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Is Writing Affected by Spelling Performance and Beliefs About Spelling?

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SUMMARY

This study examined relations between self-efficacy and outcome expectancy beliefs and spelling and writing performance. Perceptions about spelling and writing were assessed in 258 college-age participants. Spelling performance was measured through a 50-item spelling test and writing performance by a holistically scored writing sample. The most highly correlated variables included spelling outcome expectancy and writing outcome expectancy, spelling self-efficacy and writing self-efficacy, spelling performance and spelling self-efficacy, and spelling and writing performance. A causal model relating perceptions, spelling performance, and writing performance was proposed and its appropriateness estimated. Direct effects on spelling were found for spelling self-efficacy, while spelling self-efficacy had indirect effects on writing performance and spelling had a direct effect on writing performance. The causal model was discussed in terms of changing conceptions of writing instruction and traditional views of the role of spelling as a necessary component of good writing.

While spelling never has occupied more than a fraction of the attention devoted to reading, good spelling nonetheless has been regarded by many parents and educators as an essential goal in the development of literacy. Traditionally, spelling instruction involves time set aside daily for spelling activities: these include pre-testing, study, and post-testing of words on predetermined lists; a systematic method of study; drill and practice of isolated words; and activities that encourage students to write the words in a meaningful context (see review by Brown, 1990). This bottom-up philosophy (Yellin, 1986), emphasizing rules, drill, repetition, and memorization of word lists, has its roots as far back as the late 1700s when Noah Webster wrote the *American Spelling Book* (Hodges, 1977). Driving the tradition for teaching spelling in this manner, referred to as the hierarchical view within this paper, has been the belief that good spelling is a critical component of good writing and that spelling

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skills, along with an understanding of the rules of grammar, sentence structure, and punctuation, are the necessary foundations on which good writing is built. In this view, which presumably comes to be shared by students who have participated in this instructional pattern, spelling forms a critical, foundational subskill upon which the higher-order processes of writing must be grounded. Consistent with this view, the conception of 'good writing' held by many teachers of English and the language arts often has been operationalized by the extent to which a given writing product embodies sound fundamentals, including correct spelling, accurate punctuation, and acceptable syntactical choices (Rosenblatt, 1976).

Recently, however, a number of theorists (e.g. Calkins, 1986; Graves, 1983) have begun to take issue with a hierarchical view of literacy development and with the view that spelling is a prerequisite for good writing. Instead, from this perspective, it is argued that spelling skills—like knowledge of syntactical and other features of language—are best acquired through a process of interaction with meaningful reading and writing. The critical learning about spelling, from this emerging literacy perspective, takes place as students encounter print in their reading and form words in their writing. Challenged is the view that spelling is a matter of memorizing isolated words (Beers and Beers, 1981); instead, spelling more correctly can be portrayed as a developmental cognitive process (Beers, Beers, and Grant, 1977); Gentry, 1982; Henderson and Beers, 1980; Manning and Manning, 1989) requiring knowledge of orthographic rules and a contextually driven understanding of the strategic application of those rules (Gerber, 1984). The necessary role of correct spelling in writing, and the problems associated with making errors in spelling, also have been called into question. Increasingly, young children are encouraged to use invented spellings (Chomsky, 1971, 1979) in order to express themselves in writing. For most students, it is argued, it is more functional for teacher and learner to focus upon the 'making of meaning' through reading, writing, and speaking within a community of writers and readers (Colvin and Bruning, 1989; Iser, 1974, 1978; Rosenblatt, 1976) than on critiquing the technical aspects of expression. These technical aspects, while ultimately important to effective expression, can be developed better in the service of the primary purposes for writing—making meaning and communication with others (Calkins, 1986; Graves, 1983; Rosenblatt, 1976).

Presumably, these differing approaches to spelling instruction would result in very different student beliefs regarding the relative importance of spelling proficiency and perceptions of themselves as spellers and writers. For example, students taught that correct spelling is a critical component of good writing could likely perceive themselves as poor writers if they were weak in spelling ability. Alternatively, students who are acquiring spelling through functional writing activities could likely perceive spelling as one aspect of writing, but one less critical to the primary task of communicating. Consequently, students could be poor spellers and still view themselves as good writers.

This study examined the possibility of a causal relationship between college students' perceptions about spelling and writing and their actual performance as spellers and writers. While cognitive processes and instructional methods in spelling have been the focus of a number of investigations, students' perceptions about spelling have been examined much less frequently. One such study, however, was that of Downing, DeStefano, Rich and Bell (1984), in which a series of cognitive, affective, and developmental issues were addressed through a structured interview format. Included among their measures were questions probing children's beliefs about their

competence as spellers and their perceptions about the importance of spelling. Our goal in the present study was to use quantitative methods to more closely examine these two dimensions in a group of young adults, and to explore possible links between these two dimensions and actual spelling and writing performance.

Our examination of students' conceptions of their competence as spellers and of likely outcomes of spelling performance was guided by two perceptual dimensions that have begun to attract much attention in the educational research community, self-efficacy and outcome expectancy (Bandura, 1982, 1986; Schunk, 1984, 1990; Shell, Murphy and Bruning, 1989; Zimmerman and Martinez-Pons, 1990). The first, *self-efficacy*, reflects behavioural confidence—the degree to which individuals consider themselves capable of performing an activity. Bandura (1986) has argued that these beliefs are important determinants of individuals' decisions to engage or not to engage in a particular area of activity, and research has shown that ratings of self-efficacy correlate strongly to a number of dimensions of actual academic performance, including general academic achievement (Schunk, 1984), reading (Bruning, Shell and Colvin, 1987; Nicholls, 1979; Paris and Oka, 1986; Shell *et al.*, 1989), and writing (McCarthy, Meier, and Rinderer, 1985; Shell *et al.*, 1989). In the present study our questions about self-efficacy centred on the extent to which individuals generally are confident in their abilities as spellers and writers, and on the degree to which this confidence actually relates to their spelling and writing performance.

A second dimension that determines whether an individual will engage productively in an activity is *outcome expectancy*, that is, the perception that successful performance will lead to desired outcomes (Bandura, 1986). In the present study we examined whether college students believed that successful spelling and writing performance leads to academic and/or vocational success, and whether the outcome expectancy beliefs they hold relate to their actual performance as spellers and writers.

Based on previous findings from other academic areas (Bandura, 1982, 1986; Bruning *et al.*, 1987; McCarthy *et al.*, 1985; Nicholls, 1979; Paris and Oka, 1986; Schunk, 1984, 1990; Shell *et al.*, 1989; Zimmerman and Martinez-Pons, 1990), we judged that spelling self-efficacy should relate strongly, and spelling outcome expectancy was likely to relate moderately, to actual spelling performance. Likewise, we hypothesized that writing self-efficacy and writing outcome expectancy would relate in similar ways to writing ability. Regarding the extent to which perceptions about spelling related to writing performance, our reasoning was as follows. The participating pool for this study was composed of college students aged 18–25 who had received elementary reading and writing instruction 10 or more years ago. For students educated during this time period the predominant approach to spelling instruction involved the use of word lists, drill and practice exercises, and testing (Brown, 1990; Cronnell and Humes, 1980), with good spelling likely portrayed to them as foundational to good writing and as critical to their positive evaluations of themselves as writers. If this analysis of traditional instruction in spelling and writing is correct for the young adults participating in this study, perceptions of self-efficacy in spelling and of outcome expectancies for spelling would be expected to account for some of the variability in writing performance. As a consequence, our proposed path model relating spelling and writing (see Figure 1) predicted both direct and indirect effects of spelling self-efficacy and outcome expectancy on writing. Spelling ability itself was portrayed in the model as having a significant direct effect on writing performance. Of primary interest in this model are the links between the belief variables

and the performance variables, rather than the relationships among the belief variables. Consequently, the belief variables were entered into the causal model as a set of exogenous variables. The correlations between the belief variables, however, are included in the model.

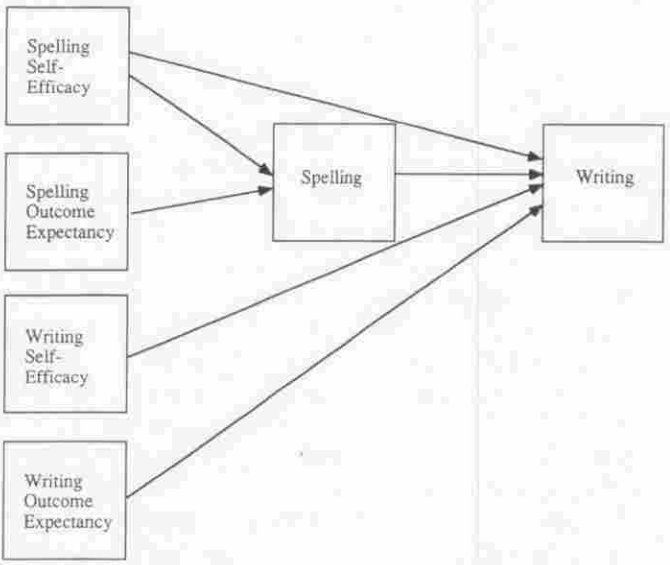

Figure 1. Proposed causal model

Thus our *a priori* model reflected hypothesized relationships among these variables for individuals who had experienced a hierarchical instructional framework. Obviously, a causal model predicting relationships among these variables for individuals instructed in the language arts from a meaning-oriented, emergent literacy perspective would vary considerably. It is important to note that compatibility between data and any model does not constitute evidence establishing causality; nonetheless, arguments for possible causal links are strengthened.

METHOD

Participants

Participants were 258 undergraduate students (179 female, 79 male) recruited from educational psychology courses in a teacher preparation programme at a large mid-western university. Participants were in their second or third years of their teacher preparation programme, ranged in age from 18 to 25, and were predominantly Caucasian (>93 per cent). All participants were expected to take part in research opportunities throughout the semester and received course credit for participation.

Literature describing national trends in spelling instruction during the time these participants were in elementary school (Brown, 1990; Cronnell and Humes, 1980) supported the assumption that these participants had experienced a traditional form of spelling instruction. In addition, spelling practices in the state that the majority

of participants (92 per cent) were educated in were documented (R. Filmer, Language Arts Consultant, Nebraska Department of Education, personal communication, December 1991). The predominant approach to spelling instruction involved the use of commercially produced spelling series based on a traditional model of word lists, drill and practice exercises, and testing.

Measurement of variables

Self-efficacy.

The self-efficacy instruments for spelling and writing were patterned after those of Shell *et al.* (1989). Consistent with methods outlined by Bandura (1982, 1986), participants were asked to estimate the probability they could successfully complete a variety of different spelling and writing tasks on a scale from zero, indicating no chance, to 100, indicating complete certainty. A principal-components analysis then was conducted on each scale. On the spelling self-efficacy scale the analysis showed items loading on two factors. Fifteen of the 17 items loaded strongly on the first factor, which accounted for 44.8 per cent of the variance, and were retained in the final scale. Likewise, on the writing self-efficacy scale, the principal-components analysis revealed two factors, with 16 of 19 items loading on the first factor, which accounted for 49.4 per cent of the variance. These 16 items comprised the final scale. Overall self-efficacy scores for spelling and writing were computed by calculating the mean for items on each scale. Reliability for the spelling and writing self-efficacy measures was assessed with Cronbach's alpha. Alpha for the spelling self-efficacy measure was .92, and .93 for the writing self-efficacy measure. The spelling and writing self-efficacy items, mean confidence ratings, and factor loadings are presented in the Appendix. As would be expected for these participants, individual ratings of self-efficacy were quite high. However, none of the participants' efficacy judgments was at 100 per cent for either reading or writing, eliminating the possibility of ceiling effects for self-efficacy.

Outcome expectancy

Participants also were asked to rate the perceived relationship of successful spelling and writing performance to achieving a set of academic and vocational goals on a five-point Likert-type scale from 1, indicating *not important at all*, to 5, indicating *extremely important*. Two sets of four items each modelled after the reading outcome expectancy instrument used by Shell *et al.* (1989) were employed to assess spelling and writing outcome expectancy. Principal-components analyses of the spelling and writing outcome expectancy items showed that these sets of items loaded on an initial factor, which accounted for 62.7 and 58.7 per cent of the variance for the spelling and writing items, respectively. The two sets of four items were identical for spelling and writing and related to academic goals (i.e. *doing well in school* and *graduating from college*) and vocational goals (i.e. *getting a good job* and *improving job performance*). Outcome expectancy scores were computed by taking the mean response of the four items on each scale. Overall reliability, assessed with Cronbach's alpha, was .79 for the spelling outcome expectancy measure and .76 for writing outcome expectancy. These items, mean confidence ratings, and factor loadings appear in the Appendix. A number of participants rated all outcome expectancy items at the high extreme ($n = 46$ or 18 per cent for spelling; $n = 96$ or 36 per cent

for writing), causing potential ceiling effects for spelling and writing outcome expectancy. However, it should be noted that the effect of this response pattern would be to truncate the correlations that were obtained between these and the other variables, leading to an underestimation of effects rather than an overestimation of the true relationships.

Spelling performance

Participants were given a 50-item spelling test consisting of words taken from the spelling list for grades 11–14 of the McGraw-Hill Basic Skills System (Raygor and Wallace, 1970). The total of 476 words included in the Spelling Test of the McGraw-Hill Basic Skills System had been compiled from Pollack's (1954) study of misspelling and seven other lists of words commonly misspelled by high-school and college students (see Horn, 1972 for a review of the word selection process).

Writing performance

Using procedures developed by Shell *et al.* (1989), participants were given 18 minutes to construct an organized essay in response to the question, 'What do you believe to be the qualities of a successful teacher?' This amount of time allowed students to produce essays of approximately 200–250 words in length, which varied considerably in structure and other qualitative dimensions. Essays were scored independently by two of the researchers using the holistic scoring method of Shell *et al.* (1989), which was based on methods described by Cooper (1985). Scoring categories included realization (vivid, creative, personally invested), clarity/quality (rich, distinct vocabulary; logical; persuasive), organization (cohesive, elaborated introduction and conclusion), quantity/density (number of distinct ideas), and language mechanics/usage (grammar, punctuation, capitalization). Each scoring category was assigned a score of 0 to 20, indicating the level at which the quality being assessed was present in the writing sample. The five category scores then were summed to create a holistic score ranging from 0 to 100. Correlations between category subscores and the total holistic score were .71, .84, .62, .51, and .72 for the categories of realization, clarity, organization, quantity/density, and language mechanics/usage, respectively, with an overall coefficient alpha of .86. The correlation between the holistic writing scores for the two raters for all essays was .89, a score in the upper range of acceptability for holistic essay scoring (White, 1985). The mean score of the two raters for each essay was used as the final writing score.

Procedures

Participants were administered the spelling, writing, and belief measures in groups ranging from 30 to 70 subjects. They were provided with three sheets of writing paper and were asked to number the first page along the left-hand margin with numbers 1 to 50. The spelling test was administered first. During the 15 minutes allowed for the spelling measure, a researcher read each word orally, used it in a sentence, and then repeated the word. Following the completion of the spelling measure, participants were asked to turn to the second sheet of writing paper and to begin writing the essay. Participants were informed they would have approximately 15 minutes to complete their essay. At the end of 15 minutes, participants were notified of the time and were given an additional 3 minutes. The spelling and writing

measures were collected at this time, and the self-efficacy and outcome expectancy measures were distributed. Directions were read independently by the participants, with the researcher available to answer questions. Individuals responded to the scales at their own rate and were permitted to leave when all measures were complete.

The self-efficacy measures in this study were assessing the participants' beliefs regarding their overall performance in spelling and writing as well as the specific spelling and writing tasks and subtasks identified in the self-efficacy measures. In order to avoid the participants relating their self-efficacy ratings to the reading and writing measures only, the spelling and writing measures were administered prior to the self-efficacy measures.

RESULTS

Three separate types of analyses were conducted. Descriptive statistics for spelling and writing performance, self-efficacy, and outcome expectancy are presented in Table 1. Correlation analyses were conducted to identify relationships among variables. Separate correlational analyses for females and males showed highly similar patterns for each gender; consequently, the data sets were combined in all subsequent analyses of the relationships among the variables. Finally, the appropriateness of the causal model was estimated using LISREL 7. Alpha level for all tests was set at .05.

Table 1. Means and standard deviations on spelling and writing performance, self-efficacy, and outcome expectancy measures

Measure	*M*	*SD*
Spelling test	37.07	8.33
Written essay	52.69	15.43
Spelling self-efficacy	85.30	11.85
Spelling outcome expectancy	4.20	.64
Writing self-efficacy	82.87	13.48
Writing outcome expectancy	4.52	.50

Spelling test scores indicate mean items correct on a 50-item spelling test. Written essay scores are mean scores on a holistic writing scale, with possible scores ranging from 0 to 100. Spelling and writing self-efficacy scores indicate average confidence ratings on a scale from 0 to 100 per cent certainty. Spelling and writing outcome expectancy scores are mean ratings on a five-point Likert-type scale.

Zero-order correlations

The correlations among the variables analysed in this study are presented in Table 2. Spelling performance was correlated with spelling self-efficacy ($r = .63$) and with spelling outcome expectancy ($r = .24$). Writing performance did not correlate with writing outcome expectancy, but did correlate with writing self-efficacy ($r = .27$). A moderate correlation existed between spelling and writing performance ($r = .42$). Spelling outcome expectancy was correlated with writing outcome expectancy

($r = .57$) and spelling self-efficacy with writing self-efficacy ($r = .68$). Given the correspondence between these correlations and the relationships proposed, the original causal model was subjected to empirical test.

Table 2. Correlations among variables

	Writing	Sp-OE	Sp-SE	Wr-OE	Wr-SE
Spelling	.42*	.24†	.63†	.18*	.48†
Writing		.05	.28†	.09	.27†
Sp-OE			.29†	.57†	.15
Sp-SE				.25†	.68†
Wr-OE					.25†

*$p < .01$; †$p < .001$.
Note. Spelling = spelling test, writing = written essay, Sp-OE = spelling outcome expectancy, Sp-SE = spelling self-efficacy, Wr-OE = writing outcome expectancy, Wr-SE = writing self-efficacy.

Causal model

The path model was estimated using LISREL 7 (Jöreskog and Sörbom, 1988). The model (see Figure 2) fitted the data well, with overall goodness-of-fit measures of $\chi^2 = 3.41$ with 3 degrees of freedom ($p = .333$), and an adjusted goodness-of-fit index (AGFI) of .969. Furthermore, there were no large standardized residuals. Modification indices for all paths not included in the model were examined; a large value would indicate that a path might have been inappropriately excluded. All modification indices for this model were small.[1] The standardized path coefficients for the model are presented in Figure 2, while unstandardized coefficients are presented in Table 3. To simplify the model, correlations among the exogenous variables (see Table 1) are not printed, but were included in the model. Paths from spelling self-efficacy to spelling and from spelling to writing were significant at $p < .05$. The coefficient for the indirect path from spelling self-efficacy to writing through spelling is .242 in standardized form, also significant at the .05 level.

Although the fit of the model was good, a number of the path coefficients were non-significant, suggesting that the proposed theoretical model was not entirely supported by the data. Specifically, paths from writing self-efficacy to writing, writing outcome expectancy to writing, spelling self-efficacy to writing, and spelling outcome expectancy to spelling were not significant at $p \leq .05$. Thus, a modified model (see Figure 3) was tested, setting the non-significant paths in the original model to zero. The χ^2 for this model was 7.56 with 7 degrees of freedom, $p = .373$. The AGFI was .971. Both indicate a good fit. Since the modified and original model were nested, we tested for the difference in fit for significance.

The χ^2 test of the difference was 4.15 with 4 degrees of freedom, not significant at the .05 level, indicating that the original model did not fit significantly better

[1] In addition to the model described and tested in this study, the researchers constructed and tested an alternative model depicting hypothesized relationships between the variables resulting from an emerging literacy, meaning-oriented instructional approach. In this model, beliefs about writing were portrayed as leading to writing performance, which in turn affects spelling performance and beliefs about spelling. As predicted, the model did not fit the data from this subject pool, resulting in a χ^2 of 248.90 with 9 degrees of freedom ($p < .001$) and an AGFI of .522.

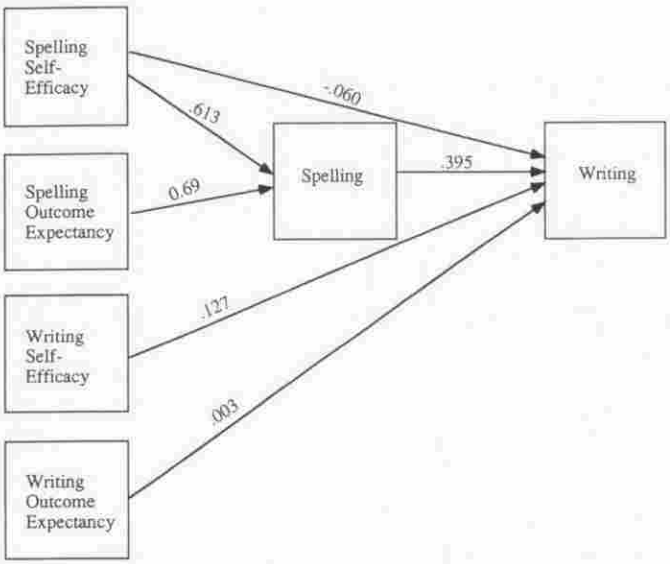

Figure 2. Standardized path coefficients for the original model

Table 3. Unstandardized path coefficients in the original and modified model

	Original model		Modified model	
Path	*b*	SE_b	*b*	SE_b
Direct effects				
Sp-SE → Spelling	.431*	.036	.443*	.034
Sp-OE → Spelling	.762	.657	—	—
Sp-SE → Writing	−.077	.117	—	—
Wr-SE → Writing	.145	.088	—	—
Wr-OE → Writing	.081	1.790	—	—
Spelling → Writing	.729	.135	.772*	.105
Indirect effects				
Sp-SE → Spelling → Writing	.314*	.064	.342*	.053
Sp-OE → Spelling → Writing	.555	.490	—	—

Coefficients were tested for significance by forming the ratio of the *b* and its standard error, then comparing this value to those in a normal probability table. Asterisks indicate coefficients significant at the .05 level. Spelling = spelling test, Writing = written essay, Sp-SE = spelling self-efficacy, Sp-OE = spelling outcome expectancy, Wr-SE = writing self-efficacy, and Wr-OE = writing outcome expectancy.

than the modified, simpler model. Standardized path coefficients for the modified model are presented in Figure 3, while the unstandardized coefficients appear in Table 3. Again, the modification indices were small, indicating that none of the deleted paths, taken singly, would be significant if added to the model. The standardized coefficient for the indirect effect of spelling self-efficacy on writing was .263 ($p < .05$), with paths from spelling self-efficacy to spelling and from spelling to writing again significant, as they were in the original model.

Overall, the proportion of variance accounted in these models is .40 for spelling

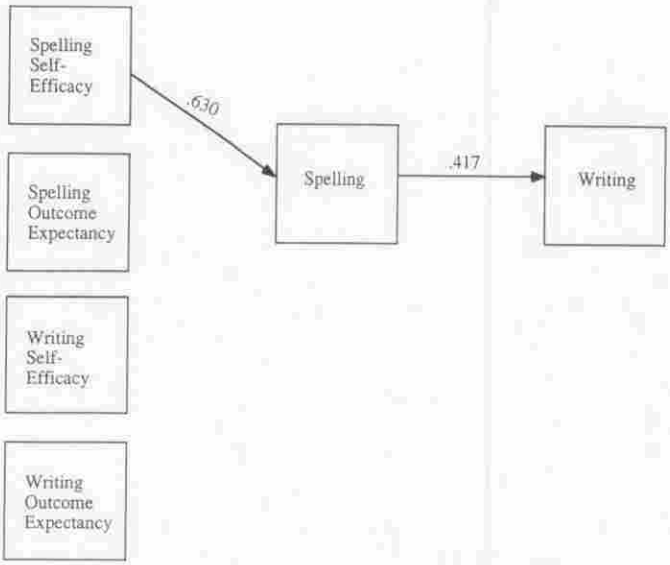

Figure 3. Standardized path coefficients for the modified model

and .17 for writing, figures that are not surprising given the complexity of these phenomena and their relationships, and the fact that other important causal factors almost certainly have not been included in the model. It also should be noted that the model modification was based on empirical evidence and therefore should be considered exploratory. For fuller evaluation the modified model still needs to be tested using data from an independent sample.

DISCUSSION

In the revised causal model relating students' perceptions about spelling and writing, spelling performance, and writing performance, students' beliefs about their efficacy as spellers related strongly to their actual spelling performance, while outcome expectancy—their sense of the utility of spelling in achieving other significant outcomes—was not retained in the final model. However, it should be noted that there was a significant zero-order correlation between spelling outcome expectancy and spelling (.24). Thus, the findings are closely in accord both with the theoretical predictions of Bandura (1982, 1986) and the empirical findings of a number of researchers who have examined the relationship of these two variables to several dimensions of academic performance. That is, in predicting variables such as reading, writing, and overall academic achievement, self-efficacy measures typically account for a large portion of performance variation, while outcome expectancy has related less strongly, but fairly reliably to performance (e.g. McCarthy *et al.*, 1985; Shell *et al.*, 1989).

Our major interest in the present study went beyond the relationship of individuals' perceptions about spelling and spelling performance; it extended to the role that these variables might play in the more complex performance of writing. Two aspects

of the final model bear on this relationship: (1) the direct effect of spelling performance on writing performance and (2) the indirect effect of spelling self-efficacy on writing performance.

The causal interpretation embodied in the proposed model was that the beliefs this group of individuals held about themselves as spellers, given their educational experience, might affect not only their performance as spellers but their performance as writers as well. In the revised model, writing performance is affected both directly by spelling performance and indirectly by the self-efficacy beliefs individuals have about themselves as spellers. These relationships are consistent with a causal interpretation that better spelling led to better writing, and that positive perceptions of spelling ability affected writing performance through spelling performance. Interestingly, self-efficacy beliefs about spelling exerted a significant direct influence on writing, while writing self-efficacy did not. Based on prior findings (McCarthy *et al.*, 1985; Shell *et al.*, 1989), we had expected writing self-efficacy to affect writing performance. One explanation for this lack of relationship, however, may lie in the high degree of variance these two measures shared (the zero-order correlation between spelling self-efficacy and writing self-efficacy was .68). The zero-order correlations of spelling self-efficacy and writing self-efficacy with writing were nearly identical, .28 and .27, respectively.

As Bandura has argued (Bandura, 1982, 1986), perceptions of competency that develop out of prior successes or failures often determine whether individuals are willing to undertake a particular behavioural step. In the present instance one reasonable possibility consistent with the present findings is that spelling self-efficacy beliefs in this group of individuals developed reciprocally with spelling ability as a result of feedback from early spelling performance. These then came to shape not only their performance as spellers, but because of the critical role assigned early on to spelling as a part of 'good writing', these beliefs came to mediate their attempts at writing, the extent to which writing was practised, and the extent to which they developed their abilities as writers. That is, if a great deal of importance is assigned to correct spelling in the early grades, children's spelling ability and views of themselves as good or poor spellers may soon come to extend or limit their willingness to write and to shape their sense of competency as writers. As spelling ability and self-efficacy beliefs about spelling develop, spelling self-efficacy may come to function as a kind of screen for attempting writing and, ultimately, affect the extent of students' development as competent writers.

The present findings are particularly intriguing when considering the future course of writing instruction. If the model for instruction chosen by most teachers remains close to the traditional, hierarchical model in which correct spelling functions as one of the critical components of good writing, then one might argue that by focusing early on direct instruction in spelling, and thereby maximizing children's performance as spellers, their positive beliefs about themselves as spellers will be enhanced and writing performance maximized. On the other hand, the ascendancy of newer models of literacy development in which writing for meaning carries greater emphasis from the outset, and in which language mechanics such as spelling are de-emphasized, could be expected to reduce or remove the causal status of spelling and spelling self-efficacy in determining writing performance. That is, as greater emphasis is placed in writing instruction on expression of meaning, and less emphasis on structural aspects and critical analysis of isolated components of language, the role both of

spelling ability and beliefs about one's ability as a speller in causally determining writing performance may decline.

At this point, however, there is no research showing whether spelling ability develops as well within an instructional framework with a 'meaning-making' emphasis as within a traditional skill development framework. Scholars within an emergent literacy perspective would argue that it would; any loss of skill resulting from a lack of direct instruction should be more than compensated for by acquisition of these same skills, albeit more indirectly, in the much richer and more meaningful language and literacy context. What seems certain, however, is that causal paths leading to writing from spelling and self-efficacy should change considerably if spelling is de-emphasized as a foundational skill. Instead, a bidirectional model of reciprocal effects between writing and the structural/analytical skills that serve writing would more accurately portray the relationship among these variables. As more and more children are educated within language/meaning-oriented classrooms it should become possible to test these hypotheses directly.

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APPENDIX: SELF-EFFICACY AND OUTCOME EXPECTANCY ITEMS

Table A-1. Spelling and writing self-efficacy items: mean confidence rating and factor loading for each item

Item	*M*	Factor loading
Spelling items		
1. The words in questions on an essay exam in college class.	82.60	.78
2. Spell words that you have not studied but have seen a lot in writing.	87.50	.76
3. Spell words that can't be 'sounded out'.	71.42	75
4. The words on a college-level spelling test.	77.06	.75
5. Spell unfamiliar words well enough for someone else to figure out what you mean.	87.00	.75
6. The words in class notes for someone else to read.	84.02	.74
7. Spell words that you have studied.	94.28	.73
8. Spell unfamiliar words well enough to find them in the dictionary.	89.58	.70
9. The words in an employment application.	90.24	.69
10. The words in a letter to a friend or family member.	92.57	.68
11. Spell words with plurals, prefixes, and suffixes, if you know how to spell the base words.	88.60	.67
12. Spell words that can be 'sounded out'.	90.43	.65
13. The words in a list of instructions for how to play a card game.	84.76	.63
14. The words in writing an instruction manual for operating a stereo.	70.56	.59
15. Recognize when you don't know how to spell a word.	88.86	.40
Writing items		
1. Correctly use plurals, verb tenses, prefixes, and suffixes.	88.17	.88
2. Correctly use parts of speech (i.e. nouns, verbs, adjectives, etc.).	86.79	.83
3. Write compound and complex sentences with proper punctuation and grammatical structure.	84.59	.81
4. Correctly punctuate a one-page passage.	81.68	.79
5. Write a term paper of 15–20 pages.	84.04	.78
6. Organize sentences into a paragraph so as to clearly express a theme.	88.76	.78
7. Write a paper with good overall organization (e.g. ideas in order, effective transitions, etc.).	88.22	.77
8. Write a simple sentence with proper punctuation and grammatical structure	91.71	.77
9. Compose a one- or two-page essay in answer to a test question.	86.31	.74
10. Write a letter to the editor of a daily newspaper.	86.24	.73
11. Compose an essay expressing your view on a controversial topic.	83.39	.69
12. Author a scholarly article for publication in a professional journal in your field.	69.11	.67
13. List instructions for how to play a card game.	87.15	.64
14. Correctly spell all words in a one-page passage.	85.09	.64
15. Author a novel.	62.38	.63
16. Compose a will or other legal document.	72.36	.61

Table A-2. Spelling and writing outcome expectancy items: mean confidence rating and factor loading for each item

Item	*M*	Factor loading
Spelling items		
1. Getting a good job	4.19	.83
2. Graduating from college	4.22	.82
3. Improving your job performance	4.15	.78
4. Doing well in school	4.24	.74
Writing items		
1. Getting a good job	4.51	.80
2. Improving your job performance	4.29	.79
3. Doing well in school	4.67	.77
4. Graduating from college	4.26	.70