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Does the Study of Latin Affect Spelling Proficiency?

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ABSTRACT: This investigation explores Latin study as a possible route to superior spelling proficiency. The spelling ability of two groups of academically able eleventh graders — students of Latin and students of other second languages — is compared. It was found that the Latin students were superior in general spelling ability and were particularly superior at spelling words of Latin origin. In addition, analysis of the spelling of derivatives for which knowledge of Latin could either facilitate or mislead the speller revealed that Latin students were differentially affected by the two types of derivatives. In contrast, students of other second languages, lacking the knowledge of Latinate derivatives, made more errors on both types of words. Thus, it appears that Latin study does have an effect on spelling performance. Whether it can fully account for the superior spelling proficiency of the Latin students, however, remains a question to be answered by a more extensive longitudinal investigation. Implications for instruction drawn from the present study are discussed.

KEYWORDS: Latin study, spelling proficiency, second language learning

Research for ways to increase spelling proficiency has gone on for at least a century in this country and has been, broadly speaking, unsuccessful. In spite of many efforts to find solutions, spelling problems are still present at all stages of academic experience and in the adult workplace as well. The idea of using Latin study as one possible route to greater spelling proficiency is not new. Following a scattering of investigations early in the century that provided rather conflicting or inconclusive results (e.g.

Most of the previous research into the effect of Latin study was concerned with the transfer of training to proficiency in vocabulary, grammar, and reading, not to spelling. Moreover, when the focus was on spelling, the studies were variously lacking in one or another control. In particular, no single study controlled such factors as general aptitude, other foreign language study, etymological origin of stimulus words, word frequency, and level of general spelling proficiency of the subjects.

In view of these limitations of previous research and the continuing need to find ways to improve spelling achievement and instruction, it seemed the time had come to look into the effects of Latin study once again. For this purpose, we chose to compare the spelling performances of students of Latin and of other foreign languages. The comparison with students of other languages was, of course, necessary to control for the possibility that study of any second language would have an effect on spelling proficiency in English.

Investigations of the effects of Latin study, however, must also control for the possibility that it is the superior students who elect Latin as a second language and that therefore all positive effects obtained are due simply to the general intellectual superiority of those particular students. In this research, therefore, we took several steps to counter that argument. Our subjects were purposely selected from a private secondary school that prides itself on its high academic standards. We sought thereby to insure, as best we could, that both groups would have superior academic ability and, moreover, that both groups would have excellent instruction in the language chosen. In addition, we obtained information about the general aptitude and academic achievement of the two groups that could be used in inferential statistics as needed.

As previous investigators had, we examined overall differences between the two groups in spelling performance. We then looked at differences on words of Latin and nonLatin (in this case, Greek) origin separately, to determine whether any specific benefit was derived from Latin study. We were careful to equate the Latin and Greek origin words in both frequency and familiarity. In addition, we included another condition, one specifically aimed at pinpointing the influence of Latin study in a different way: we examined its effect on the spelling of words with the ambiguous -ENCE/-ANCE suffixes. Latin derivatives with these suffixes were chosen because their correct spelling is not normally taught by 'rule' in English and Language Arts classes and because they are challenging even for well-educated adults. For some of these words, a knowledge of Latin forms can provide a direct clue to the correct vowel in the suffix. Thus, knowledge of the Latin form, *eloquentis*, would be helpful in providing the correct spelling of the vowel in the English word, *eloquence*. In other cases, the Latin form, far from being helpful, might actually suggest the wrong English spelling. For example, the Latin student who is familiar

with the Latin infinitival form, *admittere*, might be led mistakenly to spell the English derivative as *admittence*.

Specifically, then, in order to gauge the influence of Latin study, we asked: Given groups equal in overall verbal ability, (1) whether students of Latin are generally better spellers of English than students in other languages, (2) whether the two groups differ in their ability to spell words of Latin and Greek origins, and (3) whether they are differentially affected in spelling Latin derivatives for which knowledge of Latin may be a critical factor.

We consider that the answer to these questions will provide a first step in the reexamination of the broader question of the effect of Latin study on the spelling of English. Even more importantly, they may provide clues to improvements in spelling instruction.

METHOD

Subjects

The subjects were 30 11th-grade students at an independent school in northwestern Connecticut who had volunteered to participate in a spelling research project.¹ Half of the students were studying Latin, and half were studying other second language — either French, Spanish, or German. All of the subjects were completing at least their second year of the study of a foreign language; their school requires three years of a foreign language for graduation. The two groups did not differ in years spent studying second languages ($t = 1.89$, $df\ 28$, $p = 0.07$). It should be noted, however, that five of the Latin students were concurrently studying a second foreign language—three were in their first year of Greek, and two were studying French.

Aptitude test scores from the Comprehensive Testing Program (1976), administered to the students in the tenth grade, were available for 29 of the 30 students. Percentiles based on the publisher's normative tables indicate that every student performed comfortably above average on both the Verbal and Quantitative aptitude subtests. Although the students of Latin scored higher on the Quantitative aptitude subtest ($t = 2.49$, $df\ 27$, $p = 0.02$), they did not differ significantly from the students of other second languages in the scaled scores on the Verbal Aptitude subtest ($t = 1.61$, $df\ 27$, $p = 0.12$).

In order to determine whether the two groups differed in academic achievement, two measures of the students' academic achievement at the school were examined — their first term (half year) grades in their foreign language classes and their first term overall grade averages. The grades of all the students were in the average to above average range on both

measures. Moreover, differences between the Latin students and students of other second languages on these two measures were not significant (grade in foreign language, $t = 1.25$, $df 28$, $p = 0.22$; semester average, $t = 0.10$, $df 28$, $p = 0.92$).

Materials and Procedures

The subjects were given three spelling tests in a single group administration in the second week of May. These were as follows:

(1) *Wide Range Achievement Test, Spelling subtest* (Jastak and Jastak 1978): The Spelling subtest of the Wide Range Achievement Test (WRAT) served two purposes — first, to assess the spelling ability of the students with a nationally normed test of proven reliability and second, to establish the validity of the special spelling test that was constructed for this study. A high correlation (0.80 , $p < 0.001$) was obtained between performances on the WRAT subtest and our Experimental Spelling Test (described below).

(2) *Experimental Spelling Test*: The Experimental Spelling Test (EST) consists of 48 words of Latin and Greek origin, specifically selected for an analysis of spelling ability and spelling errors. Each word on the test was followed by a sentence given to clarify its meaning and grammatical form; then the word was repeated. There was a 10-sec pause between the reading of each test item.

The test includes words of two etymological origins: 27 words of Latin origin and 21 words of Greek origin, as displayed in the Appendix.

(a) *Words of Latin origin (LO)*: The LO words are divided into two categories. The first is a mixed array of words whose Latin forms were judged by their teachers to be familiar to second-year Latin students (for example, 'description'). The second is a group of words with the suffixes of the '-ence/-ance' type (labeled -ENCE/-ANCE). Latin derivatives with these suffixes were chosen because the correct spelling of the suffix, as we noted earlier, is not normally or efficiently taught by 'rule' and because accurate knowledge of the spelling of the suffix is challenging even for well-educated adults.

We expected that all of the -ENCE/-ANCE words would be equally difficult to spell correctly for the students of other second languages. However, for the students of Latin, the -ENCE/-ANCE words present two different kinds of challenges. For ten of the words (henceforth called 'Facilitative') the spelling of the vowel in the English derivative is signaled by the Latin word origin. A different kind of challenge is presented by five other -ENCE/-ANCE words in which the relationship between the Latin

forms and the spelling of the English derivative is misleading (henceforth called 'Misleading'). For these, the knowledge of the Latinate forms is apt to suggest the wrong English spelling of the -ENCE/-ANCE suffix.

(b) *Words of Greek origin (GO)*: Words of Greek origin (GO) were chosen for comparison with the words of Latin origin (LO). It was considered that students of Latin and students of other second languages, other things being equal, should find the spelling of the Greek words equally familiar. This should be true even for the three Latin students who were concurrently studying Greek, since the content of the first-year Greek course would be limited in higher-level vocabulary instruction.

The GO and LO words were equated in several ways. First of all, they are comparable in word length. The average number of letters in the LO words is 9.93 (SD 1.36), not appreciably different from the average number of letters of the GO words, 9.67 (SD 1.50).

The two lists were also equated for word frequency. Two different systems for measuring word frequency were used. One system (the one commonly used in language research) was to equate the two lists for their frequency in reading materials, using the estimates per million tokens provided by Kučera and Francis (1967). Determined in that manner, the mean frequency of all the words on the Experimental Spelling Test (EST) was 14.85 (SD 20.05), and the LO and GO words were not significantly different in their frequency ratings. This system is not without its problems. One was the generally low frequency counts, which indicate that, comparatively speaking, the words on the EST are not often encountered in reading, although, as the large standard deviation shows, the range varies quite widely. The second drawback was the use of a measure of frequency in reading when we were testing spelling.

A more appropriate system might be to evaluate the frequency with which the words were used in the written work of high-school students. Accordingly, we added a system for measuring familiarity of words based on teachers' estimates of how often these 11th-grade students use the words in their writing. Specifically, we asked six teachers at the students' school (three in English, one in history, one in American studies, and one in science) to rate the collection of possible words on the frequency of use in the written work of their students, using the following scale: 'never,' 'seldom,' 'occasionally,' or 'frequently.' We also asked the chairman of the Classics department to eliminate from the list any words whose Latin word stems were not encountered in the first two years of studying Latin. The final list of EST words included only those words judged by 75% or more of the judges as 'occasionally' or 'frequently' used by the students. Mean frequencies of the teachers' ratings of the LO words on the final list (79.6%) did not differ significantly from those of the GO words on the list (75%).

(3) *Experimental Frequency Test*: The Experimental Frequency Test (EFT) was devised to test the relationship between the two frequency rating scales — the frequency in reading of Kučera and Francis (1967) and the frequency of use in writing, as judged by teachers' evaluations. Since this latter system is original to this study, we deemed it important to determine whether words commonly found in reading are also commonly found in the students' writing and whether there are fewer spelling errors on frequently encountered or frequently used words, as might be expected. To carry out this comparison, we needed to devise a counterpart to the EST (made up of words frequently used in the students' writing) that would consist of words the students seldom used in their writing. For this purpose, we selected 12 Latinate words that had been judged to be 'seldom' or 'never' used in the students' writing by most (75% or more) of the teachers to make up the EFT. These words, then, constituted the EFT. They are similar in length (mean of 10.2, SD 1.3) to the EST word list. The EFT was administered immediately after the EST, as if the two were one test. The format and procedures were identical.

Comparisons were made between the two estimates of frequency and the number of misspellings of the words. As Table 1 shows, the teachers' ratings of frequency of use in writing roughly coincide with the Kučera and Francis (1967) frequency ratings for reading.

That is, the words used frequently in writing (EST) also are more frequently encountered in reading material than words used infrequently in writing (EFT). However, as Table 1 also shows, we found that the infrequently used words (those on the EFT) were not misspelled more than the frequently used words (the words of Latin origins on the EST). In fact, the frequently used words were misspelled somewhat more often than the infrequently used words, but this difference was not significant. We also found that there was a relatively small correlation between misspellings and the frequency ratings ($r = 0.34$).

Table 1. Frequency rating (Kučera and Francis, 1967) and spelling errors as a percent of opportunity (means and SDs) for Latin origin words on the Experimental Spelling Test (EST) and Experimental Frequency Test (EFT)

	Frequency Rating	Spelling Errors
Frequently Used Words (EST) ($n = 27$)	21.3 (24.0)	30.4 (23.6)
Infrequently Used Words (EFT) ($n = 12$)	6.13 (9.34)	25.6 (17.9)

RESULTS

The Spelling Ability of Students of Latin and of Other Second Languages

The first question we asked was whether students of Latin (LAT) are better spellers than students of other second languages (OSL). As Table 2 shows, the LAT students were significantly better than the OSL students on the WRAT spelling subtest scaled scores ($t = 2.67$, $df = 28$, $p = 0.01$). This superiority is also evident on the Experimental Spelling Test (EST) ($t = 2.19$, $df = 28$, $p = 0.03$).

Errors on Words of Latin (LO) versus Greek Origin (GO)

The second question was the extent to which LAT and OSL students differed in spelling performance on words of Latinate origin (LO) and those of Greek origin (GO). As Table 2 shows, the LAT students on the average tended to spell more words of both types (LO and GO) correctly than the OSL students. In addition, the LAT students were significantly better at spelling LO words ($t = 2.19$, $df = 28$, $p = 0.03$). They were not significantly better at spelling the GO words ($t = 2.04$, $df = 28$, $p = 0.06$), despite the fact that the three LAT students studying first year Greek were included in the analysis.

Comparison of Errors on the -ENCE/-ANCE Suffixes

The third question we asked was whether the LAT spellers derived particular benefit from their knowledge of Latin forms when spelling the -ENCE/-ANCE suffixes. Specifically, we asked first whether the LAT

Table 2. Performance of students of Latin (LAT) and of other second languages (OSL) students on the Wide Range Achievement Test (WRAT), Spelling subtest (standard scores and grade equivalents), and on the Experimental Spelling TEST (EST), with a breakdown of Latin origin (LO) and Greek origin (GO) words (means and SDs)

	WRAT SS	Spelling GE	EST		
			Total*	LO**	GO***
LAT ($n = 15$)	119.5 (6.6)	11.4 (1.0)	36.8 (7.9)	20.3 (3.9)	16.5 (4.2)
OSL ($n = 15$)	113.8 (5.1)	10.5 (0.8)	31.0 (6.4)	17.2 (3.9)	13.8 (2.8)

* Maximum possible = 48

** Maximum possible = 27

*** Maximum possible = 21

students' spelling of words with -ENCE/-ANCE suffixes would be facilitated by knowing Latin forms with like spellings and hurt by words that have possibly misleading relationships between the Latin and English forms. In addition, we asked whether the effect of the facilitative and misleading suffixes was similar for LAT and OSL students.

To carry out these analyses, we compared accuracy in spelling the two types of suffixes, each expressed as a proportion of opportunities for error. Since the number of words in each category was limited, the data were not subjected to tests of significance. As can be seen in Table 3, however, the two language-learning groups do show trends of performance that merit consideration. The LAT students make proportionately more errors on the misleading than they did on the facilitative suffixes. Their performance on the misleading words was very similar to that of the OSL students; thus, on this type of word, they do not have the advantage in spelling skill they have shown on all of the other measures of spelling performance. In contrast, the OSL students show roughly equivalent performances on the facilitative and misleading suffixes.

DISCUSSION

When we initiated this investigation, it was with the notion that the study of Latin, a highly inflected language that has contributed such a large proportion of words used in high school students' writing in English, might provide the student with a kind of explicit instruction in the morphophonological structure of words and the intricate processes of affixation that is not available to students of other second languages. Since English spelling is to such a large extent morphophonological, we considered that it might follow that, other things equal, the Latin students would be better spellers, no matter what the etymological origin of the words. At the very least, we supposed that the Latin students might be able to apply their knowledge of Latin directly to the spelling of words of Latinate origin and accordingly might outperform students of other second languages on such words,

Table 3. Errors of students of Latin (LAT) and of other second languages (OSL) on the -ENCE/-ANCE suffixes of misleading and facilitative types, expressed as percent of opportunity (means and SDs)

	Misleading	Facilitative
LAT (<i>n</i> = 15)	17.3 (19.8)	8.7 (13.0)
OSL (<i>n</i> = 15)	20.0 (18.5)	17.3 (15.3)

while being less differentiated on words of Greek origin. As an additional check on the effect of Latin study, we sought to determine the possible differential effects of knowledge of Latinate structure. We proposed to do this by examining the spelling of English suffixes with facilitative and misleading Latin origins.

Our focus was the effect of Latin study on the spelling performance of high school students. For this purpose, we compared the spelling of 11th graders, half of whom had studied Latin for two years (the LAT group), and half (the OSL group) other second languages for the same length of time. The general finding was that the students exposed to Latin were indeed better spellers of English than their classmates who had been taught other second languages.

Despite this evidence, it might still be the case that this difference may simply reflect the keener native intelligence or linguistic ability of students who choose to study Latin. We cannot counter that argument definitely, though we do have evidence that the LAT and the OSL students were both considerably above average in general intelligence and that the two groups were not significantly different in their performance on the Verbal Aptitude portion of the Comprehensive Testing Program (1976). There might, however, still be some question about the relative superiority of the LAT group on the Quantitative Aptitude subtest, that is, whether it might point to some innate superiority in analytic ability that would be useful in spelling, apart from any added effect of Latin study. Definitive answers to questions of that sort must await further research. We have initiated a longitudinal study to examine some of these questions, beginning with the question of whether the better spellers choose to study Latin and whether they have better linguistic abilities in general.

However, we already have some evidence from the present research that suggests that Latin study may have specific effects on certain aspects of spelling achievement, effects that may not be attributable to differences in intelligence, verbal aptitude, or analytic ability. For example, aside from their general superiority in spelling, LAT students had specific advantages that further differentiated them from the OSL group. They were significantly better than the others at spelling words of Latin origin. Although they also spelled Greek origin words better than their classmates, that difference did not reach statistical significance. Thus, it can be said at least that Latin study had a salutary effect on the spelling of Latinate words.

This is not necessarily a trivial matter. To the extent that the more difficult multisyllabic words in English are of Latin origin, the student of Latin would appear to have a considerable advantage. A post-hoc evaluation of the spelling of our students on the 46 Level II spelling words of the Wide Range Achievement Test (WRAT) (Jastak and Jastak 1978) lends some credence to that view. Eight of the ten best spellers on the WRAT among our students were from the LAT group. Checking the word origins of the WRAT spelling subtest, we find that all but four of the 23 words in

the second, increasingly difficult, half of the WRAT word list are Latinate in origin.

The specific nature of the advantage of Latin study is further suggested by an analysis of the spelling performances of the two groups on words with -ENCE/-ANCE suffixes. The LAT students were better than the OSL group in spelling words for which the forms of the Latin declensions provided facilitative clues to the spelling of the English derivatives, but no better than their classmates when the Latin forms were misleading. The Latin students were clearly using their knowledge of Latin structures and so tended to misspell the misleading words in predictable ways. The OSL students, on the other hand, do not show this effect. Unlike the LAT students, they found both types of suffixes to be of equal difficulty. They had not had the training that would make the correct spelling of the facilitative suffixes more accessible or the misleading suffixes less so.

A methodological issue encountered in designing this study is worthy of some comment. That is the problem of how to determine the familiarity of words that are presented to students as a test of their spelling abilities. Word frequency tables, such as those developed by Kucera and Francis (1967), reflect how often words appear in reading materials. A more appropriate measure might be the frequency with which students actually use the words in their writing, but no such frequency tables exist, to our knowledge. Our solution to this problem was to solicit judgments of frequency of usage from a group of the students' teachers. We used these judgments as one method of selecting the words we included on the Experimental Spelling Test. In examining the spelling errors the students made, we found that they made errors on about the same number of words they use frequently in their writing as on words that they seldom use. Thus, it is clear that familiarity through reading or writing is only a moderately successful way to evaluate how difficult a word is to spell correctly. At this level of expertise, the linguistic complexity of the words themselves may be the major factor affecting ease or difficulty of spelling.

This rather striking finding — that lexical familiarity or frequency of words is not a critical factor in high-school level spelling — brings us back to the question of just what Latin study can do to improve the spelling of our students. It is clear that Latin study did have a positive effect on English spelling, but the effect was particularly pronounced on the cognates of Latin words. It did not seem to have the more general effect we expected.

At all events, the differences we found were not as dramatic as one might have expected them to be. We would venture the hypothesis that the general effects of Latin study would be considerably enhanced if there were more direct instructional emphasis on the structure of English words — their roots, prefixes, suffixes, vowel and consonant shifts and alternations — in addition to the study of etymological origins (see Henry, 1988). Direct instruction might facilitate the development of students' morpho-

logical awareness in reading and spelling (Elbro, in press). Whether this instruction should be carried out in connection with Latin study, in English classes, or jointly in both remains an open question. Several studies in the 1920s (see Douglass and Kittelson, 1935) suggested that morphological instruction of the kind that other investigators had left to incidental learning in Latin classes might have greater general effects on English spelling if it were carried out as part of the high-school English language curriculum. More recently, instruction with a morphemically-based spelling program has been shown to bring about significant improvement in the spelling skills of a seventh-grade group (Robinson and Hesse, 1981). The beneficial effects of instruction in the structure of English words might increase if such instruction were commenced in elementary school when children are just beginning to learn about the nature of our written language.

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NOTE

¹ The performance of one volunteer who took part in the testing was not used in the analysis of the group data when it was learned that he had a history of a spelling disability. This young man's spelling was at a low seventh-grade level on the Wide Range Achievement Test, Spelling subtest.

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APPENDIX

*Words on the Two Experimental Tests**Experimental Spelling Test*Words of Latin Origin:

benefit
 correlation
 acceleration
 consensus
 obsession
 description
 license
 propensity
 opposite
 continuum
 accommodation
 dissension

-ENCE/-ANCE;

malevolence*
 eloquence*
 occurrence*
 preference*
 convenience*
 resistance*
 expedience*
 significance*
 deficiency*
 antecedent
 vengeance**
 attendance**
 acceptance**
 admittance**
 descendant**

Words of Greek Origin:

paralysis
 homogeneity
 architecture
 chronology
 hypocrisy
 sympathy
 catastrophe
 dichotomy
 antipathy
 anonymity
 melancholy
 psychology
 prologue
 microcosm
 philanthropy
 protagonist
 euphemism
 catalyst
 cosmopolitan
 psychiatry
 apathy

* the Facilitative type
 ** the Misleading type

Experimental Frequency Test

precursor

obsolescence

remittance

trajectory

progenitor

apparatus

convolution

constellation

vigilance

restitution

adversary

renovation