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ABSTRACT
        Although techniques of measuring reading rate have
been studied and reported in the literature, actual practice is not
always consistent with the findings. A study reexamined the reading
rate issue in light of additional information regarding the
test-taking experience provided directly by the test takers
themselves. The purpose of the study was to determine the effects of
two reading rate measurement techniques on rate and comprehension of
college readers and to obtain feedback from the readers concerning
the two techniques. Subjects, 173 freshman level reading and study
skills students at a large southeastern university, completed two
rate measurement techniques, a time-limit procedure and a
passage-completion procedure, and were asked for their opinions on
which exercise they felt provided a better measure of their reading
rate and should be used in tests measuring reading rate. Responses
indicated a greater preference for the passage-completion rate
measurement techniques and that students felt it gave a better
measure of actual reading rater performance, and recommended it for
testing. (One table of data is included, and 12 references are
appended.) (MS)

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Reading Rate:
The Measurement Dilemma Revisited

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Reading rate:
The measurement dilemma revisited

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Since the development of efficient and flexible reading rates is both a necessary and desirable skill for success in college level reading, satisfactory measures of rate are especially useful at that level. Although techniques of measuring reading rate have been studied and reported in the literature, actual practice is not always consistent with the findings.

To seek new insight into an old dilemma, the reading rate issue was reexamined in light of additional information regarding the test taking experience provided directly by the test takers themselves. While effects of various test lengths on rate and comprehension have been examined in research, little additional subjective information has been concurrently obtained from those in the actual testing situation. The purpose of the study was to determine the effects of two reading rate measurement techniques on rate and comprehension of college readers and to obtain feedback from the readers concerning the two techniques. Rate measurement techniques used were a time-limit procedure and a passage-completion procedure.

While no recommendations for changes in standardized reading rate testing resulted from the study, information gained from the test takers was insightful. Although reading rates obtained through the two techniques did not vary greatly, the test takers showed a strong preference for one testing method over the other. Practical suggestions and implications for college level reading rate measurement and training are provided as a result of the study.

Background

Available tests for college level reading assessment include the measurement of reading rate, but these measures are often based on short time limits. Related literature on various reading rate measurement techniques (Chang, 1980; Farr, 1969; Stetson, 1982; Traxler, 1938) suggests that longer time allowed for measuring rate can result in more reliable measures which may be most reliable are not necessarily those which can be practically obtained (Bloom, 1942; Humphry, 1959). Though perhaps more reliable, extremely lengthy tests of reading rate may be both different to administer and impractical for those taking the test. In actual practice, certain popularity used college level reading tests (Webb, 1983) continue to restrict measures of rate to short time limits. Thus, a reading rate measurement dilemma still exists. Both the call for constructive use of test results in counseling and advisement beyond mere reporting of scores to students (Webb, 1983), and the call for more research in college reading improvement programs (Gordon & Flippo, 1983), seemed to warrant a closer look into the reading rate measurement dilemma.

Procedures

In order to obtain data for the study, students in twelve sections of a freshman level reading and study skills program in a large southeastern university were included as participants. Complete rate and comprehension data were obtained on 173 of the 175 students tested. Of the 173 students, 83

were male and 89 were female; sex was not indicated by one student. The average age of the students was 19.3 years.

Two different rate measurement techniques were used with equivalent form-passages to obtain the reading rate scores. A one-minute time limit measure was selected since such short measures are both widely used in practice and questioned in research. A passage-completion measure was chosen because it provided time as needed to complete the reading of the entire passage without interruption. Two passages were extracted from the Nelson-Denny Reading Test. forms C and D (Brown. Nelson. & Denny. 1976). to be used as equivalent forms with accompanying comprehension questions. The readings were based on passages from Auslander and Hill's The Winged Horse. the same source for the passages used in forms E and F of the Nelson-Denny Reading Test. Through use of the Flesch readability formula. test makers determined that passages were close to the standard level of difficulty and suitable for eighth and ninth grade use (Brown. Nelson. & Denny. 1976). Students did not take the Nelson-Denny Reading Test for the study. Only the first passages of each form regularly used to obtain a measure of reading rate were extracted and used as equivalent forms in the study.

All participants in each of the twelve sections were given the equivalent form passages to test the two rate measurement techniques. Each student was tested through both techniques. Students were directed to read at a reasonable speed in order to answer comprehension questions.

For the time-limit technique. students read for one minute before time was called and were asked to circle the last work read. The end of each line of the passage was numbered by words-per-minute (wpm). The exact wpm score was later determined by the examiner according to the word circled in the passage by the reader when time was called. After reading the rest of the passage. students answered comprehension questions based on the passage content.

For the passage-completion technique. students read the entire passage without interruption. This was accomplished by using a timing procedure which allowed the reader to finish a passage before a rate score was assigned. This procedure is similar to the one used in Timed Readings. (Spargo & Williston. 1975) rate practice material. In this method. the examiner kept track of time elapsed during reading. As soon as the last word of the passage was read. the reader looked up to note the time elapsed in seconds. Every five seconds was marked off by the examiner on a chart of large numbers projected from an overhead projector onto a screen. Readers wrote the time in seconds on the reading passage. The accompanying comprehension questions were then answered. Each reader's time was later converted to a wpm score by dividing the total number of words in the passage by the number of seconds taken to read the entire passage. then multiplying this quotient by sixty.

Comprehension measures were included to consider the rate scores as meaningful. In addition. all scores and comments of higher comprehenders could be studied and analyzed as well as those of the total sample. Exercises were distributed in counterbalanced order so that a practice effect would not favor one particular passage or measurement technique over the other.

Reading efficiency scores were computed since some commonly used college level reading improvement materials often report performance in terms of reading efficiency. A traditional reading efficiency index was used (reading efficiency = wpm x % correct on comprehension).

Following completion of all objective rate and comprehension exercises. an option form was completed by all readers in order to obtain test taker

feedback. Readers were asked to indicate preference of rate measurement exercise. They were asked to indicate which exercise they felt provided a better measure of their reading rate, and which one they felt should be used in tests measuring reading rate. Opportunity was given for any written explanatory comments.

Results

Data on rate, comprehension, and efficiency scores, along with test taker options were analyzed for the total sample. In addition, all scores of the higher comprehenders by each technique were analyzed. Those who scored 75% or better on comprehension after reading by the time-limit rate technique, those who scored 75% or better on comprehension after reading by the passage-completion rate technique, and those who scored 75% or better on both exercises were studied as Subgroups 1. 2, and 3, respectively. In order to consider the rate scores meaningful, scores included for subgroup analysis were those of participants who had a minimum of 75% on comprehension.

Rate scores

The average (mean) reading score resulting from the time-limit technique for the total sample was slightly higher than the average produced from the passage-completion technique. The mean rate score for the time-limit measure (termed Rate A) for the total sample was 230.7 words-per-minute. The mean rate score for the passage-completion rate measure (termed Rate B) for the same group was 222.6 words-per-minute.

In each case by subgroup. the Rate A measure resulted in a slightly higher reading rate in words-per-minute than did the Rate B measure. The subgroup scores were as follow:

Subgroup 1: Rate A 232.7 wpm, Rate B 225.6 wpm
Subgroup 2: Rate A 230.8 wpm, Rate B 222.4 wpm
Subgroup 3: Rate A 242.0 wpm, Rate B 232.8 wpm

Statistically significant differences ($\alpha = .05$ level) in rate scores but not in comprehension scores resulted for the total sample. The wpm average difference reported between the two rate measures for the total sample was determined to be significantly different from zero, $t (173)= 2.37$, $p < .01$. Although the time-limit measure resulted in a greater wpm score than did the passage-completion measure for the total sample, the actual difference was only 8.1 wpm. The significance of the difference may be accounted for. however, by the variation in scores. A great variation in scores resulted between the two rate methods — 44.9 wpm. Large differences in scores resulted from the two rate methods for many readers in the sample.

No significant differences were found to exist for the rate measurement techniques by subgroups, or by subgroup member characteristics — age, sex, classification, college, and major. (The dependent t-statistics for rate scores by subgroup are as follows: Subgroup 1, $t (33) = 0.81$, $p < .42$; Subgroup 2, $t (30) = 1.19$, $p < .24$; Subgroup 3, $t (59) = 1.59$, $p < .11$.)

Comprehension scores

No significant differences resulted in scores from the accompanying comprehension exercises for the total sample. or for Subgroup 3 (those who scored 75% or better on both comprehension exercises). Comprehension score differences found by Subgroup 1 and Subgroup 2 were due to definitions of subgroup membership.

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Efficiency scores

Since efficiency scores are included. it can be emphasized that two different individual scores — rate and comprehension — affect the resulting product. Significant efficiency score differences resulted in all groups in the study. The difference for the total sample can be accounted for by the difference in rate scores. The difference in Subgroup 1 is due to the difference in comprehension scores. While these differences may be reported as being highly significant statistically. this designation does not give particular meaning to the scores without acknowledgement of the differences in component scores.

Reading efficiency scores can often be misleading (Farr. 1969: Nacke. 1970). It is the components of the scores — not simply the product — which must be acknowledged in discussions of these scores. While reading efficiency scores for several readers may be identical. the same products do not necessarily reflect the same performance. Without regard to which compon ent may have been disproportionate. comparison of one product to another can lead to misinterpretation of the scores. The component scores might best be considered in relation to each other rather than only in combination as products. if they are to be meaningful and useful in determining reading performance or needs.

Opinion forms

Results of the opinion forms filled in following all rate and comprehen sion exercises are summarized in the Table of Participant Preferences of Reading Rate Measurement Exercises.

Question 1: Which rate exercise did you prefer to take?

For Question 1. the greatest percentage of respondents in all groups preferred the passage-completion exercise over the time limit exercise. This was evidenced by 53% in the total sample. 46% in Subgroup 1. 54% in Subgroup 2.and 60% in Subgroup 3 who preferred taking the passage completion exercise. Even though the time limit measure produced a slightly higher yet significantly different mean rate score for the total sample. the greatest percentage of those participants preferred to take the passage completion exercise.

Question 2. Which rate exercise do you think gives a better measure of the rate at which you really read?

For Question 2. the passage completion measure was regarded as the better rate measure by the majority of respondents in each group. Sixty eight percent of the total sample. 64% in Subgroup 1. 59% in Subgroup 2. and 78% in Subgroup 3 regarded the passage completion measure as a better measure of their actual reading rate.

Question 3: Which rate exercise do you think should be used in tests measuring reading rate?

The passage completion technique was recommended for use in tests of reading rate by a 55% majority of the total sample. In Subgroup 1. 46% recommended that either rate exercise be used in tests of reading rate. The next highest percentage — 33% — recommended the passage-completion technique even though this was the group (Subgroup 1) which scored 75% or better on comprehension after the time-limit exercise. A 55% majority in Subgroup 2. and a 64% majority in Subgroup 3 recommended the passage completion technique over the time limit technique for use in tests of reading rate.

Overall, the responses indicated a greater preference for the passage-completion rate measurement techniques. The greatest percentage of students preferred to take the passage-completion exercise. They felt it gave a better measure of actual reading rate performance, and recommended it for testing. This preference was made regardless of actual performance of students demonstrated by their rate and comprehension measures.

Reasons expressed by students for the preference of the passage-completion techniques were that the technique allowed for greater concentration without interruption, and it did not cause undue pressure during reading. Students felt that the measure was more like their actual reading performance (outside of rate testing) and was, therefore, more representative of normal reading situation.

One reason given for preference of the time limit technique was that the short time-limit caused readers to read faster. Once the time-limit had passed, the reader could resume a normal reading pace unpressured. In this way, students tended to suggest that the short time-limit encouraged an artificial rate of reading for testing situations. Again, overall performances were made regardless of actual performance by scores.

Discussion and Recommendations

While the actual reading rate scores did not vary greatly through use of the different measurement techniques, definite preference of measurement techniques was indicated by the test takers in the study. Since no significant differences were found in scores of the higher comprehenders of the sample subgroups, changes in standardized testing procedures were not recommended as a result of the study. The use of short time limits in tests measuring reading rate might still be considered useful.

Practical recommendation and implications which did result could be considered by those who make use of reading rate scores in reading improvement programs:

1. Since procurement of rate scores by the passage completion rate measurement technique appears to rely heavily upon the examiner's skill, use of such a measure for formal group standardized test situations is questionable due to the timing and precision constraints inherent in standardized testing.
2. Reading rate measurement done in informal situations rather than formal standardized test situations should be considered when estimates of reading rate are utilized as a college level reading improvement programs. In such situations, the passage-completion rate measurement technique could be used without putting undue pressure on students. Rate practice exercises could then more closely simulate a atural reading situation.
3. In cases where reading efficiency scores are used, interpretation of these scores could be more meaningful and useful in determining reader performance or needs if the component scores were considered in relation to each other, rather than exclusively in combination as products. Reporting and comparison of products can be misleading and thereby misrepresent actual reading performance.
4. As a suggestion for future study, the subsequent rate and comprehension performance of readers in practice material could be compared back with the scores of initial placement based on results of a time-limit rate and comprehension exercise, and on a passage-completion rate and comprehension exercise.
5. In light of the findings of the study, time-limit measures of reading rate might still be considered useful.

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Participant Preferences of Reading Rate Measurement Exercises

Preferred Response	Number and Percent of Responses					
	Question 1A		Question 2B		Question 3C	
Total Sample						
Time-limit	41	24%	30	18%	25	15%
Passage-Completion	91	53%	117	68%	93	55%
Either	39	23%	24	14%	52	30%
Total	171	100%	171	100%	170	100%
Subgroup 1[d]						
Time-limit	11	33%	5	15%	7	21%
Passage-completion	15	46%	21	64%	11	33%
Either	7	21%	7	21%	15	46%
Total	33	100%	33	100%	33	100%
Subgroup 2[e]						
Time-limit	7	23%	7	24%	3	10%
Passage-completion	16	54%	17	59%	16	55%
Either	7	23%	5	17%	10	35%
Total	30	100%	29	100%	29	100%
Subgroup 3[f]						
Time-limit	11	19%	7	12%	4	7%
Passage-completion	35	60%	46	78%	38	64%
Either	12	21%	6	10%	17	29%
Total	58	100%	59	100%	59	100%

a Which rate exercise did you prefer to take?

b Which rate exercise do you think gives a better measure of the rate at which you really read?

c Which rate exercise do you think should be used in tests measuring reading rate?

d Subgroup 1 = those who scored 75% or better on comprehension under the time-limit rate measurement technique only.

e Subgroup 2 = those who scored 75% or better on comprehension under the passage-completion rate measurement technique only.

f Subgroup 3 = those who scores 75% or better on both comprehension checks.

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