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Sandra K. Pitts  
*Albuquerque, NM*

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## THREE SPELLING MEASURES AS CORRELATES OF READING ABILITY IN UNDERPREPARED COLLEGE FRESHMEN

Sandra K. Pitts  
Univ. of Albuquerque

George Hirshfield  
Univ. of New Mexico

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Many new students entering post-secondary education are learners whose aspirations heretofore never included a higher education and who receive poor scores on college board tests (Knowles & Knowles, 1983). Students whose backgrounds included cultural or linguistic isolation are of particular concern to colleges which operate in areas of large minority populations. For these and other high-risk learners, colleges have been obligated to create support facilities, such as reading/writing labs and tutorial services, to diagnose and remediate those language deficiencies in reception and production which handicap learners' progress in all classes, but especially in basic skills English classes.

Placement in basic skills English classes is usually accomplished through a holistic rating of one sample produced by each entering student. Since recent studies indicate a significant correlation between reading and writing abilities, many placement procedures now include a standardized reading test as an additional screening device. These two measures provide little help for the staff of support facilities, who usually must wait until initial assignments are completed, graded, and returned by English instructors before specific remediation procedures can begin--often one month into the semester. In addition, essay evaluation can result in prejudicial judgments on major criteria when repeated spelling errors interfere with comprehension, especially when they are read as rapidly as they must be read in the screening process. Poor spelling, among good and poor readers alike, persists as an impediment to clear discourse production by college students.

While a spelling test might prove of value as an added instrument in the screening process, the choice of instrument would depend upon whether its results correlated

significantly with the special learner's spelling as manifested in his/her independent discourse production. Such information would enable the learning center staff to initiate spelling remediation at the onset of the semester. Although multiple-choice tests have become the most common format used in this computer age, there is no recent evidence that the two tasks required in standardized spelling tests (dictation and multiple-choice) reflect how the adult learner performs when writing his or her own words in a contextual setting, particularly the learner from a minority population.

If a significant relationship were found between spelling abilities using varied measures and reading levels using an easily administered reading test, a remedial program for spelling should have a positive effect upon reading skills as well by tapping common cognitive processes and by cultivating those language competencies which are common to both reading and spelling. Such information would be of particular value to support facilities in colleges which serve large minority populations.



### Reading and Spelling

There is considerable lack of concurrence among researchers with regard to the relationships between reading and writing at the college level, and particularly between reading and spelling. While Applebee (1977) noted a reliability of .88 in predicting reading levels from students' writing samples, P. Smith (1980) noted primarily the differences between reading and writing, labeling reading a selection task and writing a production task.

Both reading and spelling abilities may be results of rule application. As a result of their study in rule application, Baron, Treiman, Wilf, and Kellman (1980) suggested

that learning to spell by rules had provided their subjects with practice in detecting segments (sounds associated with letters or groups of letters in varying positions) and had improved their phonemic perception while reading. In support of rule-application strategies, Marsh, Friedman, Welch, and Desberg (1980) demonstrated that there is considerable congruence between the development of strategies in reading and spelling. Also, Cheek (1979) found a positive significant relationship between sixth- and eighth-grade students' knowledge of graphemic options and their total oral reading accuracy. While F. Smith (1981) asserted that "We learn to spell by reading" (p. 167), Frith found that poor spellers who were good readers were proficient in going from print directly to meaning but were impaired at converting print to sound. Frith's good spellers who were also good readers showed mastery of both aspects of reading, converting print to meaning and converting print to sound.

### The Purpose of the Study

The researchers were interested in discovering if the Principle of Associative Symmetry, wherein associations formed in one direction are usable in the opposite direction (Baron et al., 1980), is operative with regard to reading and spelling. This study was conducted to answer the following questions: (1) For basic skills college students, particularly minorities, are there statistically significant relationships between reading abilities as measured by vocabulary, comprehension, and total reading scores and spelling scores as measured by a dictation format, a multiple-choice format, and independently produced discourse, and (2) for these same students, are there statistically significant correlations among the spelling measures themselves?

### Method

Subjects. The students in five basic skills English classes at the University of Albuquerque were used in this study: three English 100 classes (intensive remediation) and two English 102 classes (refresher). Only those students who were in class both days, during the writing of the controlled-topic essay and during the administration of the spelling tests, were used as subjects in the study, resulting in a sample of 71 subjects: 28 male and 43 female. The ages ranged from 16 to 60 years, the ethnicity was made

up of 25 Native Americans, 25 Hispanics, 12 Anglos, 6 Blacks, and 3 Asian and Middle Eastern students. While English was the first language of most (28), many spoke first languages other than English: 18 spoke Spanish, 20 spoke one of several Native American languages, and 5 spoke other languages.

Instruments. The four instruments used in this study were (1) Form C of the Nelson-Denny Reading Test (NDRT) (2) the multiple-choice spelling section of the Comprehensive Test of Basic Skills (CTBS), Level J, (3) the spelling dictation section of the Wide Range Achievement Test (WRAT) Level II, and (4) an independently produced essay of approximately 500 words using a classification pattern of exposition and entitled "Three Types of Students I Have Observed."

Procedure. During the month of August, prior to the start of the semester, all subjects participating in the study were administered the NDRT as part of the placement procedure required for all entering students. During the fourth week of the semester, on the same day, all students in the five English classes wrote in-class essays on the topic "Three Types of Students I Have Observed." All subjects were given a maximum of 75 minutes to complete the assignment. They were not advised of the specific nature of the study until after the essays were written in order to preclude extra precaution being taken with spelling that would not ordinarily be taken with an in-class assignments. No dictionaries were permitted.

The total number of spelling errors produced on each essay was ascertained, with duplicate errors counted only once. The total number of spelling errors was subtracted from the total number of words in each essay. The difference was divided by the total number of words written by each subject to arrive at a percent correct spelling score, carried to four decimal places. This positive score facilitated comparison with the positive scores expressed in the NDRT, WRAT, AND CTBS results.

Two days after the in-class writing assignments, during the regular 75-minute class sessions, the two spelling tests were administered to the five classes. In each class, the dictation test was administered first, followed by the multiple-choice test. Only raw scores, number of correct

responses, on the reading test and the two spelling tests were used in the analyses.

### Results

Means, standard deviations, and ranges of the four tests used in the study are given in Table 1. To answer the first question in the purpose, multiple regression analyses were computed with appropriate post hoc tests. To answer the second question, Pearson Product Moment Correlation coefficients were computed.

The multiple regression analysis indicated that the three spelling variables share about 33% of the variance in the NDRT scores. The observed relationships were significant,  $F(3,67) = 11.21$ ,  $p < .01$ . A secondary analysis was performed to look uniquely at the independent variables in order to ascertain the best predictor of reading vocabulary among the measures of spelling ability. Only the contribution of the CTBS is significant as a predictor of reading vocabulary,  $F(1,67) = 9.50$ ,  $p < .01$ .

The analysis indicated that the three spelling variables share about 26% of the variance in the NDRT comprehension scores. The observed relationships were significant,  $F(3,67) = 7.72$ ,  $p < .01$ . The secondary analysis indicated that only the contribution of the CTBS is significant as a predictor of total reading ability,  $F(1,67) = 6.77$ ,  $p < .01$ .

Results revealed that the three spelling variables share about 36% of the variance in the total reading scores. The observed relationships were significant,  $F(3,67) = 12.61$ ,  $p < .01$ . The secondary analysis showed that only the contribution of the CTBS is significant as a predictor of total reading ability,  $F(1,67) = 10.83$ ,  $p < .01$ .

The Pearson Product Moment Correlation analysis revealed that all obtained coefficients among the three different measures of spelling ability were significant.

### Conclusions

Several conclusions may be drawn from the results of this study. However, it must be emphasized that these conclusions apply only to populations of underprepared college freshmen similar to those enrolled in basic skills English classes at the University of Albuquerque. To general-

Table 1  
Means, Standard Deviations, and Ranges  
of Nelson-Denny and Spelling Scores

Variable	Mean	Stan. Dev.	Min.	Max.	Poss. Score
NDRT Vocab.	23.40	12.39	8.00	52.00	100.00
NDRT Compre.	30.34	9.29	14.00	52.00	72.00
NDRT Total Rdg.	53.75	19.76	24.00	102.00	172.00
WRAT Spelling	24.31	7.99	3.00	39.00	46.00
CTBS Spelling	18.70	5.50	6.00	30.00	30.00
ESSAY Spelling*	.97	.02	.86	1.00	1.00

\* Scores on the independently produced essay are expressed as the proportion of total words written that were spelled correctly.

Table 2  
Correlations Among Measures of Spelling Ability

Variables	WRAT	CTBS	IPE
WRAT	--	.80889**	.72252**
CTBS	.65430	--	.56793**
IPE	.52204	.32254	--

\*\*  $p < .01$

Note: Correlations are in the upper quadrant, variance shared ( $r^2$ ) in the lower quadrant.

ize these conclusions to students in other basic skills programs, one must assume a similarity in composition of the sample with regard to ethnicity and first language.

For the subjects used in this study, there is a significant relationship between reading and spelling ability; capable readers are better spellers than poorer readers. This seems to hold true whether the reading ability is measured by vocabulary, comprehension, or total reading score. Further, the three spelling measures used in this study would serve as predictive measures of general reading ability if used in a screening process for incoming freshmen similar to those in our sample. However, among the three spelling tests, the CTBS--a multiple-choice format--serves as the best predictor of reading ability.

Spelling measures, whether multiple-choice or dictation, do not correlate with spelling ability as revealed in the independent writing of underprepared freshmen, although the dictation test (WRAT) shares more variance with spelling performance in independent writing (52%) than does the CTBS multiple-choice format (32%). Therefore, the choice of a single spelling measure to be used in the screening process for incoming freshmen would depend upon which skill it is most necessary to predict; reading ability (the CTBS) or spelling performance in independent discourse (the WRAT).

### Discussion

Although the CTBS multiple-choice test and the WRAT dictation test had 65% variance shared, their relationships to reading scores provided contradictory information. While a higher CTBS score resulted in a higher reading score, negative Beta weights in the secondary analyses indicated that a higher WRAT score resulted in a lower reading score. From this, one may conclude that the significant relationship between the WRAT and independent spelling and the significant relationship between the CTBS and reading scores imply that the measures are tapping different processes (production versus recognition) as Croft (1982) suggested. The WRAT dictation test and spelling in one's own writing may be measuring production tasks, while the CTBS and the NDRT, both multiple-choice formats, may be measuring recognition tasks. Also, it might well be that a spelling task which requires the subject to select a



correct spelling from four alternative spellings of the same word is more a measure of reading ability than of spelling ability, especially in older learners.

Hanna, Hodges, and Hanna (1971) noted that the task of encoding phonemes into graphemes is made more difficult because English has a "surfeit of graphemic options" (p. 39). If this is so, the multiple-choice format of the CTBS narrows the options for the testee to only four possible alternatives, which is considerably fewer than the number of options that may come to mind as one is involved in the act of writing.

One possible explanation for the significant relationships between reading and spelling as a question of options was noted by Perin (1982). Her study showed that better readers completed spelling tasks of words and nonwords with not only fewer errors but with qualitatively better attempts, more plausible graphemic options. This suggests that better readers have been exposed, through more experience with print, to the repeated and acceptable patterns of English orthography and, therefore, have a "better grasp of the rules relating sound and letter" (p. 11).

The bi-directionality of spelling and reading instruction needs to be tested and, if verified, treatments need to be devised and studied to see if improving scores on one variable (the CTBS, for example) increases reading scores, and vice versa. The influence of spelling instruction on reading scores of good and poor readers might be determined through an experimental design employing a path analysis approach in a covariance framework.

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