation by written symbols.
Phonic Generalizations -- "rules" to follow in establishing the "sounds" of unknown letters or words or word parts; such as: "when a word begins with kn, the k is silent" (as in knife).

Poor Readers -- were those who scored below the 3.0 grade-equivalent level in reading on the Iowa Test of Basic Skills.

Spelling Achievement -- was the grade-equivalent score in spelling on the Iowa Test of Basic Skills.

Structural Analysis -- the study of grammatical format, including such components as prefixes, suffixes, syllabication, accents, etc.
Chapter 2

REVIEW OF RELATED LITERATURE

Due to the expansive nature of the literature regarding the subject of spelling, this review was limited to the research regarding how spelling relates to reading and conversely, how reading relates to spelling, since that was the primary focus of this study.

The literature regarding how reading and spelling relate divided into four major areas:

1) research correlating and describing the relationship between reading and spelling abilities;
2) the impact of phonics and structural analysis on reading and spelling achievement;
3) the influence of auditory and visual discrimination abilities on reading and spelling success; and
4) the question of linguistics vs. phonic/structural approaches to reading and spelling.

Both Nellie Peake (1940) and David Russell (1946) completed studies which established high correlations between reading and spelling achievement scores. Peake found a .814 positive correlation between the spelling scores and word meaning scores (part of reading ability) of 355 pupils in grades IV-VIII. Russell's study took the relationship a step further in his study of 135 third to
fifth grade pupils. He found positive correlations between spelling and reading comprehension (.84), spelling and word recognition (.86) and spelling and word meaning (.80). Both Templin (1954) and Rudisell (1957), likewise, yielded correlations between reading and spelling to be in the .70 to .72 range.

Leo Fay, most recently, again depicted the significance of the spelling and reading relationship in 1971, but further discovered that they were not totally related in all instances. It is generally consistent, he stated, that poor readers are also poor spellers. However, contrary to earlier views, good readers are not always good spellers. Frequently superior readers may be mediocre or even poor spellers.

This apparent contradiction, Fay suggested, occurs because spelling is really the reverse of reading. Spelling requires converting a phoneme (sound) to a grapheme (letter), whereas reading requires converting a grapheme (letter) to a phoneme (sound). Some efficient, superior readers pay little attention to the individual letters. They use the context of what they are reading, rather than the individual words to get the meaning.

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Therefore, they do not focus on the "structure" of the words and consequently may be very good readers, but poor spellers.

This attention to the "structure" of the words read, opened up a very vast amount of research focusing on the use of phonics and structural analysis techniques as they relate to both reading and spelling.

As early as 1940, Joseph Tiffin tested the relationship of the phonic ability of 155 fifth to seventh grade pupils to their reading ability. He found a strong positive correlation (.70) and concluded that a reading program that was not yielding a mastery of the principles of phonics was not accomplishing its full purpose. Similar results were found by Rudisell (1957) in correlating reading with phonic knowledge at .71. She, likewise, correlated spelling with phonic knowledge at the .69 level.

Mildred Templin (1954) found that correlations between phonic knowledge and spelling were even somewhat higher than between phonic knowledge and reading, thus indicating that phonics employed in reading programs could affect spelling more than reading. She, likewise, discovered that a substantial amount of phonic knowledge had been acquired by the fourth grade students in her study without direct or extensive instruction in phonics. Hers was the only study that seemed to indicate the ability of students to grasp phonic relationships without direct instruction, which could be a "plus" for programmed
instruction. This aspect of study was lost, however, as the later "great controversy" developed between how many and which phonic generalizations should be taught.

Ibeling (1961) noted significant increases in spelling ability of second grade pupils when their regular program of reading and spelling was supplemented with the use of standard phonic workbooks. His study of 600 students included second, fourth and sixth grades. However, only the second grade pupils showed significant gains. None of the groups showed any improvement in vocabulary or reading comprehension. These results again pointed out the greater relationship of phonics to spelling achievement than to reading. Plus, a further distinction was made on the importance of phonics in the early stages of elementary school.

All the "good" results of these and other studies were abruptly thrown into question with the research done in 1963 by Theodore Clymer. He researched the usefulness of forty-five phonic generalizations, selected from four basic reading series. He used each generalization on a composite list of 2,600 words, selected from both the reading series and the Gates Reading Vocabulary for the Primary Grades. He determined a "percent of utility" for each generalization. Based on a criterion of 75%, he discovered that only eighteen of the forty-five generalizations were useful! Such generalizations as, "when there are two vowels side by side, the long sound of the
first one is heard and the second is usually silent", which were commonly taught, were found to be of limited usefulness to students in working out the pronunciation of unknown words.

Clymer's findings prompted several similar replications of his study (Bailey, 1965; Emans, 1966; Burmeister, 1966). In general, the findings, when summarized and tabulated by Burmeister in 1968, formed two major groups of phonics generalizations currently in use: (1) those generalizations which were commonly included in instructional programs, but according to the studies, had limited utility value; and (2) those which according to the results did, in fact, have broad application. Burmeister outlined the most useful generalizations, which included, not only, those pertaining to consonants and vowels (phonics), but also to syllabication and accent, two categories which addressed the area of structural analysis.

The structural area of analysis was thought to be especially important in spelling success by Betts, as early as 1945. If students only spelled phonetically (by how it sounds), then Betts pointed out that they only had a fifty-fifty chance of being correct, considering the irregularity of the English language. Betts advocated the instruction in structural analysis techniques "especially syllabication."^4

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^4 Emmett Betts, "Inter-relationships of Reading and Spelling," The Elementary English Review, 22:18, January 1945.
Lois Otterman (1955), likewise, confirmed the significant increases in spelling achievement in her study of the "The Value of Teaching Prefixes and Word-Roots" (structural analysis). These gains were made by 270 students in the experimental group with only a ten-minute lesson each day in addition to the regular English classes.

Then, after the researchers had apparently 'narrowed-down' the field of phonic generalizations and structural analysis techniques that were useful, Joseph Bukovec (1973) challenged the results of Clymer's study. He argued that the purpose of phonic generalizations was not to achieve accurate pronunciation, but rather to be vehicles for the much broader area of word recognition, which is often accomplished without precise pronunciation. So, obviously, the question is far from settled and further classroom studies need to be done to really determine, not only, the purpose but also, the usefulness of generalizations.

This aspect of word recognition tied in specifically to the research concerning visual and auditory discrimination, which, likewise, have major influences on reading and spelling abilities.

Spache (1940) did a very detailed study of the types of errors made by both good and poor spellers. His results confirmed that poor spellers are lacking in auditory discrimination and phonic skills and knowledge.
Russell confirmed these findings in his study of eighty-five children in the first three grades of an Oakland, California school. Six tests of auditory discrimination were given to the children in addition to four other standardized reading, spelling and I.Q. tests. His conclusions revealed auditory abilities (of a specific and complex nature) are significantly related to spelling abilities at the .01 level of confidence. These rather complex abilities involve word parts rather than whole words. He found considerable, but not conclusive, evidence that this group of auditory abilities could be good predictors of spelling success.

Not only auditory, but also visual perception abilities are related to spelling and reading success, as Kottmeyer pointed out in 1952. Plessas and Dison (1965) also undertook a study of visual discrimination on 260 third grade students. They explored the differences in the spelling abilities between good readers-good spellers and good readers-poorer spellers. Their results indicated that when phonic clues are held constant, good readers-good spellers discriminate better visually than do good readers-poorer spellers. It was determined that "word imagery" played an important role in spelling words.

Since visual discrimination skills depends upon some form of word memory or imagery, children who are more able in reading than in
spelling perhaps rely **too** strongly on phonics than on visual study in learning to spell certain words.5

Thus, we had some results that indicated for superior readers, that **too** much emphasis on phonics interfered with ability to visually perceive correct spelling.

Other factors which affect spelling ability seemed to be I.Q. and sex. These had been two areas of controversy throughout the literature. Sex differences were **not** found by Neville in 1968, but Tanyzer and Alpert found that girls did significantly better in spelling than boys in all three basal readers compared in 1965. Both studies dealt with first grade readers, however Tanyzer's sample size of 650 was much larger than Neville's 104. These contrasting results showed the continued divided opinion on the issue.

Likewise, study results also divided on the issue of I.Q. Some indicated that mental age does **not** correlate with reading or spelling (Russell, 1958), but others have found I.Q. correlating highly with reading (Tanyzer and Alpert, 1965). Templin (1954) found a correlation of mental age and reading of .62 and mental age of spelling of .54. She remarked these relationships to be

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5 Plessas, *op. cit.*, p. 22
"substantial". However, they really did not show much strength.

Mixed in with I.Q., sex, phonics, structure and auditory/visual perception was the question of the linguistics (meaning) approach to spelling (Key, 1969; Venezky, 1969; Hanna, 1966). "The linguistics followers feel that a morphemic spelling system helps to signal intonation and meaning." 7 Foran established as early as 1934 that "knowledge of the meaning of a word is a direct aid in learning to spell it." 8 However, some difficulties arise with morphemes too, because they have various pronunciations depending upon their position in a word and the other morphemes with which they combine, i.e. the 'sign' or 'signal'.

Thus, the controversy went on. General agreement of the researchers had been reached on accepting that poor readers were poor spellers and good readers were either good spellers or poor spellers, depending upon their approach to reading, whether it be structural or contextual. Most agreed that auditory and visual perception abilities played a big part in both reading and spelling success.

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8 Betts, op. cit., p. 18.
Questions regarding whether the linguistics or the phonic/structural approach to spelling was more effective remain unresolved, as did the disagreements on which phonic generalization and structural analysis techniques are the most useful. Researchers, likewise divided on the issues of how I.Q. and sex correlated with spelling achievement.

The area of how participation in specific reading series affected spelling ability remains an area of limited research and was the focus of this study. Both Clymer and Bukovec in discussing their findings, pointed out the need to tap the classroom setting. This study examined how spelling is affected after actual participation in two separate types of reading programs, which have varied emphasis on the phonic, structural, visual and auditory orientations.
Chapter 3

DESIGN OF THE STUDY

The design of the study was ex post facto. No manipulation of reading programs or students was done, but rather, a gathering of existing data from the Iowa Test of Basic Skills was taken from existing classes. Due to the use of intact classes, randomization could not be utilized in this study. Therefore, to induce some type of control, the two samples were matched on the following characteristics: 1) grade level; 2) participation in the same spelling program; 3) exposure to only one or the other of the two reading programs; 4) a similar I.Q. range; 5) reading level; and 6) equal numbers of males and females in each reading category.

Procedures Used

A sample of 102 third grade students, taken from four consecutive years of third grade classes, was selected from Valley Park Elementary School. This group was matched with 98 third grade students from Orchard Hill Elementary School, taken from three consecutive years of third grade classes. Valley Park used the Sullivan Associates Programmed Reading Program, while Orchard Hill used the Ginn & Company Basal Reading Program. Both elemen-
taries were in the Cedar Falls Community School District and were selected for the study because of their use of the same spelling program and their similar socio-economic neighborhoods.

Permanent school records were reviewed to select for each sample only those students who had never changed schools. Their consistent K-3 attendance ensured their exposure to only one reading program. Each student chosen was then assigned an identification number of use in the study, thus giving anonymity to each participant and more objectivity to the selection process.

Student records were utilized to record the sex of each student, as well as the I.Q., which was determined by the Otis-Lennon School Abilities Test, and given in the third grade.

With I.Q. recorded for all students within each sample, it was found that fifty students fell within the 100-119 I.Q. range in each school. The original samples were narrowed down to these fifty students, who were then identified for further matching. (See Appendix A.)

The Iowa Test of Basic Skills was then used to record the reading grade-equivalent score for each of the fifty students in each sample. At Valley Park, reading levels ranged from 1.2 to 6.4, with Orchard Hill ranging from .6 to 6.4.

Due to the wide range of reading abilities, four categories of reading levels were determined for each
sample. Students below 2.0 or above 5.9 reading levels were eliminated. All other students were then categorized as either poor readers or good readers. Poor readers were defined as students having grade-equivalent scores of 2.0-2.9. Good readers were categorized into three groups of grade-equivalent scores: 1) 3.0-3.9; 2) 4.0-4.9; and 3) 5.0-5.9. (See Appendix B.)

After the reading levels were determined, each of the four categories were matched for equal numbers of girls and boys. When equal numbers did not exist, eliminations of students (identified by student number) were made on the basis of I.Q. If there were students in the subgroup who had the same I.Q., the reading levels of those students were then also examined and utilized to make the elimination. (See Appendix C.)

With these eliminations, all matching of the samples was completed. Each sample contained seventeen girls and twenty-four boys, totaling forty-one students in all. The final samples contained only third grade students from schools of similar soci-economic neighborhoods, who had used the same spelling program, had participated in only one of the two reading programs, were in the same I.Q. range, and had an equal number of males and females within each of the reading categories.

Spelling scores were then collected from the Iowa Test of Basic Skills for the forty-one students in each sample. The Programmed Reading sample spelling scores
ranged from 1.7 to 6.5, while the Ginn Reading sample ranged from 1.9 to 5.7. (See Appendix D.)

A means difference test was completed on the spelling scores of each sample to determine if the null hypothesis would be accepted or rejected at the .05 level of significance. Following this determination made on the entire sample, means difference tests were completed on subgroups of the sample, consisting of the four reading level categories. Once comparisons were made at each reading level, the means difference test was used to compare all males and all females in each sample, and then within each reading category in each sample.

With the means difference test completed on all the fifteen various subgroups, the spelling scores of each sample were correlated with the reading scores, using the Pearson-Product Moment Correlation technique. This test was also completed separately on males and females of each sample, as well as on the various reading level categories within each sample.

Sources of Data

School records were utilized for determining (1) sex; (2) whether students had participated in one spelling program; (3) whether the students had participated in only one or the other of the reading programs; and (4) I.Q., which was taken from students scores on the Otis-Lennon School Abilities Test, Form R, given in the third grade.
The Iowa Test of Basic Skills was utilized for gathering the grade-equivalent reading scores on students in the samples. Students scoring at the 3.0 level or above were categorized as good readers and students scoring below 3.0 were categorized as poor readers.

Likewise, the Iowa Test of Basic Skills was the source of data in gathering the spelling scores, which also were of the grade-equivalent nature.

Both the Iowa Test of Basic Skills and the Otis-Lennon School Abilities Test were standardized tests that were used nation-wide. The Otis-Lennon School Abilities Test, Form R, scored .92 with a standard error of measurement of 3.8 on the Kuder-Richardson Reliability Formula 20 at the grade 3 level. For validity, the correlation between the Otis-Lennon scores and teacher grades for the various subject matter areas fell with the range .40 to .60 with a median of .49.

The Iowa Test of Basic Skills, Level 9 (Grade 3) Test showed a reliability on the Kuder-Richardson 20 of: (1) .91 in reading with a standard error of measurement of 3.6; (2) .92 in spelling with a standard error of measurement of 4.0; and (3) .98 on the complete composite score with a 1.3 standard error of measurement. Intercorrelations among the test of the Grade 3 level were .79 in reading, .73 in spelling and .88 on the complete composite.
Chapter 4

ANALYSIS OF THE DATA

The means difference test was completed on the entire Programmed and Ginn reading samples. A t-score of .689 was calculated, which was not statistically significant at the .05 level. Therefore, the null hypothesis was accepted: no significant difference exists between the spelling achievement of students in Programmed versus students in Ginn reading, using the Iowa Test of Basic Skills.

Since no difference existed using the entire sample, the means difference test was calculated on each of the fifteen subgroups containing various combinations of reading levels and sex. The resulting means and significance may be seen in Table I.

As noted in Table I, no subgroup achieved statistical significance at the .05 level, thus supporting the null hypothesis that no significant differences existed between the spelling achievement of students in either sample.

In examining the mean spelling scores, the greatest difference existed between boys, reading at the 4.0-4.9 level. Boys in Programmed Reading had a spelling mean score of 34.75, while boys in Ginn had a 44.38 spell-
### TABLE I

Significance of Difference and Mean Spelling Scores on the Iowa Test of Basic Skills of Students in Programmed Reading and Students in Ginn Reading

<table>
<thead>
<tr>
<th>(N)</th>
<th>Category</th>
<th>Grade-Equivalent Reading Level</th>
<th>Programmed Reading Spelling Mean</th>
<th>Ginn Reading Spelling Mean</th>
<th>Level of Significance .05 Level</th>
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<tr>
<td>(41)</td>
<td>ALL STUDENTS</td>
<td>2.0-5.9</td>
<td>36.27</td>
<td>37.80</td>
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</tr>
<tr>
<td>(17)</td>
<td>A. All Girls</td>
<td>2.0-5.9</td>
<td>39.65</td>
<td>39.59</td>
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<tr>
<td>(24)</td>
<td>B. All Boys</td>
<td>2.0-5.9</td>
<td>33.88</td>
<td>36.54</td>
<td>---</td>
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<td>(9)</td>
<td>C. Poor Readers</td>
<td>2.0-2.9</td>
<td>25.89</td>
<td>25.89</td>
<td>---</td>
</tr>
<tr>
<td>(3) 1. Girls</td>
<td>2.0-2.9</td>
<td>30.00</td>
<td>27.00</td>
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<td>(6) 2. Boys</td>
<td>2.0-2.9</td>
<td>23.83</td>
<td>25.33</td>
<td>---</td>
<td></td>
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<tr>
<td>(32)</td>
<td>D. All Good Readers</td>
<td>3.0-5.9</td>
<td>39.19</td>
<td>41.16</td>
<td>---</td>
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<td>(14) 1. Good Readers</td>
<td>3.0-3.9</td>
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<td>(7) a. Girls</td>
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<td>(7) b. Boys</td>
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<td>38.43</td>
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<td>(13) 2. Good Readers</td>
<td>4.0-4.9</td>
<td>36.85</td>
<td>42.62</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>(5) a. Girls</td>
<td>4.0-4.9</td>
<td>40.20</td>
<td>39.80</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>(8) b. Boys</td>
<td>4.0-4.9</td>
<td>34.75</td>
<td>44.38</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>(5) 3. Good Readers</td>
<td>5.0-5.9</td>
<td>43.80</td>
<td>41.40</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>(2) a. Girls</td>
<td>5.0-5.9</td>
<td>54.00</td>
<td>53.00</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>(3) b. Boys</td>
<td>5.0-5.9</td>
<td>37.00</td>
<td>33.67</td>
<td>---</td>
<td></td>
</tr>
</tbody>
</table>
ing mean score. Another noticeable difference existed within the 5.0-5.9 reading level, between boys scores and girls scores. Boys within each sample subgroup scored almost two grade levels in spelling below the girls in the subgroup. However, the small size of the subgroup (5) must be taken into consideration when examining this, as well as all the subgroups.

With no differences existing between the samples or subgroups, an examination of the relationship between spelling and reading within each sample and within some of the subgroups was made, using the Pearson Product Moment Correlation technique. In Table II, you will find the correlational coefficient for each subgroup within each sample. Table II shows to what degree spelling achievement correlates with reading achievement on the Iowa Test of Basic Skills for each reading sample separately.

Only the spelling scores of Programmed Reading students at the 5.0-5.9 reading level correlated strongly (.754) with their reading scores. Likewise, this 5.0-5.9 reading level showed the greatest variance in correlation between the Programmed (.798) and the Ginn Reading (-.297) samples. However, the small size of this subgroup definitely affected the degree of significance of these correlations.
TABLE II

Correlational Coefficients Showing the Relationship Between Spelling and Reading Scores on the Iowa Test of Basic Skills for Each Reading Sample

<table>
<thead>
<tr>
<th>(N)</th>
<th>Category</th>
<th>Grade-Equivalent Reading Level</th>
<th>Programmed Reading Correlational Coefficient</th>
<th>Ginn Reading Correlational Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>(41)</td>
<td>ALL STUDENTS</td>
<td>2.0-5.9</td>
<td>.423</td>
<td>.430</td>
</tr>
<tr>
<td>(17)</td>
<td>A. All Girls</td>
<td>2.0-5.9</td>
<td>.628</td>
<td>.512</td>
</tr>
<tr>
<td>(24)</td>
<td>B. All Boys</td>
<td>2.0-5.9</td>
<td>.316</td>
<td>.398</td>
</tr>
<tr>
<td>(9)</td>
<td>C. Poor Readers</td>
<td>2.0-2.9</td>
<td>.053</td>
<td>-.515</td>
</tr>
<tr>
<td>(32)</td>
<td>D. All Good Readers</td>
<td>3.0-5.9</td>
<td>.111</td>
<td>.093</td>
</tr>
<tr>
<td>(14)</td>
<td>1. Good Readers</td>
<td>3.0-3.9</td>
<td>-.009</td>
<td>.220</td>
</tr>
<tr>
<td>(13)</td>
<td>2. Good Readers</td>
<td>4.0-4.9</td>
<td>.120</td>
<td>-.099</td>
</tr>
<tr>
<td>(5)</td>
<td>3. Good Readers</td>
<td>5.0-5.9</td>
<td>.754</td>
<td>-.297</td>
</tr>
</tbody>
</table>
No other subgroups in either reading group sample showed a strong relationship between spelling and reading achievement, as measured by the Iowa Test of Basic Skills.

Correlations between male (.316) and females (.628) in Programmed Reading seemed to have a wider gap than the correlations of males (.398) and females (.512) in the Ginn Reading sample. Likewise, the spelling scores of girls in both samples seemed to correlate more with their reading scores than did the spelling and reading scores of boys.
Chapter 5

FINDINGS AND INTERPRETATIONS

No significant differences at the .05 level were noted between the spelling scores of third grade students participating in Sullivan Associates Programmed Reading and third grade students in Ginn & Company Basal Reading, as measured by the Iowa Test of Basic Skills. Therefore, the null hypothesis to that effect was accepted. However, we cannot assume that achievement in other areas, such as in reading, in vocabulary, etc., will likewise be consistent between the two programs. Further research will need to be conducted in those areas to draw any conclusions.

Since we did not examine or compare specific components of each reading program, we could only speculate that whatever differences did exist, were not differences that greatly altered or affected a difference in spelling achievement. Additional research with different grade levels, different I.Q. ranges, or use of different measuring instruments would need to be completed before such generalizations could actually be supported.

Despite the fact that no statistical significances were noted, some interesting comparisons can be made in reviewing the mean scores of the subgroups. The following characteristics of data were noted:

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(1) The poor readers had the exact same mean score in both samples; likewise, the good readers at the 3.0-3.9 level also had identical means; (2) All boys in both samples at the 2.0-2.9 reading level scored lower than all girls in the same categories; (3) In both samples, boys in the 5.0-5.9 reading level scored noticeably lower than girls at that level. The male spelling mean scores were almost two grade levels below their reading level, whereas, the girls spelling scores were consistent with their reading levels; (4) There was a greater difference between male and female scores in the Programmed Reading sample than in the Ginn Reading sample, when comparing all reading levels, 2.0-5.9; (5) In both samples, all boys had a lower mean spelling score than all girls, when comparing all reading levels 2.0-5.9; and (6) Boys in Ginn Reading had a higher mean score than girls at the 4.0-4.9 reading level.

A Pearson Product Moment Correlation was done to see what relationship existed between spelling and reading of students in each reading sample. Interestingly enough, again there was not a significant relationship between spelling and reading achievement in either program. However, in correlating boys and girls scores separately, we again noted two interesting characteristics: (1) In both samples, the relationship between male spelling and reading (.316 and .398) was less than the relationship between female spelling and reading scores (.628 and .512), and (2) There was a greater difference between
male and female correlations in Programmed Reading (.316 and .628) than between the male and female correlations in Ginn Reading (.398 and .512).

To summarize, no significance differences were found in spelling achievement between students in Programmed Reading versus students in Ginn Reading. Likewise, it was found that there was little correlation in either sample between students' spelling and reading achievement. While there were some interesting findings in viewing male and female scores, no conclusions could be drawn with such little statistical significance shown.

In our original statement, we noted less direct instruction of phonics in Programmed Reading than in Ginn Basal Reading, with research correlating phonics ability and spelling ability. However, as Mildred Templin (1954) found, students are able to pick up phonics ability independent of direct instruction. This would seem to hold true for females in Programmed Reading, but possibly not for males. With an overall larger gap existing between males and females spelling scores in the Programmed Reading sample, it could be speculated, that boys may need more direct phonics instruction than girls.

We also noted less opportunity in Programmed Reading for superior readers to be focused by the teacher to "structure" and thus to better spelling achievement. This premise did not hold true, because female students in both Programmed and Ginn spelled at a level consistent with
their reading ability, while males in both samples were spelling significantly below their reading level. We could speculate then that both reading programs would need to be putting more emphasis on focusing superior male readers in particular to the structure of words, to enhance their spelling achievement.

The consistent differences noted between male and female scores throughout this study can only support research done by Tanyzer and Alpert (1965), noting poorer spelling performance by male than by females. Not only were male mean spelling scores lower (with two exceptions) than female scores, but also there was less correlation between male spelling ability and reading ability. Male spelling performance had less chance of being predicted from their reading ability than female performance.

The fact that the poor readers in both samples achieved the exact same mean spelling score (25.89) was not only ironic, but also strongly supportive of Leo Fay's findings that poor readers are poor spellers. However, curiously enough, the next reading category of students at the 3.0-3.9 grade level, also achieved an exact mean spelling score in both samples (39.71). We might enlarge on Fay's findings then, that, not only are poor readers, poor spellers, but also, average readers are average spellers.

In all the research cited, a relatively strong correlation between reading and spelling achievement was
found. However, in this study, both reading groups yielded a very weak \(0.423-0.430\) correlation between spelling and reading achievement, using the Iowa Test of Basic Skills. Does this mean that neither reading program contains the appropriate phonics or structural techniques needed to stimulate spelling success? Further research would need to be done studying the specific components of these reading programs and comparing them with components of reading programs that correlate highly with spelling, in order to answer that question.

As with the means difference tests, the greatest gaps in correlation occurred between the males and females of the Programmed Reading sample. Again, girls' spelling and reading scores in both samples correlated higher than boys' spelling and reading scores. So once again, boys, in general, have more difficulties with reading and spelling than do girls, and the boys in Programmed Reading, in particular, have more difficulties than boys in Ginn Reading. Thus, the assumption made at the beginning of this study, that girls sometimes score higher than boys in spelling and reading, has for the most part been confirmed concerning spelling achievement.

In light of the weak correlations in both programs between spelling and reading performance, it was easier to see why there was no significant differences in spelling achievement between students in Programmed vs. students in Ginn Reading. These correlations challenged
all the research cited and certainly warrants further research to determine the reasons contributing to this weak relationship. Would different results be found with: larger samples? different I.Q. ranges? a different measuring instrument? different grade levels? different socio-economic levels? A need for further research in all these areas is certainly seen.
Chapter 6

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This study attempted to find the effect of Sullivan Associates Programmed Reading Series vs. Ginn & Company Basal Reading Series on the spelling achievement of third grade students, as measured by the Iowa Test of Basic Skills. It was hypothesized that the spelling scores of students participating in the Ginn Basal Reading Series would be significantly higher than those of students in Programmed Reading at the .05 level.

The study was conducted on two samples of third grade students within the Cedar Falls Community School system. Forty-one students using Programmed Reading were matched with forty-one students using Ginn Reading. Due to the use of records from intact classes, no randomization could be used. To induce control into the study, the samples were matched on: 1) similar socio-economic neighborhoods; 2) use of the same spelling program; 3) use of only one of the reading programs; 4) same I.Q. range; and 5) equal numbers of males and females within each reading category.

Data concerning sex and use of only one reading program were taken from school records. The Iowa Test of
Basic Skills was used to record both reading and spelling scores. I.Q. scores were obtained through use of the Otis-Lennon School Abilities Test.

Each sample was divided into categories of poor readers and good readers. Poor readers were defined as those students reading at the 2.0-2.9 grade-equivalent level. Good readers were further divided into three categories of students reading at the: 1) 3.0-3.9; 2) 4.0-4.9; and 3) 5.0-5.9 reading levels.

The means difference test was used to calculate the differences in spelling scores between the Programmed Reading sample and the Ginn Reading sample. This statistical technique was, likewise, used in comparing the spelling scores of fifteen subgroups within the samples, consisting of various combinations of reading levels and sex. No significant differences were found among any of the various samples of subgroups compared. Thus, the null hypothesis was accepted.

The Pearson Product Moment correlation was the second technique used to determine the direction and strength of the relationship between spelling and reading within each separate sample. Again, no strong correlations were found among any of the groups compared.

Conclusions

It was concluded that no significant differences existed between the spelling scores of third grade students
participating in Programmed and Ginn Reading programs. However, consistent performance among the students in other areas, such as reading, vocabulary etc., could not likewise, be assumed.

The study also yielded an interestingly weak correlation between spelling and reading scores both in the Programmed and in the Ginn Reading program. This discovery contradicted all the existing research concerning reading and spelling correlations.

No statistically significant differences were found, but some interesting data were collected concerning male and female spelling scores. Males scored below the females in four out of five categories, thus supporting existing research to that effect. There also was a consistently greater gap between male and female scores in Programmed Reading than between males and females in Ginn Reading. Thus, it could be speculated that males would perform closer to females in Ginn than in Programmed Reading.

Recommendations

Further research is warranted using larger samples, different grade levels, different measuring instruments, different I.Q. ranges, and comparing different reading programs. When a reading program is found that correlates positively and strongly with spelling success, it would be recommended that a study of the components and how each affects spelling, be done, in order to attempt to narrow down the myriad of variables affecting spelling success.


Tanyzer, Harold J., and Harvey Alpert. *Effectiveness of Three Different Basal Reading Systems on First Grade Reading Achievement*. Hempstead, New York: Hofstra University, 1965.


APPENDIX A

Distribution of Student I.Q. Scores

<table>
<thead>
<tr>
<th>I.Q.</th>
<th>Valley Park (Programmed Reading)</th>
<th>Orchard Hill (Ginn Reading)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Girls</td>
</tr>
<tr>
<td>Range</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Below 90</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>90 - 94</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>95 - 99</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>100 - 104</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>105 - 109</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>110 - 114</td>
<td>11</td>
<td>4</td>
</tr>
<tr>
<td>115 - 119</td>
<td>14</td>
<td>4</td>
</tr>
<tr>
<td>120 - 124</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>125 - 129</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>130 &amp; above</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>TOTALS</td>
<td>102</td>
<td>48</td>
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</tbody>
</table>
APPENDIX B

Distribution of Students Within Each Reading Level Category

<table>
<thead>
<tr>
<th>Reading Levels</th>
<th>Valley Park (Programmed Reading)</th>
<th>Orchard Hill (Ginn Reading)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N 50</td>
<td>N 50</td>
</tr>
<tr>
<td>Total Students (Within 100-119 I.Q. range)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Girls</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>2. Boys</td>
<td>29</td>
<td>28</td>
</tr>
<tr>
<td>3. Reading Levels</td>
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<td></td>
</tr>
<tr>
<td>a. Below 1.0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>b. 1.0-1.9</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>c. 2.0-2.9</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>d. 3.0-3.9</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>e. 4.0-4.9</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>f. 5.0-5.9</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>g. 6.0 and above</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
## APPENDIX C

### Distribution of Students by Sex Within Each Reading Level Category

<table>
<thead>
<tr>
<th>Reading Levels</th>
<th>Valley Park (Programmed Reading)</th>
<th>Orchard Hill (Ginn Reading)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Girls</td>
<td>Boys</td>
</tr>
<tr>
<td>Below 1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.0-1.9</td>
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<td>2*(2)</td>
</tr>
<tr>
<td>2.0-2.9</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>3.0-3.9</td>
<td>7</td>
<td>9*(2)</td>
</tr>
<tr>
<td>4.0-4.9</td>
<td>7*(2)</td>
<td>8</td>
</tr>
<tr>
<td>5.0-5.9</td>
<td>4*(2)</td>
<td>3</td>
</tr>
<tr>
<td>6.0 and above</td>
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<td></td>
</tr>
<tr>
<td>Sample Total Before Eliminations</td>
<td>21</td>
<td>29</td>
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<tr>
<td>Sample Total After Eliminations</td>
<td>17</td>
<td>24</td>
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</table>

* (N) -- Category and number of students eliminated during the matching process in order to establish equal numbers of males and females within each sample and within each reading level.
### APPENDIX D

**Spelling and Reading Grade-Equivalent Scores**  
From the Iowa Test of Basic Skills  
For Students Within Each  
Reading Sample

<table>
<thead>
<tr>
<th>Reading Level</th>
<th>Sex</th>
<th>Valley Park-Programmed Reading No.</th>
<th>Orchard Hill-Ginn Reading No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0-2.9</td>
<td></td>
<td>10 26 29</td>
<td>44 20 29</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13 28 27</td>
<td>55 33 21</td>
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<tr>
<td></td>
<td></td>
<td>79 36 25</td>
<td>70 28 26</td>
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<tr>
<td></td>
<td>M</td>
<td>22 21 23</td>
<td>49 25 25</td>
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<tr>
<td></td>
<td></td>
<td>70 30 24</td>
<td>74 24 22</td>
</tr>
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<td></td>
<td></td>
<td>74 30 26</td>
<td>78 21 26</td>
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<td></td>
<td>76 22 22</td>
<td>86 33 26</td>
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<td></td>
<td></td>
<td>89 17 27</td>
<td>87 26 27</td>
</tr>
<tr>
<td></td>
<td></td>
<td>97 23 26</td>
<td>95 23 28</td>
</tr>
<tr>
<td>3.0-3.9</td>
<td>F</td>
<td>50 33 35</td>
<td>97 33 30</td>
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<td></td>
<td></td>
<td>46 43 30</td>
<td>7 28 36</td>
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<td>5 38 34</td>
<td>29 42 34</td>
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<td>51 53 38</td>
<td>57 39 31</td>
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<td>87 41 30</td>
<td>41 57 31</td>
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<td></td>
<td></td>
<td>83 36 30</td>
<td>94 49 35</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>62 44 34</td>
<td>61 36 33</td>
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<td>85 36 31</td>
<td>36 27 30</td>
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<td>25 42 30</td>
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<td>100 26 34</td>
<td>15 47 36</td>
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<td></td>
<td>17 47 34</td>
<td>96 31 30</td>
</tr>
<tr>
<td>4.0-4.9</td>
<td>F</td>
<td>8 42 49</td>
<td>68 40 42</td>
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<td>60 27 42</td>
<td>51 43 44</td>
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<td>60 57 46</td>
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<td>21 24 44</td>
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<td>44 57 48</td>
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<td></td>
<td></td>
<td>55 31 48</td>
<td>89 56 42</td>
</tr>
</tbody>
</table>
APPENDIX D (Continued)

Spelling and Reading Grade-Equivalent Scores
From the Iowa Test of Basic Skills
For Students Within Each
Reading Sample

| Reading Level | Sex | Valley Park-Programmed Reading | | Orchard Hill-Ginn Reading |
|---------------|-----|---------------------------------|-----------------------------|
|               |     | Student/Spelling/Reading No.    | Student/Spelling/Reading No. |
| 5.0 - 5.9     | F   | 18 65 57                        | 83 49 50                    |
|               |     | 34 43 50                        | 58 57 57                    |
|               | M   | 49 48 53                        | 33 19 57                    |
|               |     | 101 23 51                       | 71 40 54                    |
|               |     | 61 40 54                        | 26 42 52                    |