

The Simple View of Reading: Research of Importance to All Educators

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Introduction

In spite of its importance in the world of reading research, many practicing educators do not know about the Simple View of Reading. It is a formula based on the widely accepted view that reading has two basic components: word recognition (decoding) and comprehension. The Simple View formula has been supported and validated by a number of research studies. Understanding the formula can help educators with assessing reading weaknesses and providing appropriate instruction.

The Simple View formula presented by Gough and Tunmer in 1986 is:

$$\text{Decoding (D) x Language Comprehension (LC) = Reading Comprehension (RC)}$$

The Simple View formula and supporting studies show that a student's reading comprehension (RC) score can be predicted if decoding (D) skills and language comprehension (LC) abilities are known. Notice that D and LC are not added together to predict RC. They are multiplied. In the Simple View formula, the values of D and LC must be between 0 and 1 (or 0% and 100%). A score of 0 means no skill or ability at all and 1 indicates perfection. (Examples of how the formula works are presented later in this article.)

Gough and Tunmer (1986) proposed the Simple View of Reading to clarify the role of decoding in reading. Many educators believe that strong decoding skills are not necessary to achieve reading comprehension. Beginning and struggling readers are often taught to compensate for weak decoding by guessing an unfamiliar word based on the first letter or the picture, then asking themselves if the word makes sense after reading the sentence. In contrast, when decoding is the focus of instruction students are taught to sound out unfamiliar words using all the letters.

This article discusses the following so that educators can take advantage of the Simple View of Reading to help all students achieve their maximum reading potential.

- The Simple View formula makes clear that strong reading comprehension cannot occur unless both decoding skills and language comprehension abilities are strong.***
 - We must teach students to decode expertly as early as possible. When students can decode expertly, their reading comprehension capabilities equal their language comprehension abilities.
 - We must provide students with strong content knowledge in many domains at all grade levels in order for them to develop adequate language comprehension abilities.
- Intervention for struggling readers is effective only when it addresses the student's specific weakness, which may be decoding, language comprehension, or both.***
 - Intervention instruction focused on developing content knowledge or comprehension strategies will benefit struggling readers only they have a weakness in language comprehension.
 - Struggling readers of all ages can have decoding weaknesses; explicit instruction in decoding will be necessary to improve their reading comprehension.
- Decoding and language comprehension skills are separable for both assessment and teaching, although both are required to achieve reading comprehension.***

- Scores from reading comprehension (RC) assessments are not enough data to identify students' areas of weakness (D or LC) with certainty.
 - Assessment for students of all ages must supply enough information to specifically identify decoding skills and language comprehension abilities.
4. ***The Simple View of Reading is a mathematical formula with three variables. If we have two variables, the third can be estimated using the formula.***
 5. ***The Simple View of Reading is supported by scientific research.***

Definitions

For purposes of the Simple View of Reading, skilled **decoding (D)** is defined as “efficient word recognition” (Hoover & Gough, 1990). This definition goes beyond the traditional definition of decoding as the ability to sound out words based on phonics rules. The meaning of decoding expands to include fast and accurate reading of familiar and unfamiliar words in both lists and connected text (Gough & Tunmer, 1986).

Language comprehension (LC) is called by several other names in various studies, including linguistic comprehension, listening comprehension, and comprehension. All of these terms are defined as the ability to derive meaning from spoken words when they are part of sentences or other discourse. Language comprehension abilities, at a minimum, encompass “receptive vocabulary, grammatical understanding, and discourse comprehension” (Catts, Adlof, & Weismer, 2006).

Reading comprehension (RC) differs from language comprehension because of the reliance on print, as opposed to oral language, to perceive the words and derive meaning (Hoover & Gough, 1990). In other words, language comprehension becomes reading comprehension when word meaning is derived from print. It is possible to have strong language comprehension and still be a poor reader if there is difficulty with decoding.

Kamhi (2007) eloquently describes the differences between decoding (word recognition) and comprehension. Decoding is “a teachable skill” compared to comprehension, which “is not a skill and is not easily taught.” Kamhi explains that word recognition is a teachable skill because it “involves a narrow scope of knowledge (e.g. letters, sounds, words) and processes (decoding) that, once acquired, will lead to fast, accurate word recognition.”

Kamhi further writes that comprehension “is not a skill. It is a complex of higher-level mental processes that include thinking, reasoning, imagining, and interpreting.” The processes involved in comprehension are dependent on having specific knowledge in a content area. This makes comprehension largely knowledge-based, not skills based.

Important Findings from the Simple View of Reading

Three important findings from research supporting the Simple View of Reading have major implications for providing reading instruction and assessment.

1. **Reading comprehension results from skills and knowledge that can be broken into two distinct and identifiable categories: decoding (D) and language comprehension (LC).** Although reading is complex, the Simple View of Reading shows that the complexities can be assigned to one of the two categories. A deficit in decoding is related to the student's ability to read printed words accurately and rapidly. Any deficit in language comprehension is not specific to reading, but related to a knowledge domain or to higher order thinking skills such as reasoning, imagining or interpreting.

2. **All reading difficulties fall into one of three general types.** The Simple View demonstrates that reading difficulties fall into three basic types:
 1. **Poor at Language Comprehension** – Has adequate decoding skills and weak language comprehension skills. The extreme example of this profile is a hyperlexic student (a student with severe language comprehension issues and excellent decoding skills).
 2. **Poor at Decoding** – Has adequate language comprehension and weak decoding skills. The extreme example of this profile is a dyslexic student (a student with language comprehension abilities that are at least average and severe decoding difficulties that do not respond to research-based decoding intervention).
 3. **Weaknesses in Both Areas** – Has weaknesses in both areas; sometimes referred to as the “Garden Variety” poor reader.

3. **Both decoding (D) skills and language comprehension (LC) abilities are necessary for reading, and both must be strong. Strength in one area (D or LC) cannot compensate for a deficit in the other area.**
 - **A student with excellent decoding skills will achieve reading comprehension equal to his language comprehension skills in the subject area being tested.** The Simple View shows that for a student with D equal to 1.0, the RC score will be equal to the LC score. For instance, a student with a D score of 100% and an LC score of 50% will have an RC score of 50%, as shown below.

$$RC = D \times LC$$

$$.50 = 1.0 \times .50$$

Any improvement in this student’s language comprehension skills will result in an equal improvement in reading comprehension. Improving the LC score to 70% will result in a concurrent increase in RC to 70%.

$$RC = D \times LC$$

$$.70 = 1.0 \times .70$$

When decoding (D) skills are strong, the only limitation to high reading comprehension (RC) is the student’s language comprehension (LC) abilities with regard to the material being read.

- **A student with strong language comprehension abilities in the subject area being tested will achieve reading comprehension equal to his decoding skills.** For instance, a student with an LC score of 100% and D of 30% will have an RC score equal to 30%, as shown below.

$$RC = D \times LC$$

$$.30 = .30 \times 1.0$$

Any improvement in this student’s decoding abilities will result in an equal improvement in reading comprehension. Improving the D score to 75% will result in a concurrent increase in RC to 75%.

$$RC = D \times LC$$

$$.75 = .75 \times 1.0$$

When language comprehension (LC) abilities with regard to the subject area of reading are strong, the only limitation to high reading comprehension (RC) is the student's decoding (D) skills.

- **A weakness in one area will be exacerbated by a weakness in the other area.** For instance, a student with scores of 75% for both D and LC will have an RC score of 56%, as shown below.

$$RC = D \times LC$$

$$.56 = .75 \times .75$$

Because of the multiplier effect in the Simple View formula, the RC score is significantly lower than either of the component scores. Both D and LC scores will need to improve for this student to achieve high reading comprehension scores.

If the D score improves to 100%, the student's RC improves only to 75% as shown below:

$$RC = D \times LC$$

$$.75 = 1.00 \times .75$$

Intervention in both D and LC is necessary in order for this student to achieve maximum RC scores.

Practical Application of the Simple View of Reading

The Simple View is an algebraic equation with three variables. Any variable in the equation can be estimated if the other two variables are known. That means that if any two of the three variables (RC, D, LC) are known, the third variable can reasonably be estimated. The equations to estimate each variable are:

$$RC = D \times LC \text{ (The Simple View formula)}$$

$$D = RC \div LC$$

$$LC = RC \div D$$

Measures of a student's reading comprehension (RC) abilities are commonly available from high stakes tests or other measures. Therefore, if scores for either decoding (D) or language comprehension (LC) are available, the third variable can be estimated using the Simple View formula. The practical aspect of this is that we need assess only two of the variables, not all three, which saves time spent on assessment.

Using the Simple View of Reading to Analyze Different Responses to Intervention

This section analyzes three 5th grade students. The profiles are composites of actual 5th graders with reading difficulties.

All three students had same RC score at the beginning of the year, which was considerably below the grade level benchmark. In terms of the Simple View formula, these students can be considered to have a low RC score of 20%.

The three students were placed in the same intervention group that focused on improving content knowledge and teaching comprehension strategies. The goal was for students to achieve an RC score of 50% or higher.

Description of Varying Responses to Intervention

After four months of intervention, the three students in the intervention class had different improvement in RC scores. The intervention was successful for one student who exceeded benchmark after intervention. One student almost reached the goal of 50% for an RC score. One student had almost no improvement in comprehension.

Table 1 shows a description of the improvement in RC scores for each, the increase in RC score, and RC scores before and after intervention for each student.

Table 1
Pre- and Post- Intervention Reading Comprehension (RC) Scores

Student	Description of Improvement in RC	Increase in RC Score	RC Scores	
			Before Intervention	After Intervention
A	Strong	50%	20%	70%
B	Minimal	5%	20%	25%
C	Moderate	20%	20%	40%

Using the Simple View to Explain Different Responses to Intervention

The Simple View of Reading can explain why the students responded so differently to the same instruction. After intervention, each student’s decoding skills were assessed. We can reasonably assume that their decoding skills were essentially the same prior to intervention because they did not receive instruction in word attack. Table 2 shows the student’s decoding (D) scores.

Table 2
Decoding (D) Scores

Student	D Score
A	80%
B	25%
C	40%

Using pre-intervention RC scores and D scores, the Simple View formula will estimate the student’s LC score prior to intervention. With both the D and LC scores, each student can be placed in one of the three types of reading difficulties defined by the Simple View of Reading (see previous section). This placement is based on pre-intervention RC scores.

Table 3 shows the estimated Pre-Intervention LC score for each student, along with actual RC and D scores. Table 3 also places each student into one of the three types of reading difficulties defined by the Simple View of Reading.

Table 3
Description of Students' Reading Difficulties
Based on the Simple View of Reading

Student	Reading Difficulty per Simple View	D Score	Estimated LC Score before Intervention
A	Poor Language Comprehension	80%	25%
B	Poor Decoder	25%	80%
C	Weaknesses in Both D and LC	40%	50%

Explaining Different Responses to Intervention based on RC, D, and Estimated LC Scores

Each of the three students had the same low reading comprehension (RC) score, but responded very differently to intervention. The discussion below views each student's response to intervention based on the Simple View of Reading.

- **Student A, Poor at Language Comprehension** – Student A had the greatest improvement in reading comprehension after the intervention (Table 1). Student A's post-intervention RC score exceeded the goal of 50%. He has strong decoding skills (Tables 2 and 3). The primary cause of his low reading comprehension was a significant deficit in language comprehension (LC), as evidenced by his low estimated LC score of 25%. Therefore, the intervention targeted Student A's weakness, and it was successful.

If the original assessment process had provided both RC and D scores, we could have predicted the success of the comprehension instruction. We can use the Simple View formula to estimate Student A's LC score after intervention.

$$LC = RC \div D$$

$$.875 = .70 \div .80$$

Student A's LC score improved from 25% to 87.5% after intervention. This student received the instruction that targeted his weakness, and he experienced dramatic improvement to his RC, score from 20% to 70%.

Student B, Poor Decoder - The Simple View makes it very clear that the primary cause of Student B's low reading comprehension (RC) score was very weak decoding (D) skills, with a score of 25%. His language comprehension abilities, at 80%, were quite strong. It follows that his RC scores increased only minimally (Table 1) after intervention aimed at improving language comprehension (LC).

If the original assessment process had provided both RC and D scores, we would have predicted that improving Student B's language comprehension would not translate to a material improvement in reading comprehension. Indeed, Student B's RC score increased only minimally from 20% to 25%.

We'll use the Simple View formula to estimate Student B's LC score after intervention.

$$LC = RC \div D$$

$$1.0 = .25 \div .25$$

The formula shows that Student B's LC score improved from 80% to 100%. Improving LC to a perfect score resulted in only a minimal improvement to RC from 20% to 25%.

Suppose the instruction had targeted decoding and the student's D score had increased by 20%, from 25% to 45%. This results in increasing RC to 36% (holding LC at the original level).

$$RC = D \times LC$$

$$.36 = .45 \div .80$$

A 20% increase in D results in an RC score of 36%. This contrasts with a 20% increase in LC, which yields an RC score of only 25%, demonstrating that the student gets a "bigger bang for the buck" to RC by teaching to the area of weakness.

- **Student C, Weaknesses in Both Areas** – Student C has moderate deficits in both decoding and language comprehension. Therefore, the comprehension-focused intervention improved one of his weaknesses, which is reflected in the moderate improvement in his RC score (Table 1). However, Student C still needs to improve his decoding skills before he will realize significant improvements in RC, such as those seen for Student A.

Student C's RC score of 20% is significantly lower than either his D or LC scores because of the multiplier effect of the Simple View formula. This student needs to improve both D and LC to experience significant improvement in RC. The comprehension-focused intervention did improve his LC skills. Using his post-intervention RC score and his D score, the Simple View formula shows that after intervention Student C's LC scores increased to 100%.

$$LC = RC \div D$$

$$1.0 = .40 \div .40$$

Student C's RC will improve even further by raising his D score with instruction focused explicitly on decoding.

It is clear from this analysis that intervention needs to target the student's weakness, whether it is D or LC. It is also clear that assessment needs to specifically identify the student's weak area or areas. Teaching to the student's strength will not raise reading comprehension scores meaningfully, no matter how intensive the instruction is. Students with weaknesses in both decoding and language comprehension must have instruction in both areas in order to maximally improve reading comprehension.

Using only RC scores to assign the students to an intervention is a hit or miss approach. Diagnosis of either D or LC is needed to identify the area of reading weakness and to identify instruction that will be most beneficial. With scores for RC and either D or LC, the unknown score can be reasonably estimated based on the Simple View formula.

Too often it is assumed that older students with low reading comprehension (RC) scores have general comprehension (LC) difficulties, and decoding (D) weaknesses are not considered or assessed. Research supporting the Simple View of Reading shows that decoding weaknesses are a problem even for older students. Both younger and older students with low reading comprehension scores need additional assessment of decoding or language comprehension. Informal assessments of decoding skills are readily available and easy to give, unlike assessments of language

comprehension. Therefore, it is generally easier to give decoding assessments and estimate language comprehension than the other way around.

Research Supporting the Simple View Formula

A number of studies support the Simple View of Reading. Aouad and Savage (2009) briefly describe some of the studies that show how variability in decoding and language comprehension is strongly correlated with variability in reading comprehension (p. 184). Two studies are summarized below because they directly validate the Simple View of Reading and its importance to instruction and assessment.

The Simple View of Reading (1990)

Hoover and Gough (1990) first showed the validity of the Simple View of Reading formula. Their study involved more than 250 students. They used multiple assessments to measure students' development in cognition, language, and reading. Students were assessed annually from 1978–1985. They were followed from either the beginning of kindergarten or the beginning of first grade through second, third, or fourth grades. (Some attrition of students occurred during the study.)

Decoding (D) was measured by having students read nonsense words (ranging from words such as *hin* and *pame* in the lowest list to *rhosmic* and *conspartable* in the highest list). To measure language comprehension (LC), students listened to a story, retold the story, and answered questions about it. Reading comprehension (RC) was measured with materials and questions parallel to those used for LC except that students read the story, as opposed to hearing it, before answering questions.

The correlation between the actual RC score and the RC score predicted by multiplying $D \times LC$ was higher than 0.8 for each of grades K–4. What exactly does this mean? For studies of this type, a 0.3 correlation is weak and a 0.7 correlation is strong. The correlations of 0.8 and higher are strong validations of the Simple View of Reading.

Language Deficits in Poor Comprehenders: A Case for the Simple View of Reading (2006)

A more recent study that supports the Simple View of Reading was conducted with 8th graders (Catts, Adlof, & Weismer, 2006). Three groups of students were studied: (1) poor comprehenders (57 students with poor reading comprehension and normal word recognition); (2) poor decoders (27 students with poor word recognition and normal reading comprehension); and (3) typical readers (98 students with normal word recognition and reading comprehension).

This study shows that the Simple View of Reading provides an effective classification system to aid intervention for poor readers. The Simple View formula predicts that students who have poor reading comprehension and strong decoding skills will have poor general language skills. As predicted, the students with poor comprehension and normal word recognition uniformly had lower language abilities than the other two groups. They had identifiable deficits in language comprehension and normal abilities in phonological processing. Poor decoders with normal reading comprehension had an almost opposite profile. They generally scored well on tests of oral language comprehension but poorly on tests of phonological processing. (Interestingly, this study also supports the view that poor decoding is correlated with a phonological deficit.)

Conclusion

The Simple View of Reading shows that reading comprehension abilities are dependent on decoding skills and language comprehension abilities. These categories can be taught and assessed separately.

The Simple View of Reading provides clear guidance for necessary assessment of students with reading comprehension scores below grade level expectations. We need more data than just an RC score. We must also have data to understand the student's decoding skills and language comprehension abilities in order to determine effective and efficient reading intervention.

The Simple View of Reading also is clear about the components of effective reading instruction. At every grade level we must insure that students have sufficient content knowledge and higher order thinking skills to understand what they read. We must provide early reading instruction that insures students become strong decoders because once decoding is strong, the only limit to reading comprehension is the student's knowledge of the subject he is reading about and his ability to synthesize the information.

For those who would like to learn more about the Simple View of Reading, articles listed in the References section below are a good place to start. (The two articles with asterisks are short and easy to read.)

References

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*These articles are short and easy to read.

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