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ABSTRACT

The complete texts of 250 trade books for children in the primary grades were analyzed by computer in order to identify recurring two- and three-word strings. Of the 202,763-word sample that resulted, 89 two-word strings occurred 100 times or more, and only two three-word strings occurred more than 100 times. These frequencies represent, respectively, 10.5% and 0.15% of the total number of strings in the sample. The investigators propose that these results are directly applicable to classroom reading instruction, and suggest that beginning readers can be taught such word strings in much the same manner as common sight words are presently taught in initial reading instruction. (RL)

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# THE COMPUTER-ASSISTED IDENTIFICATION OF COMMON WORD STRINGS FROM THE TEXT OF CHILDREN'S BOOKS

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The concept of phrases or common word strings as they are referred to in this paper, is not new. As early as 1908, Huey noted that, "Unitary recognition of phrases is very common in reading, for mentally the words do not stand apart" (p. 115). In a related statement, he claimed that, "The reader's acquirement of ease and power in reading comes through increasing ability to read in larger units" (p. 116). The need to teach readers to attend to phrases has recently been cited by Harris and Sipay (1971, 1975), Dechant (1970), Dallmann, Rouch, Char and DeBoer (1978).

The purpose of this investigation was to identify common two-word and three-word strings in the text of children's trade books.

## Procedures

As stated in the paper by Moe and Hopkins (1978), the investigators believed that in order to substantiate claims that they had identified certain phrases which were used with any degree of regularity in printed materials, a minimum of 50,000 running words needed to be analyzed. Samples of hundreds of thousands of words were thought to be the most desirable. To obtain a language corpus of acceptable size, the investigators selected 250 widely read, highly recommended picture books for children published between the years 1928 and 1977.

The complete text of each of the trade books frequently read by primary-grade children was keypunched, resulting in a sample of 202,763 words. The text sample was then analyzed via the Moe and Hopkins (1978) computer program designed to identify recurring word strings. The program is designed to identify all consecutive two-word and three-word strings occurring in the corpus. Information regarding the total number of two-word and three-word strings encountered and the number of different strings represented is provided on the printout. The frequency with which the strings occur is tabulated beside the listing of each individual word group.

## Findings

Within the total corpus there were 170,249 two-word strings. Of this number, 85,511 different strings were identified. However,

only 89 of these different two-word strings occurred 100 times or more in the corpus. The strings, their frequency of occurrence, and the percentage of the total corpus they represent are presented in Table 1.

Insert Table 1 about here

There were 141,018 three-word strings encountered in the corpus, 120,024 of which were different, meaning that only 15% of them occurred more than one time in the text. Only two of the three-word strings occurred more than 100 times. Table 2 contains a listing of the ten most common three-word strings and their frequency of occurrence.

Insert Table 2 about here

If one considers the cumulative frequency of all two-word strings occurring more than 100 times, it can be seen that these 89 strings account for 10.5% of all strings occurring in text. For three-word strings, the two strings that occur more than 100 times account for .15% of the total number of strings in the corpus.

Discussion

There are several observations to be made about the word strings appearing in Tables 1 and 2. First, while the cumulative frequency of the two-word phrases is not exceedingly high, it is of interest to look at the individual words which make up the two-word

phrases occurring 100 times or more. It is possible that there could have been 178 different words represented in these 89 phrases. However, because of the repeated use of certain words, only 68 different words were used and the majority of these words (75%) are within the 100 most frequently occurring words on the Carroll, Davies, Richman (1971) word list. Table 3 contains a listing of these words and their frequency of occurrence.

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Insert Table 3 about here

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A second observation to be made is that these common word strings are derived from the text of trade books commonly used with primary grade children, books which typically are written without the vocabulary control found in textbooks, particularly basal readers, written for primary-grade students. The investigators suspect that had the corpus been based on text materials used in the primary grades, the common strings would have occurred with greater frequency.

The third observation deals with a comparison of the common strings identified in the present study with the common strings or phrases occurring on the Dolch Sight Phrase Cards (1948). Dolch's phrase cards represent combinations of the 95 commonest nouns and the 220 words on the Dolch basic sight vocabulary list. Of the 144 phrase cards, none of the 76 three-word phrases appeared within the ten most common three-word strings in the present study. It should be pointed out, however, that if one examines the first two words in Dolch's three-word phrases, 35 of these also appear

in the two-word strings occurring in the present investigation. Six of the 68 two-word phrases included in the Dolch cards appear in the list of two-word strings occurring more than 100 times in the present investigation.

The investigators believe that the results of this study are directly applicable to classroom reading instruction. Since a number of common word strings can be identified in text, and were identified in this study, beginning readers can be taught such word strings in much the same manner as common sight words are presently taught in initial reading instruction.

TABLE 1.

MOST COMMON TWO-WORD STRINGS

| String | Frequency | % of Total Strings Encountered | Cumulative Frequency |
|---|---|---|---|
| in the | 1153 | .68 | 0.68 |
| of the | 862 | .51 | 1.19 |
| to the | 714 | .42 | 1.61 |
| and the | 653 | .38 | 1.99 |
| on the | 602 | .35 | 2.34 |
| said the | 406 | .24 | 2.58 |
| he was | 376 | .22 | 2.80 |
| it was | 369 | .22 | 3.02 |
| and he | 317 | .19 | 3.21 |
| at the | 315 | .19 | 3.40 |
| was a | 297 | .17 | 3.57 |
| into the | 285 | .17 | 3.74 |
| all the | 279 | .16 | 3.90 |
| he said | 261 | .15 | 4.05 |
| in a | 258 | .15 | 4.20 |
| out of | 254 | .15 | 4.35 |
| a little | 240 | .14 | 4.49 |
| the little | 234 | .14 | 4.63 |
| there was | 224 | .13 | 4.76 |
| for the | 222 | .13 | 4.89 |
| I am | 216 | .13 | 5.02 |
| to be | 210 | .12 | 5.14 |
| he had | 206 | .12 | 5.26 |
| from the | 197 | .11 | 5.37 |
| for a | 195 | .11 | 5.48 |
| and a | 182 | .11 | 5.59 |
| with a | 178 | .10 | 5.69 |
| and I | 170 | .10 | 5.79 |
| on his | 169 | .10 | 5.89 |
| of his | 163 | .10 | 5.99 |
| his mother | 163 | .10 | 6.09 |
| I have | 159 | .09 | 6.18 |
| with the | 158 | .09 | 6.27 |
| it is | 158 | .09 | 6.36 |
| to see | 158 | .09 | 6.45 |
| I will | 154 | .09 | 6.54 |
| went to | 154 | .09 | 6.63 |
| began to | 153 | .09 | 6.72 |
| when he | 153 | .09 | 6.81 |
| but the | 149 | .09 | 6.90 |

TABLE 1 - Continued

| String | Frequency | % of Total Strings Encountered | Cumulative Frequency |
|---|---|---|---|
| and she | 149 | .09 | 6.99 |
| she said | 148 | .09 | 7.08 |
| a big | 148 | .09 | 7.17 |
| in his | 148 | .09 | 7.26 |
| she was | 145 | .08 | 7.34 |
| to get | 144 | .08 | 7.42 |
| had a | 144 | .08 | 7.50 |
| and they | 144 | .08 | 7.58 |
| have a | 141 | .08 | 7.66 |
| the water | 139 | .08 | 7.74 |
| you are | 137 | .08 | 7.82 |
| through the | 137 | .08 | 7.90 |
| the sun | 137 | .08 | 7.98 |
| the other | 137 | .08 | 8.06 |
| to go | 135 | .08 | 8.14 |
| like a | 134 | .08 | 8.22 |
| going to | 134 | .08 | 8.30 |
| they were | 134 | .08 | 8.38 |
| the moon | 134 | .08 | 8.46 |
| up and | 132 | .08 | 8.54 |
| on a | 129 | .08 | 8.62 |
| down the | 128 | .08 | 8.70 |
| the way | 128 | .08 | 8.78 |
| he could | 126 | .07 | 8.85 |
| and then | 126 | .07 | 8.92 |
| came to | 123 | .07 | 8.99 |
| over the | 123 | .07 | 9.06 |
| when the | 121 | .07 | 9.13 |
| as he | 121 | .07 | 9.20 |
| the man | 119 | .07 | 9.27 |
| then he | 119 | .07 | 9.34 |
| the tree | 117 | .07 | 9.41 |
| one day | 117 | .07 | 9.48 |
| of a | 116 | .07 | 9.55 |
| is a | 115 | .07 | 9.62 |
| and his | 115 | .07 | 9.69 |
| with his | 113 | .07 | 9.76 |
| up the | 113 | .07 | 9.83 |
| he went | 113 | .07 | 9.90 |
| the big | 105 | .06 | 9.96 |
| are you | 104 | .06 | 10.02 |
| to his | 103 | .06 | 10.08 |

TABLE 1 - continued

| String | Frequency | % of Total Strings Encountered | Cumulative Frequency |
|---|---|---|---|
| back to | 102 | .06 | 10.20 |
| but he | 102 | .06 | 10.20 |
| by the | 101 | .06 | 10.26 |
| the door | 100 | .06 | 10.32 |
| did not | 100 | .06 | 10.38 |
| the sky | 100 | .06 | 10.44 |
| do you | 100 | .06 | 10.50 |

TABLE 2

MOST COMMON THREE-WORD STRINGS

| String | Frequency | % of Total Strings Encountered | Cumulative Frequency |
|---|---|---|---|
| out of the | 113 | .08 | .08 |
| there was a | 101 | .07 | .15 |
| went to the | 59 | .04 | .19 |
| it was a | 58 | .04 | .23 |
| back to the | 47 | .03 | .26 |
| up and down | 40 | .03 | .29 |
| go to the | 39 | .03 | .32 |
| the end of | 37 | .03 | .35 |
| came to the | 36 | .02 | .37 |
| said the man | 36 | .02 | .39 |

TABLE 3

FREQUENCY OF WORDS FOUND IN TWO-WORD STRINGS

| Word | Frequency (as found in strings occurring 100 times or more) | Word | Frequency (as found in strings occurring 100 times or more) |
|---|---|---|---|
| the | 29 | am* | 1 |
| a | 13 | be | 1 |
| he | 12 | from | 1 |
| to | 11 | mother* | 1 |
| and | 9 | see | 1 |
| his | 7 | will | 1 |
| was | 5 | began* | 1 |
| of | 4 | get* | 1 |
| I | 4 | water | 1 |
| you | 3 | through* | 1 |
| with | 3 | sun* | 1 |
| said | 3 | other | 1 |
| on | 3 | go* | 1 |
| in | 3 | like | 1 |
| it | 2 | going* | 1 |
| little | 2 | were | 1 |
| for | 2 | moon* | 1 |
| had | 2 | down | 1 |
| have | 2 | way | 1 |
| is | 2 | could | 1 |
| went* | 2 | came* | 1 |
| when | 2 | over | 1 |
| but | 2 | as | 1 |
| she | 2 | man* | 1 |
| big* | 2 | tree* | 1 |
| they | 2 | one | 1 |
| are | 2 | day* | 1 |
| up | 2 | back* | 1 |
| then | 2 | by | 1 |
| at | 1 | door* | 1 |
| into | 1 | did | 1 |
| all | 1 | not | 1 |
| out | 1 | sky* | 1 |
| there | 1 | do | 1 |

*Denotes word not within the 100 most frequently occurring words on the Carroll, Davies, Richman (1971) word list

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