*Haskins Laboratories Status Report on Speech Research*
*1992, SR-111/112, 161-166*

# An Examination of "The Simple View of Reading"*

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This study assesses the generality and predictive validity of Gough and Tunmer's (1986) model of the reading process, The Simple View, which holds that reading comprehension can be predicted by just two of its central components: decoding ability and linguistic or listening comprehension. The Simple View model posits the relationships between these variables as R = D x L rather than R = D + L, such that there could be no reading comprehension where either decoding or listening comprehension equals zero. Subjects for this study were 137 English-speaking third grade students followed longitudinally. We found mixed support for the Simple View model itself but strong support for its components: whether configured as sum (D + L) or product (D x L), decoding and linguistic comprehension are essential factors in reading comprehension.

Theoretical models of reading can have specific implications for reading instruction (Beck & McKeown, 1986; Singer, 1985). A useful distinction between a *theory*, which explains a phenomenon and a *model*, which specifies the interrelationships between a particular theory's variables, mechanisms and constructs, is provided by Singer and Ruddell (1985). By determining which factors are central to the reading process, models can guide teachers in making instructional decisions.

The purpose of the current study was to assess the generality and predictive validity of "The Simple View of Reading," a model proposed by Gough and Tunmer (1986), with support provided by Hoover and Gough (1990). In short, The Simple View holds that reading comprehension ability can be predicted by two components: decoding, defined as efficient word recognition, and linguistic comprehension, that is, using lexical, or word level information to achieve sentence and discourse interpretations (Hoover & Gough, 1990).

Preparation of this manuscript was supported by NICHD Grant #HD-01994 to Haskins Laboratories.

We wish to thank Karin Shields for assistance with data collection. Gratitude is also expressed to Dr. Robert Lichtenfeld and the faculty and students of the Katonah-Lewisboro Schools for their generous cooperation.

Decoding and linguistic comprehension are both considered necessary for success in reading while neither of the two components is individually sufficient. The relationships, then, between reading comprehension (R), decoding (D) and linguistic or listening comprehension (L) were hypothesized in The Simple View model to be the following: $R = D \times L$ rather than $R = D + L$ such that there could be no reading comprehension where either decoding or listening comprehension equals zero. Reading comprehension in this model is proposed to be the mathematical product of a child's decoding ability and listening comprehension.

We intended to examine how well The Simple View model predicts reading comprehension for a student population that was substantially different from the Spanish-English bilingual population studied by Hoover and Gough. In contrast to Hoover and Gough (1990), our subjects were monolingual English-speaking third graders who were receiving a uniform instructional program in reading. Should the product model provide a good explanation of reading comprehension at third grade level we also intended to assess the ability of the model to account for reading comprehension two years later, when the students were in the fifth grade. If the product model has predictive as well as concurrent validity this would be a strong test of the model's adequacy.

## Method

There were 166 third grade students in four elementary schools in a largely homogeneous middle class suburban school district. The reading curriculum was uniform across the school district and reflected a strong code emphasis in the early grades. In October of their third grade year, 137 of the students who had been in the school district for at least one full school year and who were monolingual (English-speaking) received an individually administered decoding test developed for use in a study of memory factors in decoding ability (Dreyer, 1989; Dreyer & Bryant, submitted). This was a 60-item test of decoding low frequency phonetically regular single syllable real words varying in length and orthographic complexity. None of the items were likely to be known as sight words. Following the Hoover and Gough (1990) study, the current investigation was a secondary analysis on an existing data set.

One week after the decoding test was given, the school district administered its annual achievement battery, the Educational Records Bureau Comprehensive Testing Program II, Level 2, Form C (Educational Testing Service, 1987). Scores on the third grade reading comprehension and listening comprehension subtests of the battery were obtained from school records. Two years later reading comprehension scores at fifth grade level were also obtained from school records. These were available for 121 of the original 137 subjects.

## Results and Discussion

Pearson product moment correlations for all measures are shown in Table 1. As can be seen, in this student population, decoding and listening comprehension are highly related to reading comprehension at both third and fifth grade levels. As Hoover and Gough observed in their study, the relation of listening comprehension to reading comprehension increased from third to fifth grade level. However, unlike Hoover and Gough, in our population the relation of decoding to reading comprehension did not decrease, but rather remained stable.

Hoover and Gough (1990) assess the Simple View model ($R = D \times L$) by making and evaluating three predictions. *Prediction One* is that the product of decoding (D) and listening comprehension (L) will account for significant variance in reading comprehension (R) over and above the contribution of the linear combination or sum of D and L. The linear formula is $R = a + b_1D + b_2L$, a standard regression formula. The model that includes both the linear and the product is $R = a + b_1D + b_2L + b_3[D \times L]$. Table 2 presents the squared multiple correlation coefficient, $R^2$, together with significance tests for the contribution of the product over the linear.

**Table 1.** *Intercorrelations among measures.*

| Measure | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 1. Comp3 | .69*** | .38*** | .62*** | .62*** |
| 2. Comp5 | | .46*** | .62*** | .63*** |
| 3. LstComp | | | .24** | .84*** |
| 4. Decoding | | | | .69*** |
| 5. Product | | | | |

Comp3 = Reading comprehension at third grade
Comp5 = Reading comprehension at fifth grade
LstComp = Listening comprehension at third grade
Product = Product of decoding and listening comprehension indices

**$p < .01$
***$p < .001$

**Table 2.** *Summary of regression analyses.*

| Variable | R square | *R* square change | *F* | df |
|---|---|---|---|---|
| | | *Grade 3* | | |
| Linear | .439 | | 52.4 *** | 2,134 |
| Product | .453 | .014 | 3.4 ns | 1,133 |
| Product | .379 | | 82.3 *** | 1,135 |
| Linear | .453 | .074 | 18.0 *** | 2,133 |
| | | *Grade 5* | | |
| Linear | .469 | | 52.2 *** | 2,118 |
| Product | .488 | .019 | 4.1 * | 1,117 |
| Product | .401 | | 79.5 *** | 1,119 |
| Linear | .488 | .081 | 18.5 *** | 2,117 |

Linear = Linear combination of the decoding and listening comprehension indices.
Product = Product of the decoding and listening comprehension indices.

*$p < .05$
***$p < .001$

Hierarchical multiple regressions were performed, following the analyses of Hoover and Gough. With reading comprehension for third graders as the dependent variable, decoding and listening comprehension scores were entered into the regression; together they accounted for 43.9% of reading comprehension variance. Adding the product vector (D × L) to the two independent variables (D) and (L) increased the proportion of variance accounted for by 1.4%. This increment was about the same size as that found by Hoover and Gough; however, it was not statistically significant in this sample. Also following Hoover and Gough, as a second test of the importance of the product of decoding and listening comprehension (D × L), reading comprehension was regressed first on the product alone: R square was in this case equal to 37.9%. Adding the linear combination of decoding and listening comprehension (D + L) to this regression raised the proportion of variance accounted for by 7.4%, a significant increase. Thus, with these analyses, there is better evidence for a model based on the sum of decoding and listening comprehension (R = D + L) than a model based primarily on the product of these two variables.

An additional set of regressions was performed using third grade decoding and listening comprehension as predictors, as before, but with fifth grade reading comprehension as the outcome variable. The use of fifth grade reading comprehension as a criterion provides a particularly strong test of the product model because any spurious contributions to correlations among variables that are measured simultaneously (like decoding, listening comprehension and reading comprehension) are weakened when a variable (i.e. reading comprehension) is measured two years later. Here, the product gives a significant increment of 1.9% over the linear. However, the reverse order showed that the linear accounted for more, over and above the product (8.1%). Thus, the test of Prediction One did not provide very strong evidence for the superiority of the product of decoding and listening comprehension over the linear combination of these two factors as a model of the reading process.

*Prediction Two.* If reading comprehension is the mathematical product of D and L, then the correlation between decoding and listening comprehension should change as reading comprehension changes (see Hoover and Gough (1990) Figure 1 and Table 3). Specifically, the correlation should be high and positive when reading comprehension is strong and should decline to zero when reading comprehension is zero. This is tested by taking successive subsamples of the data such that all subjects are included in the first sample, the best readers (as measured by comprehension) are excluded from the next sample, additional good readers are removed for the third sample, and so on, until only the poorest readers are left. We again used as criteria both third grade and fifth grade reading comprehension. As can be seen in Tables 3 and 4 the correlations for the four overlapping samples do, in fact, decrease for third grade reading comprehension, from a high of .241 to a low of -.019. The first value is significantly different from zero while the second value is not. Although these results are in line with the prediction of The Simple View, they appear to be artifactual.

When the sampling procedure was reversed, beginning with a subsample of the 42 readers with the highest third grade comprehension scores and successively adding more and more poorer readers, we found that the pattern of correlation reversed, instead of remaining similar to the first series of correlations. For fifth grade comprehension the picture is even less clear, with the correlation pattern varying unsystematically. Thus the results of our analysis again provided mixed evidence for The Simple View.

*Prediction Three.* If the product model holds, then the regression of reading comprehension on listening comprehension should maintain the same intercept as decoding ability decreases but the slope of the function should decrease (again see Figure 1 in Hoover and Gough, 1990.) For this analysis the data were divided into three groups on the basis of decoding score. The results are presented in Table 5.

When third grade reading comprehension was regressed on listening comprehension (L) for each of these three groups, we found that as Hoover and Gough predicted, the intercept remained fairly constant and the slope decreased (from .5342 to .2925) as decoding ability decreased. However, when fifth grade reading comprehension was the criterion, there was no such monotonic change in slope and even the intercepts varied nonmonotonically. Again, we feel these results are mixed with regard to support for The Simple View of Reading.

**Table 3.** *Descriptive statistics and correlations between decoding and listening comprehension for successive sample reductions based on decreasing reading comprehension skill at Grade 3.*

| Quartile | n | Correlation | Descriptive statistics (mean and standard deviation) | | | |
|---|---|---|---|---|---|---|
| | | *r* | D | L | P | R |
| | | *Series 1* | | | | |
| 1 - 4 | 137 | .241 ** | 28.82 | 12.36 | 363.74 | 25.78 |
| | | | 7.32 | 4.22 | 164.10 | 7.07 |
| 1 - 3 | 116 | .198 * | 28.01 | 11.79 | 336.33 | 24.23 |
| | | | 7.60 | 7.60 | 155.07 | 6.52 |
| | 65 | .094 ns | 25.38 | 10.85 | 278.43 | 19.77 |
| | | | 8.39 | 3.99 | 140.36 | 5.31 |
| 1 | 33 | -.019 ns | 22.12 | 10.18 | 224.61 | 15.67 |
| | | | 8.59 | 3.91 | 117.08 | 4.26 |
| | | *Series 2* | | | | |
| 4 | 42 | -.153 n.s. | 33.05 | 14.95 | 492.36 | 33.00 |
| | | | 3.44 | 3.48 | 119.90 | 1.9 |
| 3 - 4 | 72 | .138 n.s. | 31.92 | 13.74 | 440.75 | 31.24 |
| | | | 4.33 | 3.97 | 145.42 | 2.68 |
| 2 - 4 | 104 | .176 n.s. | 30.94 | 13.06 | 407.88 | 29.01 |
| | | | 5.38 | 4.10 | 152.08 | 4.13 |
| 1 - 4 | 137 | .241 ** | 28.82 | 12.36 | 363.74 | 25.78 |
| | | | 7.32 | 4.22 | 164.10 | 7.07 |

D = Decoding index
L = Listening comprehension index
P = Product of decoding and listening comprehension
R = Reading comprehension
* $p < .05$
** $p < .01$

**Table 4.** *Descriptive statistics and correlations between decoding and listening comprehension for successive sample reductions based on decreasing reading comprehension skill at Grade 5.*

| Quartile | *n* | Correlation | Descriptive statistics (mean and standard deviation) | | | |
|---|---|---|---|---|---|---|
| | | *r* | D | L | P | R |
| | | *Series 1* | | | | |
| 1 - 4 | 121 | .298 ** | 29.55 | 12.37 | 373.17 | 26.36 |
| | | | 5.84 | 4.36 | 159.29 | 6.50 |
| 1 - 3 | 92 | .174 n.s. | 28.23 | 11.52 | 329.80 | 24.82 |
| | | | 6.04 | 4.39 | 146.82 | 6.52 |
| 1 - 2 | 63 | .199 n.s. | 25.38 | 10.78 | 297.65 | 22.51 |
| | | | 8.39 | 4.34 | 143.29 | 6.03 |
| 1 | 30 | .239 n.s. | 23.77 | 10.17 | 247.87 | 19.90 |
| | | | 5.96 | 4.53 | 126.42 | 5.79 |
| | | *Series 2* | | | | |
| 4 | 29 | .365 * | 33.76 | 15.07 | 510.76 | 31.28 |
| | | | 1.94 | 3.00 | 113.53 | 3.14 |
| 3 - 4 | 58 | .038 n.s. | 32.19 | 14.10 | 455.21 | 30.55 |
| | | | 4.03 | 3.70 | 133.90 | 3.87 |
| 2 - 4 | 91 | .134 n.s. | 31.46 | 13.10 | 414.48 | 28.50 |
| | | | 4.38 | 4.08 | 147.38 | 5.19 |
| 1 - 4 | 121 | .298 ** | 29.55 | 12.37 | 373.17 | 26.36 |
| | | | 5.84 | 4.36 | 159.29 | 6.50 |

D = Decoding index
L = Listening comprehension index
P = Product of decoding and listening comprehension
R = Reading comprehension
* $p < .05$
** $p < .01$

**Table 5.** *Regressions of reading comprehension at third and fifth grade on listening comprehension by decoding ability.*

| Decoding level % | n | Intercept | *R* square |
|---|---|---|---|
| | | *Grade 3* | |
| 75 - 100 | 26 | 23.526 | .211 * |
| 50 - 74 | 51 | 23.333 | .123 ** |
| 0 - 49 | 53 | 17.718 | .034 n.s. |
| | | *Grade 5* | |
| 75 - 100 | 37 | 11.052 | .508 ** |
| 50 - 74 | 34 | 18.513 | .083 n.s. |
| 0 - 49 | 50 | 8.573 | .088 n.s. |

* $p < .05$
** $p < .01$

A limitation in this study should be acknowledged. There was a ceiling effect on our decoding measure such that approximately 8% of the subject population performed at ceiling level. Had the decoding measure included nonwords and multisyllabic words, the results might have more closely replicated the findings of Hoover and Gough.

It is intriguing that such a complex activity as reading could be strongly predicted by just two of its central components. Whether configured as sum or product, it is clear that decoding and linguistic comprehension are essential factors in reading comprehension, as Hoover and Gough suggest. The general theory underlying The Simple View of Reading is therefore clearly supported by our results. In testing the specifics of the model itself, however, we found, as others have (e.g. Stanovich, Cunningham and Feeman, 1984; P. B. Gough, personal communication, May 29, 1991) that the sum of decoding and listening comprehension accounts for so much variance in reading comprehension that there may be little room left for improvement by the product.

What are the implications for reading instruction? We believe that our findings confirm the importance of word recognition skills in reading. For those children who do not develop decoding skills for themselves through exposure to print, explicit systematic instruction and opportunities for practice in meaningful contexts would seem to be essential to reading progress and should be an integral part of a rich classroom reading and language program.

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## FOOTNOTES

*In C. K. Kinzer & D. J. Leu (Eds.), *Literacy research, theory, and practice: Views from many perspectives,* 41st Yearbook of the National Reading Conference (pp. 169-175). Chicago, IL: National Reading Conference.

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