SPELLING IT OUT

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The spelling abilities of 11- and 15-year-olds

Greg Brooks
Tom Gorman
Lesley Kendall

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CHAPTER 1
INTRODUCTION

1.1 Background

When public attention is drawn to standards of literacy, the aspect of writing that is most often scrutinised is spelling. (See, for instance, Chew, 1990; Lamb, 1991, 1992a; the press coverage listed in Lamb, 1992b; and further contributions in the *Times Educational Supplement*, 24 September and 2 October 1992.) The project reported here arose out of such public concern about spelling, and was designed to contribute new research findings to the debate on the topic.

Much of the recent research into spelling has been done with relatively small and unrepresentative groups of subjects. Chew (1990), for example, presented data on one sixth-form college and two independent schools in Britain. Similarly, Lamb (1991, 1992a) provided **performance** data on first-year undergraduates of one department of one college of one university (even though for a period of four years). Other data were presented in Lamb (1992a) on a total of 17 British universities: but these data concerned the **opinions** of university teachers on their students' standards in various aspects of English. This was therefore not a survey of students' actual performance in English.

Spelling is the most easily assessable aspect of writing - perhaps this is one reason why so much public comment concentrates on it. Yet the assessment of writing as a whole, or a system which attempts to assess various aspects of writing separately, must take other factors into consideration, such as content, structure, style, appropriateness of language use, and punctuation.

The first four of the elements just listed might be called the 'compositional' aspects of writing, while punctuation, spelling and handwriting are sometimes collectively labelled the 'secretarial' aspects. When pupils' writing is marked analytically (e.g. Gorman *et al* 1988, 1991), the major determinants of high or low overall marks for writing are found to be the compositional aspects, and encouragement of these is thought by many to help pupils develop their writing.

This is not to say that the secretarial aspects are unimportant. They are important, because they need to be of high standard if they are to be 'transparent' and allow the compositional aspects of writing to determine readers' judgements unimpeded. If handwriting is difficult to read, or punctuation or spelling is severely inaccurate, then communication is hindered.

Research evidence (for example Cato *et al* 1992) shows that teachers recognise that both the compositional and the secretarial aspects of writing are important. The same report showed that, far from teachers neglecting the secretarial in favour of the compositional, many of those studied for that report did the opposite:

> *In commenting on the teaching of writing, it is important to note what appeared to be a concentration on 'secretarial' aspects of written work: the focus in some cases on surface features of writing as opposed to matters relating to content, form and style.*
>
> (Cato *et al* 1992, p. 36).

When investigating performance in spelling, it is therefore important to assess it in context. Chew (1990) used only a spelling-list test, and only part of Lamb's (1992a) data came from students' connected writing. Yet to determine how frequently pupils make mistakes, or to estimate how much the meaning of what they write is obscured by errors, it is essential to relate their errors to the context and to other aspects of their writing.

In terms of representativeness of samples, of performance evidence, and of spelling in the context of corrected writing, the project reported here had a great advantage. From 1977 to 1990 the Language Monitoring Project of the Assessment of Performance Unit (APU) was based at the National Foundation for Educational Research (NFER). Between 1979 and 1988 that project collected data on the writing performance of nationally representative samples of 11- and 15-year-old pupils in England, Wales and Northern Ireland on six occasions. These surveys created a very large archive of samples of pupils' writing, and a potentially enormous source of data on pupils' spelling.[1]

But to have tackled all of this archive with a long list of research questions would have been inappropriate: the enquiry carried out was precisely focused, as will be seen from the following description of the research issues.

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[1] By the time this project was undertaken, the archive had been handed over to the University Archivist at the University of Liverpool.

1.2 The research issues

Because spelling is a relatively well-researched area, the project did not set out to provide a review of the area generally, but to investigate a number of specific questions.

Variation in spelling performance related to age

The first issue which it was possible to investigate was the extent to which performance in spelling varied according to the age of the pupils involved. One would expect to find that older children, on the whole, made fewer spelling errors than younger children; but there were secondary issues to explore regarding the nature and extent of the difference in performance. It was possible to investigate, for example, whether there were age differences in terms of the different types of spelling errors made. The two age-groups studied were pupils aged 11 and 15 (Years 6 and 11).[2]

Variation related to sex

The second question asked was: Are there systematic differences in performance in spelling between boys and girls; and, if so, are such differences to be found at both age-levels? It was regularly found in APU surveys (e.g. Gorman *et al* 1988, 1991; and cf. Thornton, 1987) that girls obtained higher average impression marks for writing than boys: this project was designed to investigate whether this difference carried through into spelling.

Variation related to writing task

It was also already known from APU surveys that pupils' overall performance in writing varies according to the type of writing task they are asked to undertake; this study sought to investigate variation in spelling in relation to writing task in a more detailed way than had previously been undertaken. The third question that this project was designed to investigate was therefore: Does pupils' performance in spelling vary according to the task undertaken?

Variation related to other aspects of writing

In APU surveys, all pupil scripts were marked impressionistically (holistically), while subsamples were also marked analytically. In analytic marking, spelling was included with other aspects of writing ability (e.g. control of capitalisation

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[2] The gap in pupil ages appears to be four years, while the gap in school years was five years. The explanation for this apparent discrepancy lies in the different times of year when the surveys were carried out. Those for Year 6 pupils were carried out in May, when most of the pupils involved were 11; whereas those for Year 11 pupils occurred in October, when most of the pupils were still 15.

and aspects of punctuation) in a single category. The fourth question investigated was therefore: To what extent is attainment in spelling correlated with achievement in other aspects of writing, especially content?

Variation related to year of survey

Because representative samples of pupils took part in surveys in different years, it was possible to compare the performance of pupils over time. The fifth research question addressed therefore was: Were there any significant differences in performance between primary pupils in 1979 and 1988, and between secondary pupils in 1980 and 1983? These years were chosen because pairs of contrasting narrative and discursive tasks were repeated in the surveys carried out in those years.

CHAPTER 2:
METHOD

2.1 The sample of scripts

In order to investigate these questions, a sample of approximately 1600 scripts was drawn from the APU Language Monitoring archive. The sample was subdivided in four ways:

* two ages of pupils were involved: approximately 800 scripts were sampled from 11-year-olds and about the same number from 15-year-olds
* approximately equal numbers of boys and girls were to be represented
* in order to investigate the third research question, samples were drawn from two contrasting writing tasks (for details of the tasks, see below): approximately 400 scripts for each task at each age level
* each of the tasks marked had been used in more than one APU survey: in order to increase the generalisability of the results, therefore, about 200 examples of each task at each age level were drawn from each of two relevant surveys.

The design is summarised in Table 1, except for the sampling according to sex: in each subsample half the scripts were to be by boys, half by girls.

Table 1 The sampling design

	Number of scripts at:				
	Age 11		Age 15		Totals
	First occasion (1979)	Second occasion (1988)	First occasion (1980)	Second occasion (1983)	
Narrative task	200	200	200	200	800
Discursive task	200	200	200	200	800
Totals	400	400	400	400	1600
	800		800		

Impression marks were already available for all 1600 scripts, from the original APU marking. These marks were used as the basis for sampling. Most of the tasks had originally been attempted by between 400 and 500 pupils in the surveys. (In the 1979 age 11 survey 'Rules' was the common task, attempted by all 4500 pupils.) In order to select 200 from each group for the present project, a subset of pupil numbers was drawn according to the impression marks: each subset was representative of the original group in the sense that the distribution of impression marks on the seven-point scale used was statistically equivalent to that of the original group.

In the 1979 age 11 survey, the two tasks were completed by the same pupils. In the other three surveys, the two tasks were completed by different pupils. There were therefore about 200 fewer pupils involved than scripts: because of this, much of the discussion in this report is in terms of scripts.

2.2 The tasks

At both age-levels, one of the two tasks selected from the archive was narrative, the other discursive. ('Discursive' here can be glossed as 'argumentative' in the sense of 'arguing a case'.) The discursive task was the same at both ages, and asked the pupil to state a rule that they were familiar with, and then discuss it.

The narrative task for 11-year-olds was an account of their earliest memory. That for 15-year-olds was to write a story suitable for reading to a child of four to five years of age.

The instructions to pupils for the tasks, as printed in the original writing booklets, are reproduced in Appendix A.

It is important to emphasise that the two tasks represent only part of the range of types of writing. Within the scope of this project it would not have been possible to sample more extensively: it was therefore important to select tasks which

* were the same or very similar for the two ages of pupils
* provided a contrast with each other
* allowed at least a preliminary estimate of trends over time.

That said, the limitations of the sample of types of writing must be pointed out. Both forms of task represented what may broadly be called 'general' writing, types of writing that would be familiar to most pupils: this is especially true of the narrative tasks.

The sample of tasks did not include any 'specialist' writing, for example describing a chemistry experiment or discussing the Industrial Revolution. The project was therefore not designed to provide evidence on pupils' spelling of specialised vocabulary.

2.3 The markers and the marking schemes

Four highly experienced teachers of English were recruited as markers. Between them, they had over 120 years' teaching experience, mostly at secondary level and mostly in England. Within the group of four teachers, a diverse range of experience was represented. Two were or had been heads of secondary English departments in England; two had experience of teaching English abroad (in Kenya and Malaysia); one had experience of teacher training and of teaching in middle schools, and another of working in further education and for an examination board; three had previously acted as markers in APU surveys.

Before undertaking the main marking, the markers went through an agreement trial. This consisted of marking a common set of scripts and then attending a meeting to discuss discrepancies and clarify obscurities in, or misunderstandings about, the instructions.

In addition, following the main marking, one of the four markers checked a sample of the marksheets of each of the other three.

In general, satisfactory levels of inter-marker agreement were achieved in the agreement trial, and a high level of accuracy in the main marking - but see chapter 3 for exceptions to this.

Because impression marks were already available, the markers for this project were not asked to give the scripts an overall impression mark.

The markers were asked to apply a very detailed analytic marking scheme, which will now be summarised in five parts. The first two sections of the marking instructions replicated parts of the analytic marking procedure applied in all APU surveys: these sections are therefore not explained in detail, since such explanations can be found in earlier reports (e.g. Gorman *et al* 1988, 1991). The remaining sections of the instructions, however, were devised especially for this project, and therefore some background explanation is given. (The full marking instructions are reproduced in Appendix B.)

(1) Content and organisation

This category was assessed on a rising five-point scale (1=low, 5=high), and on the basis of the pupil's full script. The instructions concentrated on the subject matter of the task and on the manner in which what was written was ordered or sequenced.

(2) Appropriateness and style

This category, too, was assessed on a rising five-point scale, but on the basis of only the **first 20 lines** of the script (or on the full script, where that was shorter then 20 lines). In this category the markers' attention was directed to the pupil's choice and purposeful use of vocabulary and sentence structure.

(3) Number of spelling errors

Next, markers were asked to assess the pupil's spelling on the basis of only the **first 10 lines** of the script. In APU surveys it had been found that marking the first 10 lines of each script provided sufficient evidence for reliable assessment of detailed analytic categories such as orthography. On this occasion, to have asked the markers to mark, say, the first 100 words of each script would have increased their marking time considerably. An inspection of a subsample of scripts revealed that variation in the number of words written in the first 10 lines was not substantial, and it was therefore decided to follow APU practice in this respect.

If the first ten lines contained no errors, a zero was recorded for that script, and nothing further needed to be done.

But if there was at least one error in those lines, then the markers were asked to

- transcribe the word containing the error on a coding sheet in the pupil's spelling
- alongside that, enter the word that the error was intended to represent (wherever possible)
- if there was more than one error in a word, treat each error separately
- classify each error according to the following two sets of categories.

(An illustrative example of a coding sheet, with specially selected entries, is shown in Appendix C.)

(4) Major spelling error categories

There were five such categories, and the markers were asked to allocate each error to one and only one of these categories.

The categories were: **insertion, omission, substitution, transposition** and **grapheme substitution.**

The definitions of the first four categories, as used in this exercise, were largely what would be expected. They were mainly (but see Appendix B) defined in terms of single-letter errors, and examples were:

Insertion:	*untill*	**for**	*until*
Omission:	*occuring*	**for**	*occurring*
Substitution:	*definate*	**for**	*definite*
Transposition:	*freind*	**for**	*friend.*

Such categories have been used quite frequently in the literature on spelling errors. Peters (1970, p.61) for example, used all four of these categories, amongst others, and described those she used as 'conventional error categories'. She cited Spache (1940) and Livingston (1961) as authorities for this. Similar categories were used by Lecours (1966), by Chédru and Geschwind (1972) and by Wing and Baddeley (1980).

The attraction of these categories for some researchers has been that definitions of them can be rigorous, objective, exhaustive and mutually exclusive. Nelson (1980, p.476), for instance, pointed out that 'error frequency measures are often subject to unreliability because the error types are not uniquely defined and mutually exclusive'.

The price of exhaustiveness and exclusivity of spelling error categories may, however, be very high. Chédru and Geschwind (1972) excluded from their analyses words of fewer than five letters. Wing and Baddeley (1980) restricted their analyses to the first erroneous letter in a word (or two letters, in the case of transpositions).

Many schemes baulk at tackling more than one error in a word, or errors (other than transpositions) which seem to involve more than one letter. Yet many common errors, e.g. 'their' for "there", would be unanalysable under such schemes.

Nelson (1980, p.476) goes on to say: 'When the fundamental structure of a word is distorted by multiple errors objective classification becomes even less reliable as it is left to the examiner to decide where one error stops and another begins.' Yet the marker's judgment is always involved to some extent in the categorisation of spelling errors, since each word containing an error has to be compared with

the word the writer intended. Where that word is known for certain (e.g. because it was pronounced or dictated to the writer), the examiner's judgment will still be needed to decide how many errors a word contains and, as Nelson says, where their boundaries are. Where (as in this project) the errors to be analysed were derived from children's free writing, the marker's judgment is sometimes even more crucially needed, in trying to decide just what 'target' word the writer intended.

For this project, therefore, it was decided that the markers' judgment should be relied upon (though cross-checks were incorporated - the agreement trial and sample marking check have already been mentioned, and see also the opening of the Results section). In particular, where an error occurred which could not plausibly be allocated to any of the four major categories so far mentioned, the markers were instructed to code the error as a 'grapheme substitution'. More precisely, this category was defined as follows.

Where more than one single-letter error occurred in a word, but the errors were interpreted by the markers as arising from one cause, they were instructed to code the error as a 'grapheme substitution'. For example, if "thought" was spelt 'thort', it would seem not only pedantic but mistaken to code 'r' as a substitution for 'u' and then the missing 'g' and 'h' as two omissions. This is particularly so when, as in this example, the error seems very clearly to consist in the representation of a single phoneme (distinctive speech sound) by a possible, but in context incorrect, grapheme (letter pattern).

(5) Minor spelling error categories

In addition to the five major categories, the markers were instructed to code errors under 10 minor categories. Unlike the major categories, which were intended to be largely exhaustive and exclusive, the minor categories were intended to be neither. These categories were intended to capture certain types of spelling error that are of theoretical and practical interest. For instance, whether the error was a real word, and/or would sound like the target word if read aloud ('homophone'), and/or involved doubled letters, etc. Any particular error might be classified in more than one category. For instance, 'their' for "there" is both a real word and a homophone of the target word; and 'possable' for "possible" is both a homophone and an error involving an unstressed (schwa) vowel. The markers were therefore instructed to code such errors under all applicable categories and (by implication) to leave all 10 minor categories blank only for errors which fitted none of them.

CHAPTER 3:

RESULTS AND DISCUSSION

3.1 Frequency of errors

Once marking was completed, the marksheets were further checked to establish the greatest possible degree of accuracy in the results. A high level of accuracy was found to have been achieved, but one problem was identified. This had begun to emerge during the agreement trial, and was confirmed by both the marker and the researcher who carried out cross-checks. The categories 'Visual confusion' and 'Slip of the pen' had proved difficult to define initially, and there appeared to be no consensus on how they were to be interpreted. These categories were therefore dropped from all subsequent analyses.

All other categories, however, proved workable, including those which required some linguistic insight and had necessitated detailed oral explanations to the markers.

The numbers of scripts marked are shown in Table 2.

Table 2 Numbers of scripts marked, overall and by task, age and year

	Age 11			Age 15			Total
	1979	1988	Subtotal	1980	1983	Subtotal	
Narrative task	193	199	392	151	191	342	734
Discursive task	195	190	385	179	194	373	758
Total	388	389	777	330	385	715	1492

The target for the total sample had been 1600: the shortfall of 108 consisted mainly of scripts that could not be located in the archive, but included a few that for some reason were not marked or could not be coded. There were approximately equal numbers of boys and girls in each subsample.

The marking yielded a corpus of 3342 spelling errors, or an average (mean) of 2.2 errors per script. (Here and in the remainder of this report it should be remembered that, when errors are being discussed, 'script' means the portion of the script marked for this purpose; that is, the first 10 lines.) The range was from 0 to 24 errors per script - but, as the very low mean number of errors implies,

there were very few scripts which contained substantial numbers of errors. In fact, the **median** number of errors per script, across the whole sample, was one: that is, somewhat over half of the scripts contained either one error only or no errors at all.

Of the 3342 errors, only 103 (3 per cent) could not be allocated to any of the five major error categories. Almost all of these cases were errors where the intended word could not be deduced.

The numbers of errors that fell into each of the major categories are shown in Table 3.

Table 3 Numbers of errors in major error categories

	N	%
Errors of:		
Insertion	562	17
Omission	1208	36
Substitution	640	19
Transposition	179	5
Grapheme substitution	650	19
Not coded	103	3
Total	3342	100

Thus 77 per cent of all errors (the first four categories combined) involved just one letter (or two, in the case of transpositions) and, though noticeable, would rarely hinder communication. The largest single category of errors was omissions: significant proportions of these were 'real word' or 'homophone' errors, or involved leaving a letter single that should have been doubled, often before a grammatical ending (e.g. 'occuring' for "occurring").

The numbers of errors in the minor categories are shown in Table 4. (It should be noted that, since each error could be coded in more than one of these categories, percentages and totals would be inappropriate here. An example of double coding is the 309 errors which were both real words in themselves and homophones of the intended words.)

Table 4 Numbers of errors in minor error categories

	N
Errors involving	
homophones	1038
real words	962
effects of pronunciation	845
doubled letters	542
silent letters	485
'magic e'	315
schwa vowels	283
transposition of i and e	33

The last of these categories was included because of its relevance to the only explicit 'spelling rule' that most speakers of British English could be presumed to know by heart, namely 'i before e except after c'. The low absolute number of such errors, and the low proportion they represent of all transposition errors (18 per cent) might be taken to show that the rule has been effective in enabling pupils to avoid most errors involving i and e: but in fact the rule is both under-specified and in any case applicable to rather few English words (Gooch, 1992).

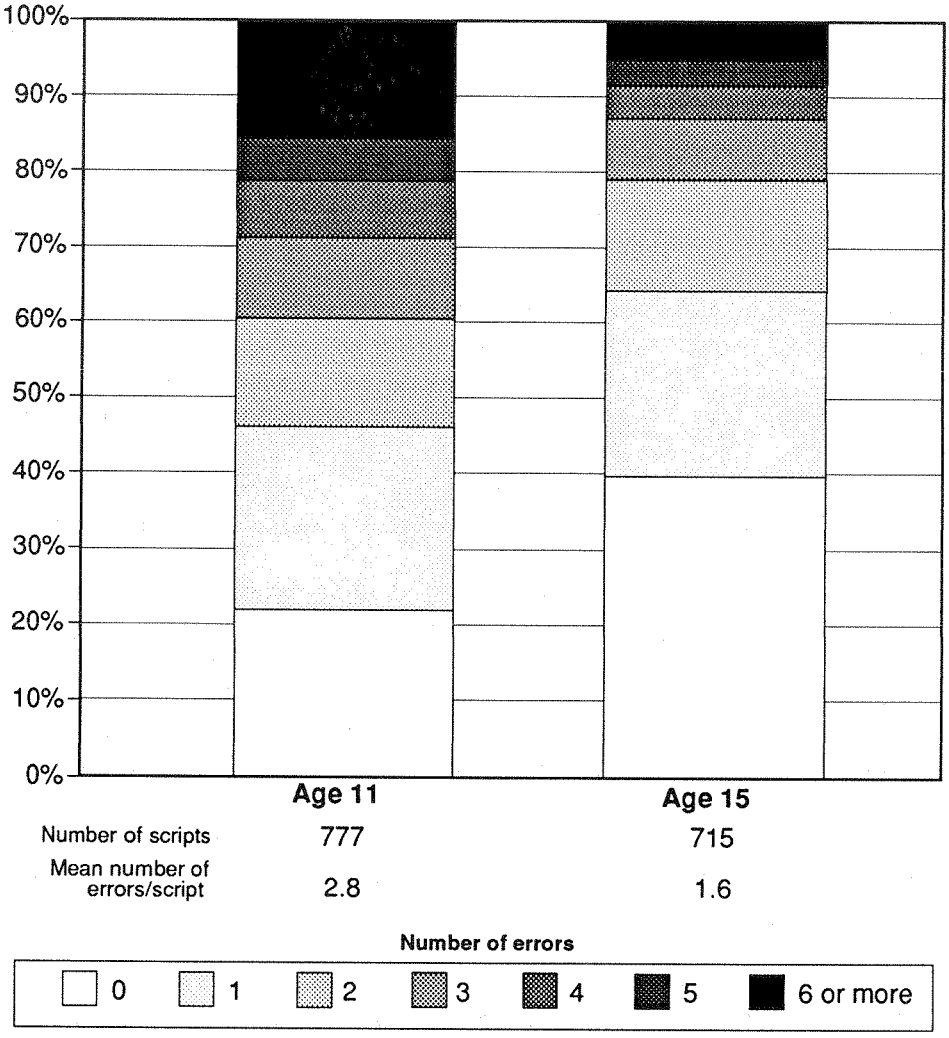
The general conclusion to be drawn from the remaining data in Table 4 is the inadequacy, for spelling English correctly, of phonic or 'sounding-out' approaches on their own. The three most frequent categories (real words, homophones, pronunciation effects) directly imply that pupils were relying on spoken language in deriving the written forms of words; in all the rest (errors involving doubled or silent letters, 'magic e' and schwa vowels) it can also be deduced that pupils were relying too much on spoken language, since in these cases the spoken form of words is insufficient to decide which is the correct one out of two (or sometimes more) possible spellings that are equally plausible phonemically.

These results therefore tend to confirm that approaches to the teaching and learning of spelling need to incorporate not just phonic but also visual strategies, as advocated above all by Peters (1967, 1985).

3.2 Variation in spelling performance related to age

There was a significant difference in the spelling performance of pupils in the two age-groups: see Figure 1. Not surprisingly, 11-year-olds made more errors than 15-year-olds. However, it was noticeable that the effect was mainly at the two 'extremes' of performance, that is in the proportion of pupils making no errors and among those making six or more errors.

Figure 1 Numbers of errors per script by age of pupil



What the figure indicates is that four out of ten pupils aged 15 and just over two out of ten pupils aged 11 made no spelling errors in the first ten lines of the scripts examined. Over six out of ten of the older pupils and just under five out of ten younger ones made no more than one error. However, one in six pupils aged 11 (16 per cent) made six or more spelling errors in ten lines of script. At secondary level the corresponding proportion was one in 16 pupils (six per cent). To put this another way: 16 per cent of 11-year-olds and six per cent of 15-year-olds

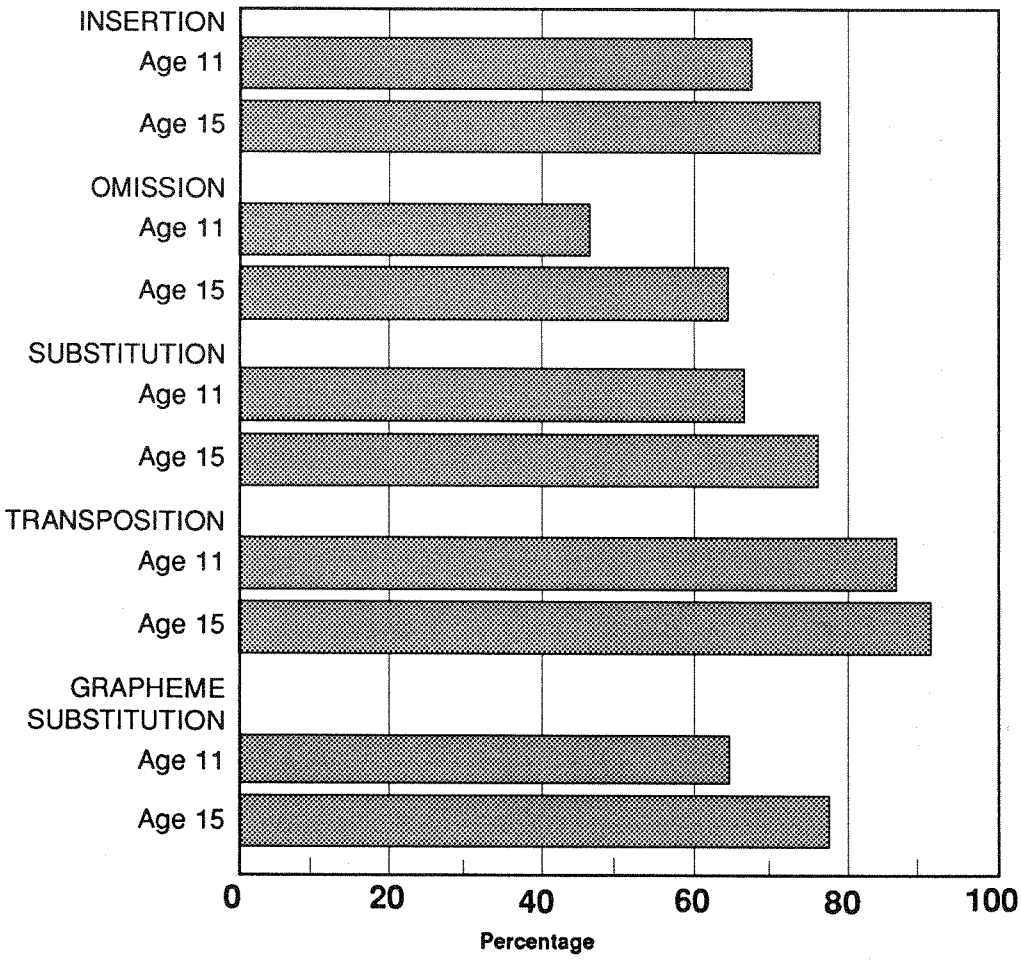
made more than one spelling error for every two lines of writing, even in the types of open, non-specialised writing sampled in this project.

These findings confirm the common-sense observation that pupils' **spelling improves with age and years in school, but also show that even by the end of the compulsory school years a small but significant minority (about six per cent) are still making relatively frequent errors,** even in free 'general' writing.

Types of error

There was no evidence that pupils of different ages tended to make different types of error. In general, older pupils made fewer of the same type of error than younger pupils. This can be seen by examining the proportions of pupils at the two age levels who made **no** errors of particular types: see Figure 2. Conversely, this evidence points to the proportion of pupils who made one or more errors in these categories.

Figure 2 Percentages of pupils making no errors, by age and by type of error

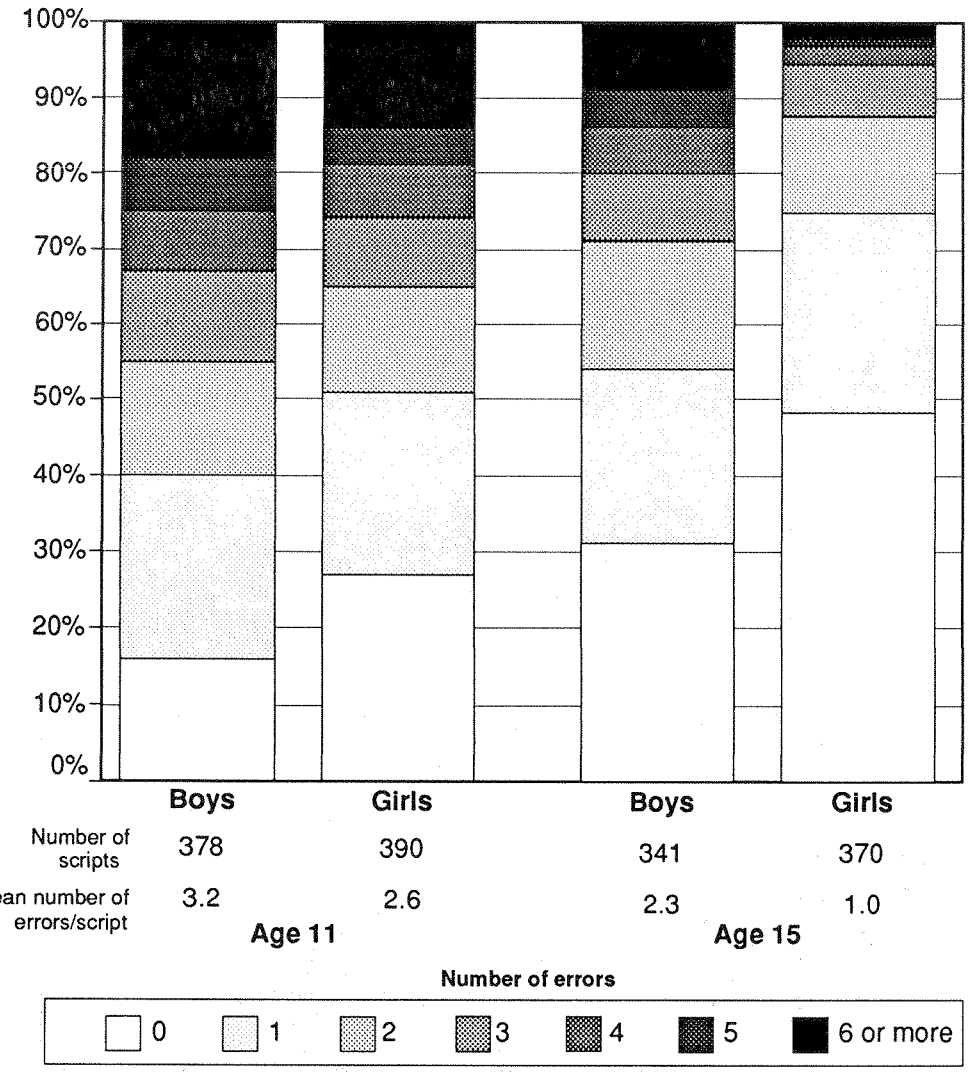


In addition, approximately five out of ten pupils aged 11 and seven out of ten pupils aged 15 made no errors involving homophones (that is, the use of a word that had the same sound as the word intended but a different spelling). Similar proportions made no 'real word' errors.

3.3 Variation related to sex

Girls made significantly fewer errors than boys at each age level: see Figure 3. **Moreover, girls made fewer errors than boys on each task at each age level.** At age 15 on the 'Rules' task, for example, girls made about **half** the number of errors made by boys. At age 11, boys made more errors overall in relation to four of the five main error categories, and the same pattern of performance was found at age 15.

Figure 3 Numbers of errors per script by age and sex of pupil



These findings confirm that girls' superior performance in writing generally, found in all 12 APU surveys (see Gorman *et al* 1988, 1991), extends also to control of spelling. Indeed, these findings may suggest that one reason for girls' higher overall impression marks may be precisely their greater accuracy in spelling. This would certainly be one of several aspects of writing that would be taken into account by the assessors who assigned an overall impression mark.

The findings from this study also indicate that boys who were good writers still tended to make more spelling errors than girls who were good writers. When general writing ability was controlled for (by means of the general impression marks assigned to pupils), significant differences were still found between boys and girls in their performance in spelling.

3.4 Variation related to task

Age 15

Overall, the evidence suggested that there was a difference between the two age 15 tasks in respect of the frequency of occurrence of spelling errors.

Pupils completing the story task made significantly fewer grapheme substitution errors, fewer errors arising from pronunciation, and fewer errors involving the spelling of unstressed vowels (e.g. **able/ible**) than pupils who completed the 'Rules' task.

In 1980, there were also fewer omission errors found in scripts relating to the story task and, in 1983, fewer homophone errors and errors involving the use of silent letters.

One possible explanation for this difference in performance might be related to the fact that the 'Rules' task presents pupils with demands that are both conceptually and linguistically more complex than the demands imposed by the story task. Pupils have to identify a rule that affects them and to consider whether or not it is a justifiable rule. The process of defining the rule in the first instance, and then of reflecting on the justification for it, involves an element of abstraction. It may involve the use of terms that are unfamiliar, such as 'controversial'. On the other hand, in writing a story for younger readers, pupils would no doubt consciously avoid words that might be unfamiliar to such children.

Age 11

The explanation just given could not, however, account for the differences found between pupils' performance on the different tasks at age 11. Younger pupils made fewer errors of omission and insertion when writing about 'Rules' than when writing about their 'Earliest Memory'. But the difficulty of the two tasks may be reversed here. That is, it may be more difficult to recapture and describe the earliest memory, because it is distant, perhaps almost pre-verbal, than to name and discuss a rule, which may have great immediacy.

3.5 Variation related to other aspects of writing

Predictably, the evidence showed that the higher the general impression mark assigned to pupils, the lower the number of spelling errors made: see Figures 4 and 5.

Figure 4 Numbers of errors per script by impression mark (Age 11)

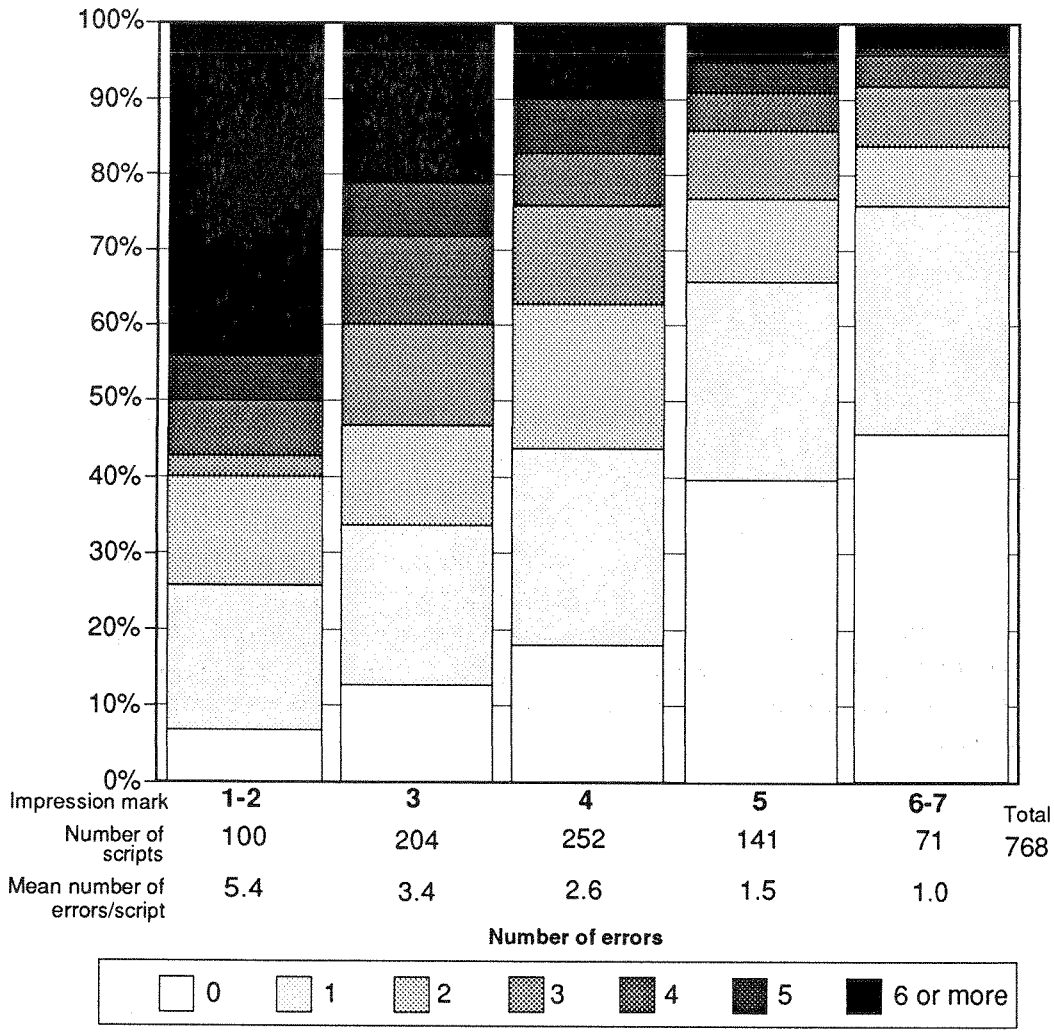
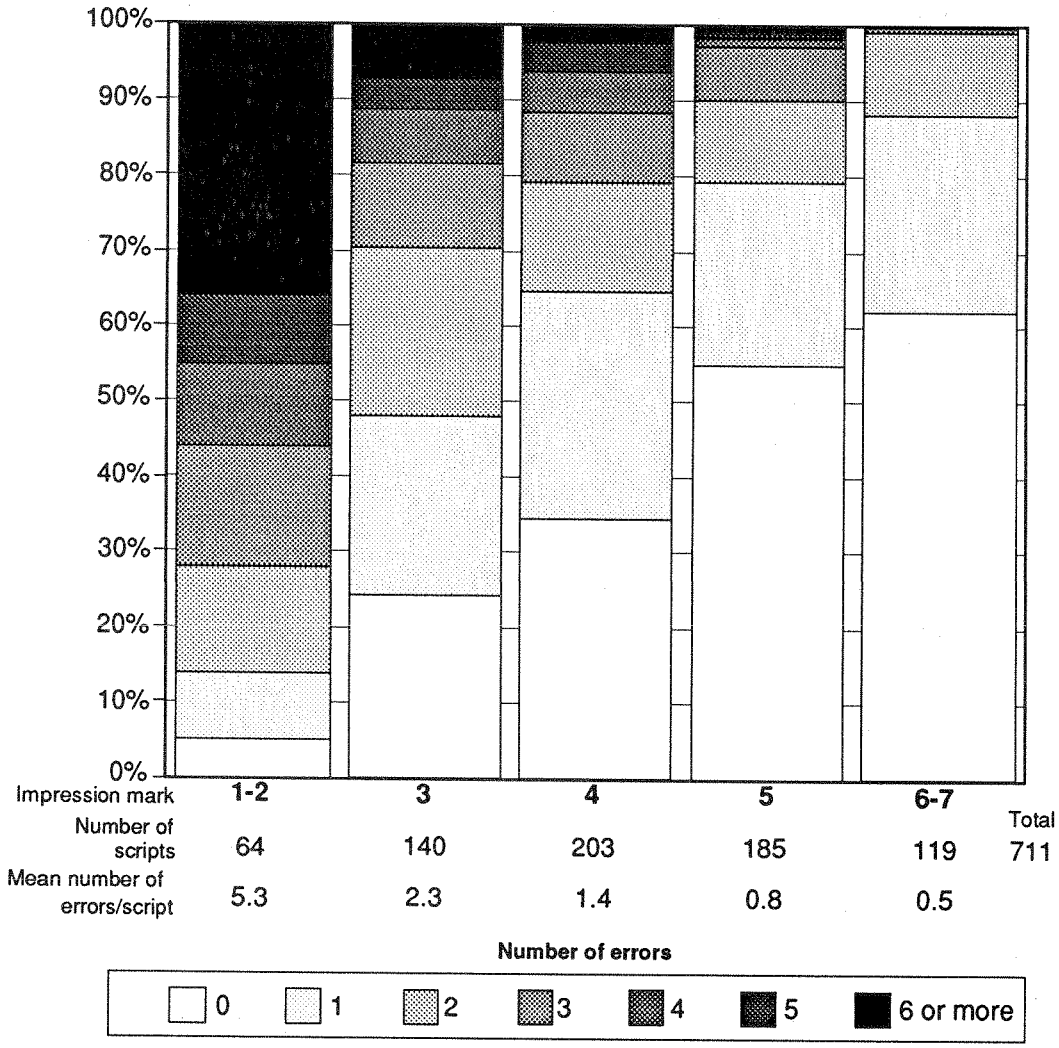


Figure 5 Numbers of errors per script by impression mark (Age 15)



This tendency was also true of marks for content and organisation, and for appropriateness and style. Therefore spelling ability was in general consonant with ability in the 'compositional' aspects of writing. However, there is one proviso that should be made at this point: there were a small number of pupils (fewer than one per cent at age 15), judged to be good writers by the members of the original impression marking team, who nevertheless found it very difficult to spell correctly. Those pupils were judged to be of above average ability in writing in terms of general impression scores assigned to them, yet they made a relatively large number of spelling errors (six or more in ten lines). Such pupils can be assumed to have a specific difficulty in this area of learning.

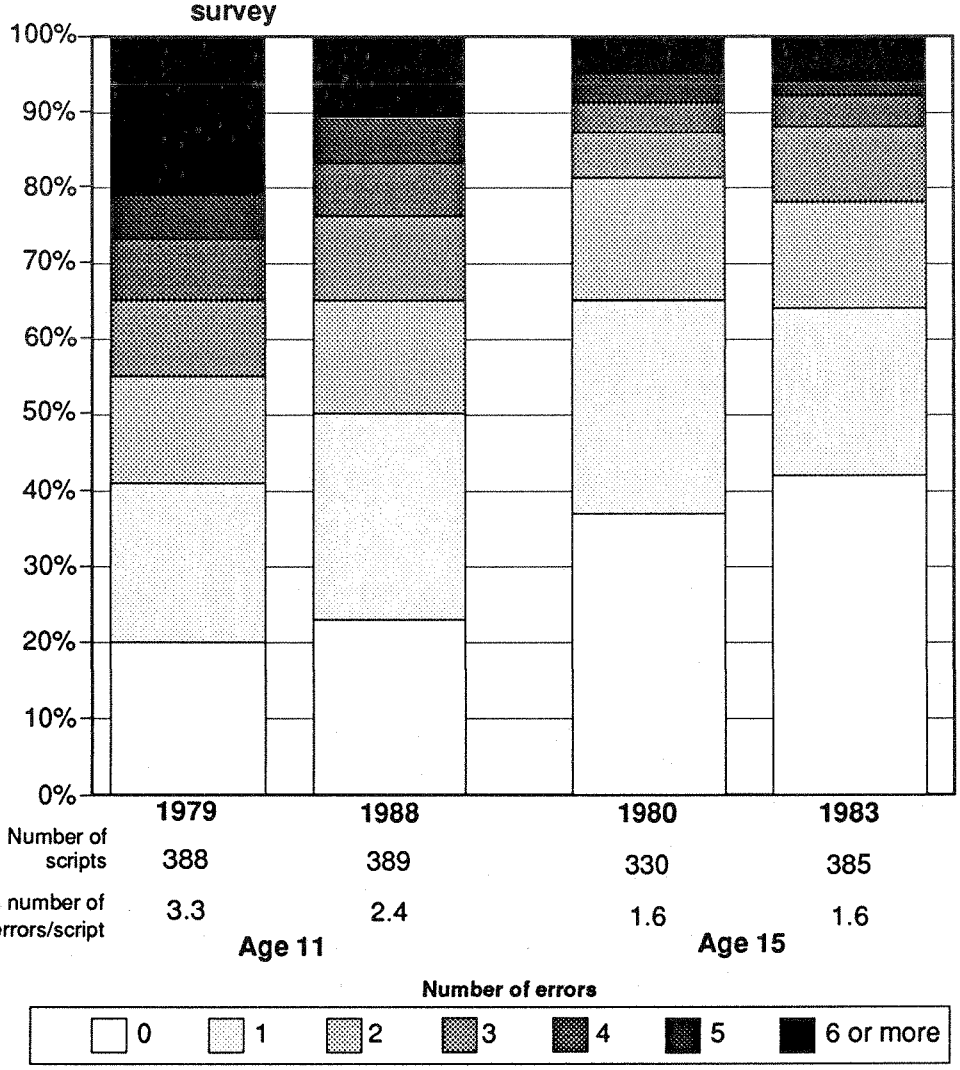
Moreover, the correlation of spelling ability with writing ability was not evenly distributed across the detailed error categories.

The error-category with the highest negative correlation with overall writing ability was the category referred to as 'grapheme substitution'; that is, pupils who were better writers made fewer grapheme substitution errors. Relatively high negative correlations were also found with real word errors, and pronunciation-effect errors. This means that errors of these types were more frequent in scripts which had been given low impression marks. Errors of other types were more evenly spread across the performance range. None of the correlations, however, was strong enough to suggest concentration on any one category of errors as a strategy for improving spelling performance in general or that of poorer spellers as a group. Individual diagnosis and support are needed.

3.6 Variation related to year of survey

The project was also designed to yield some evidence on performance in spelling in different years, and the results are shown in Figure 6.

Figure 6 Numbers of errors per script by age of pupil and year of survey



Age 15

No significant difference was found between the marks assigned to pupils aged 15 in 1980 and 1983, either in relation to the total number of spelling errors made or with respect to the impression marks they were assigned. The length of time between the two surveys was, however, relatively short, and considerably shorter than was the case for the two surveys of 11-year-olds. This result is entirely consistent with the original APU finding (Gorman *et al* 1988, p.213) of no overall change in general writing performance of 15-year-olds between 1979 and 1983.

Age 11

There was a significant difference between the spelling performance of 11-year-olds in the two years from which scripts were marked. Pupils in 1988 made significantly *fewer* spelling errors than pupils in 1979 when the results of *both* writing tasks were combined.

There was also a significant difference between the performance of pupils aged 11 in 1979 and 1988 in terms of the general impression marks assigned for the two tasks: the average score in 1988 was higher than that in 1979. However, even when this difference in overall scores was allowed for, the difference in spelling performance between 1979 and 1988 was still significant.

Comparisons with the original APU data for general writing performance of 11-year-olds are complicated. Overall, there was a slight rise in the writing performance of 11-year-olds between 1979 and 1983 (Gorman *et al* 1988, p.213), then a slight fall between 1983 and 1988 (Gorman *et al* 1991, p.62). But the 'Rules' task was not included in the calculation of changes between 1979 and 1983, and on 'Earliest Memory' over that period there was no significant change. Between 1983 and 1988 there was again no change on 'Earliest Memory', but a slight fall on 'Rules'. This could be interpreted, however, as supporting the conclusion already reached, namely that the difference in 11-year-olds' spelling performance in 1979 and 1988 was independent of any changes in overall writing performance.

However, the difference in spelling performance of 11-year-olds in 1979 and 1988 needs to be interpreted with caution, for two reasons. First, the original samples of 11-year-olds in 1979 and 1988 were not chosen in quite the same way (for survey design reasons): this means that the subsamples of pupils drawn for this study may not be fully equivalent. Secondly, the two age 11 surveys sampled were nine years apart. Since each is a snapshot of performance at a particular time, it is impossible to deduce whether change was steady between them, or appeared at a particular date, or has accelerated or slowed down.

It would be interesting to repeat the study in the near future, and then again at regular intervals, in order to see whether the situation had changed, and in order to monitor spelling performance effectively over time. Further studies would also be needed to check the generalisability of this and of all the findings in this report to other forms of writing, especially those requiring specialised vocabulary.

CHAPTER 4:

FINDINGS AND IMPLICATIONS

4.1 Main findings

Frequency of errors

* The average number of spelling errors made in 10 lines of general writing was 2.2 overall (age 11: 2.8; age 15: 1.6).
* Over half the scripts marked contained either only one error or no errors at all in the first 10 lines.
* Forty per cent of 15-year-olds made **no** mistakes.
* But there was a small minority of pupils (about six per cent at age 15) who had severe problems with spelling (that is, they made more than one error in every two lines of writing).

Variation in spelling performance related to age, sex and task.

* Fifteen-year-olds made fewer errors than 11-year-olds.
* Girls were significantly better at spelling than boys: this was true at both ages and across the range of performance.
* Performance in spelling varied between the two forms of general writing studied in this project.

Variation related to other aspects of writing and to types of error

* Performance in spelling was positively correlated both with overall ability in writing and with marks for content and organisation and for appropriateness and style.
* About three-quarters of all errors involved a single letter.
* There was no evidence that pupils of different ages made different types of error.
* There was little evidence that poorer spellers' problems were clustered in any particular category or categories of error.
* But the overall pattern of errors tended to show an over-reliance on phonic strategies.

Variation related to year of survey

* There was no difference in the spelling performance of 15-year-olds in 1980 and 1983.
* However, the spelling performance of 11-year-olds in 1988 was significantly better than that of 11-year-olds in 1979 on the two general writing tasks studied.

4.2 Implications for teaching and learning

With reservations, the general picture derived from these results can be interpreted as quite good. When producing 'general' writing, most 15-year-olds, indeed most 11-year-olds, can show control of a great deal of the English spelling system. They make few errors, and most of the errors they make are slight and would not hinder communication. A good deal of improvement occurs between the ages of 11 and 15.

However, even by age 15 there is still a minority of pupils who have relatively severe problems with spelling, to the extent that their ability to communicate effectively in writing is seriously handicapped.

It seems valid to deduce from the results reported here that many spelling errors show an over-reliance on phonic strategies, and therefore that there is a need for pupils to improve their visual strategies. One approach would be to emphasise such techniques as 'Look-Cover-Write-Check'. If spelling lists are used, they should be organised not in terms of sound (**through-threw-do-blue-shoe**), but according to spelling patterns, e.g.

through-thorough-rough-bough-slough

tomb-womb-comb-bomb-Womble-bombard.

In order to do this, teachers need not only the visual knowledge of spellings they already possess, but also a more scientific knowledge of the phonemes and graphemes of English and of the relationships between them. This would enable them to pick out in particular words for which **no** phonic strategy can possibly work and for which no visual partners exist either: such words must therefore be learnt as 'one-offs', for instance

of, was, yacht, colonel, women, mould, straight.

Such knowledge would benefit many primary teachers, especially those with particular responsibility for language, and secondary remedial teachers. Pupils with extreme problems in spelling would still, however, require specialist attention.

Finally, it is important to re-emphasise that the results reported here provide no evidence on how well pupils can spell when producing 'specialist' writing - for instance in science. The tasks analysed for this study did not call on specialised vocabulary: even in 'Rules' pupils could use almost exclusively familiar words.

As Lamb (1991, 1992a) points out, misspelling of scientific terms can lead to errors in science, or even possibly danger. There is therefore a very strong case for insisting on scrupulous accuracy in the spelling of specialised terms. There is therefore also a strong case for investigating both the **national** standard in spelling of specialised vocabulary by students of various ages, and strategies for extending school pupils' adequate control of general spelling into specialist areas.

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APPENDICES

Appendix A: The writing tasks

'Earliest Memory' (age 11, 1979 and 1988)

> **THE EARLIEST THING I CAN REMEMBER**
>
> *Think of the earliest thing you can remember when you were very young. It could be a place, a person, something that happened, even an object. Describe it as clearly as you can.*

'Rules' (age 11, 1979 and 1983, and age 15, 1980 and 1983)

> **RULES**
>
> *Think of a rule you have to obey. It could be a rule at school, a rule in the home, a rule in a game, a rule in a club you belong to, even a law that everybody has to obey.*
>
> *What do you think about this rule? Describe it clearly. Then explore the reasons for its existence, saying* ***either*** *why you feel it is a good rule,* ***or*** *one you would like to see changed.*

'Story for younger child' (age 15, 1980 and 1983)

> *Write a story which would be suitable for reading aloud to a 4- or 5-year-old child.*

Appendix B: Criteria for analytic marking of writing

Instructions given to markers

In marking the scripts we would like you to apply the criteria that are outlined here. First, rate each essay on a rising five-point scale (1=low, 5=high) with reference to these two categories:

(1) **Content and Organisation**

(2) **Appropriateness and Style.**

Assess **content and organisation** on the basis of all the pupil has written: the grade to be given here is in the nature of a guided impression mark. Assess the category of **appropriateness and style** in relation to the first 20 lines of writing only. In practice, given the frequency with which 11-year-olds in particular produce less than one A4 page on some topics, the distinction between making judgments on whole rather than part scripts will often disappear. (For scripts of less than 20 lines, follow the special instructions at the end of this section.)

Notes on the application of categories

1. CONTENT AND ORGANISATION

This category relates to the subject matter of the written task and to the manner in which what is said is ordered or sequenced.

Judgements relating to **content** will be based on somewhat different factors in the case of each of the tasks. For some tasks, the required content can be specified fairly easily; for others, we are more interested in the degree of imagination or originality shown in the writing, recognising that a wider range of responses will be evident.

Similarly with respect to **organisation**, pupils will be likely to organise the information they are conveying in different ways in the various written tasks they complete. For example, the events or information may be ordered in temporal sequence, in a series of logical steps, or grouped under topic headings according to whether the pupil is writing a narrative, arguing a case or recounting an anecdote.

Features of particular writing tasks

Task 1 - Rules (both ages)

The chosen rule should be named or clearly enough described for the reader to understand how it operates and what its purpose is. It should be clear what the pupil thinks about the rule, either supporting it or wishing to have it changed or abolished. While fairly succinct accounts may be judged to have adequately fulfilled the requirements of this topic, the highest marks will usually go to scripts in which the subject matter is dealt with more comprehensively, showing the sign of an original point of view. Weaker scripts will typically fail to clarify the nature of the rule chosen, or will mention a string of rules not related together. The reasons for or against the rule may be insubstantial to the point of silliness.

In organisational terms, two components are specified for this task: one to describe the rule, and one to comment on it. Clear paragraph structure is therefore essential, and within paragraphs the focus of discussion should be clear and relevant. Mid-range scripts will tend to be presented as single paragraphs; weaker scripts show an organisational imbalance between description and opinion.

Task 2 - Descriptive anecdote about pupil's earliest memory (age 11 only)

Subject matter may relate to any remembered incident or object in the child's past, and for most 11-year-olds the selection does not prove difficult. Particular skills looked for are the ability to highlight significant features in the remembered episode and, in organisational terms, to frame the episode as something which happened in the past, rather than in any more recent time.

Average or low marks will go to scripts in which a day or a toy is described in an itemised or literal chronology without particular focus. Average or weaker scripts may also be characterised by random changes of topic when various memories are written about.

Task 3 - Story written for younger child (age 15 only)

The best stories will show a degree of originality, and good control of plot and characterisation. Stories in the middle of the range will be largely derivative, but show adequate control of plot and characterisation. The weakest scripts may well be short, and will fail to cohere or entertain.

Marks for CONTENT and ORGANISATION (summary)

Grade 5. Scripts in which the content is in your view apt and, to a degree, original, and in which what is written is organised coherently.

Grade 4. Scripts in which the content, and less significantly the length, is in your view adequate to the task; generally successful attempt to order and relate topics or events discussed.

Grade 3. Scripts in which **either** the content **or** the general organisation is inadequate or minimal.

Grade 2. Scripts in which content and organisation alike are inadequate/ unsuccessful, shading into incoherence.

Grade 1. Scripts which are wholly inadequate in content and incoherent in structure.

2. APPROPRIATENESS and STYLE

In this category we are looking at the pupil's choice and purposeful use of vocabulary and sentence structure. The general appropriateness of language choices at word and sentence level is to be assessed in relation to the writer's subject matter, audience and intentions in so far as these can be determined (e.g. by specifications in the way the task was set). Brief guidelines to the stylistic characteristics of all three tasks are listed below, followed by an illustration of some of the commonest types of stylistic errors for the 11-year-old age group. (It can be assumed that, on average, 15-year-olds' problems will be less severe.)

Task 1 - Rules

The most formal of the tasks to be marked in this exercise. Reader: impartial stranger; few assumptions can be made about shared knowledge relating to subject matter.

Task 2 - Earliest memory

Reader(s): interested adults. Anecdotal style, colloquial expression and informality of address are appropriate for this task; varied sentence structure; precise description.

Task 3 - Story written for younger child

Audience: 4- to 5-year-old child listening to story being read aloud. Any genre of story popular with young children would be appropriate, as would repetition, 'story' language, and avoidance of structures difficult to interpret aurally.

General stylistic problems

The chief amongst these stem from usages associated with speech, some of which are illustrated below.

Note however that there are some contexts in which features of spoken language serve as an appropriate resource for writing. An example of effective colloquial style is:

> **Well, my mum told me to sit at the table and not to move, but me being my normal disobedient self, moved.** (Early Memory).

More commonly, we find that features of speech are taken over into writing in a non-deliberate way and that these characteristics impair the communicative effectiveness of the writing.

1. Commonest amongst these features is the unvaried use of sentence connectors (**and, when, then, but**). Such repetitions are to be counted as stylistic errors.

2. Dialectal features of spoken language are to be categorised as stylistic errors when these appear in writing.

   a) The use of non standard past tense forms: **I seen, I done.**

   b) The omission of past tense endings where spoken language is ambiguous:
   Someone would get **knock** over.

   c) Misanalysis of auxiliary **have**:
   would of, might of, could of, must of, etc.

   d) Non-standard use of sentence connectors, associated with regional variation:
   I think that this law must be changed *until* guns cannot be had by the public.

3. Colloquialisms current in speech, unacceptable in writing:
   If you buy a child a uniform and they keep it *good....*
   ***Funny* enough, they both hated water.**

4. Lack of specificity in subject matter/unexplained specialist terms:
   But sometimes class 3 and class 4 in our school run because they don't know the rule.
   The rule is if you miss the ball on the off or leg side and it goes over the boundary it is four byes or any amount of byes.

I think that you should be allowed to wear cords for flag down but not jeans or trainers.

5. Repetition of nouns/adjectives.

   It is that whoever sits in the front *seat* of a car must wear a *seat belt* and the driver must wear a *seat belt.*

   The no speeding *law* is a *good law* which is good for all people and children.

6. Other stylistic errors appear to stem more from experiments with written language and involve inaccurate but not ambiguous word selection, or coinage/collocation errors.

   Also it infringes on your democracy as to whether to wear them or not.

   I think that this law should stay in circulation whatever happens.

   A majority of *car crashers* hadn't a seat belt on.

   So please school *loosen* the rules on a footwear.

It is not possible to list all types of stylistic error likely to be found in the writing of this age group. The general points above should be noted in connection with specific features of the tasks used in the exercise so that in making your assessment of appropriateness and style you are responsive to the degree of reader awareness shown in each piece of writing. All the features of style discussed here bear upon the question of the writer's awareness of reader(s), and the need to sustain interest throughout the complete text. Credit should be given when pupils seek to engage the reader in what is written (by means of a heading or title, a clear opening sentence, or specific address to the reader at some stage in the writing). Conversely, where such awareness is missing it may be counted as an error of style.

Marks for APPROPRIATENESS and STYLE (summary) - assessed on the first 20 lines of writing.

Grade 5. Scripts in which the choice and ordering of language is appropriate to the subject matter and audience. There should be evidence that the pupil is able to write in such a way as to consciously achieve variation in style as appropriate in context.

Grade 4. Scripts that are for the most part written in a style appropriate to the subject matter and presumed audience, i.e. 1-3 stylistic errors in the first 20 lines.

Grade 3. Scripts that contain occasional stylistic lapses in the form of clichés, words or structures judged to be inappropriate in context, i.e. 4-6 stylistic errors in the first 20 lines.

Grade 2. Scripts that contain frequent or repeated examples of such usage, i.e. 7+ stylistic errors in the first 20 lines.

Grade 1. Scripts which fail to take account of the need for what is written to be interpreted by a reader.

Special instructions for short scripts (Appropriateness and style category only)

(a) If there is a heading, please count that as a line.

(b) Up to 7 lines count as 5 - multiply errors by 4.

(c) 8 or 9 lines count as 10, multiply errors by 2.

(d) 10 - 15 lines, take the first 10 and multiply by 2.

(e) 16 - 19 lines count as 20.

SUMMARY OF GENERAL ANALYTICAL CATEGORIES

Content and Organisation

5 Content apt. Organisation coherent. Some degree of originality evident.

4 Content adequate. Successful attempt to organise material.

3 Either Content **or** Organisation inadequate/minimal.

2 Both Content **and** Organisation inadequate, shading into incoherence.

1 Content wholly inadequate. Organisation incoherent.

Appropriateness and Style

5 No stylistic errors. Evidence of appropriate and effective stylistic variation.

4 1-3 errors in first 20 lines.

3 4-6 errors in first 20 lines.

2 7 or more errors in first 20 lines.

1 No evident account taken of need for what is written to be interpreted by reader.

3. TOTAL NUMBER OF SPELLING ERRORS

(1) Mark spelling on only the first 10 (ten) lines of each script.

(2) In the following instructions, where examples are given, single quotation marks enclose errors, double quotation marks intended words.

(3) Ignore all of the following:

* punctuation errors, including incorrect use or non-use of hyphen or apostrophe
* incorrect use of upper or lower case letters
* incorrect word division
* omitted words
* substitution of 'of' for "have"
* all dialectical forms, e.g. 'I done it', 'It got tore'.

We are therefore adopting a narrow meaning of 'spelling error'.

(4) If the pupil has made no spelling errors in this narrow sense at all, enter 'OO' in the 'Error no.' columns on both the Marksheet and the Logsheet. Then proceed to the next script.

(5) Otherwise, for each spelling error you detect, proceed as follows.

(6) Allot each error a number and enter that number in the Error no. columns on the Marksheet and Logsheet. Start at 01 and work up.

(7) Where

* the error-word is illegible or unclear, or
* the error-word is clearly written but the word which it is intended to represent is uncertain, just allot the error an error number and transcribe the error- word (as accurately as you can where it is unclear) in the 'Error' column on the logsheet. Do not enter an 'Intended word' and do not enter any codes on the marksheet. For example, one script contains the spelling 'ancident': this is probably meant to be "accident" but in the context just might be meant to be "incident".

(8) If there is more than one error in a word, then number, log and code each error separately. For example, 'wissle' for "whistle" contains two errors, the omission of the 'h' and the substitution of 's' for "t".

(9) For each codable error, do all of the following.

(10) Transcribe the error-word **in the pupil's spelling** in the 'Error' column on the logsheet.

(11) In the 'Intended word' column on the logsheet enter the word which, in your view, the error is intended to represent.

(12) Code the error according to the major and minor categories below.

4. MAJOR SPELLING ERROR CATEGORIES

Enter a 1 in **one only** of columns 14-18 of the marksheet, according to which one of the following categories applies:

I (14) Insertion:
the error consists in the insertion of a single letter, e.g. 'off' for "of"

0 (15) Omission:
the error consists in the omission of a single letter, e.g. 'occuring' for "occurring"

S (16) Substitution:
the error consists in the replacement of a single letter by another single letter, e.g. 'definate' for "definite"

T (17) Transposition:
the error consists in the misordering of two adjacent letters, e.g. 'lable' for "label"

GS (18) Grapheme Substitution:
the error is not confined to one letter or to the transposition of two. Rather, the pupil has produced a spelling with a plausible but incorrect spelling pattern (grapheme), e.g. 'their' for "there" or 'fought' for "thought".

NEVER leave all of columns 14-18 blank: it should always be possible to allot an error to one of these five categories.
Occasionally, if an insertion, omission or substitution consists of two (or more) **adjacent** letters but in your opinion constitutes a single error, then it is possible to enter '2' (or '3', etc.) in column 14, 15 or 16.

Similarly, if a spelling error consists solely in the misplacing of a single letter by more than one position within the word, then it is permissible to enter '2' (or '3', etc.) in column 17. An example would be 'litgh' for "light": this would be coded as '2' in column 17.

5. MINOR SPELLING ERROR CATEGORIES

All further categories and therefore columns are independent both of columns 14-18 and of each other: therefore enter a 1 in all of columns 19-28 that apply, and leave those that do not apply blank:

Real (19) Real word: though an error, the word written is nevertheless a real word. This can of course only be deduced from the context.

Hom (20) Homophone: if pronounced by ordinary spelling-to-sound rules, the error would sound the same as the intended word. The error may be a real word, e.g. 'pair' for "pear", or a nonword, e.g. 'thort' for "thought".

Vis Conf (21) Visual confusion: the pupil seems to have spelt the word wrongly by analogy with some fairly obvious 'orthographic neighbour', e.g. 'praid' for "prayed".

Slips of pen (22): the error seems to be attributable to sheer manual error.

Sil (23) Silent letter: the error arises from omitting or regularising what is traditionally called a 'silent letter', e.g. 'night' for "knight" or 'frend' for "friend", or from not representing a syllable which is often elided, e.g. 'libry' for "library" or 'necessry' for "necessary". In the event of pupils inserting silent letters, they should also be coded here.

Acc/Pron (24) Accent or pronunciation effect: the error seems to arise from a non-RP ('Received Pronunciation') accent, e.g. 'fought' for "thought", or from some other aspect of the pupil's pronunciation.

Dubl (25) Doubling errors: either doubling a letter when it should not be, e.g. 'inn' for "in", or not doubling it when it should be, e.g. 'accomodation' for "accommodation". This category applies to both consonants and vowels.

'e' (26) Errors involving final 'magic' e: either dropping it when it should be retained, e.g. 'managable' for "manageable", or retaining it when it should be dropped, e.g. 'moveing' for "moving".

-ble (27) Errors involving wrong representation of unstressed (schwa) vowels: these are best explained by reference to able/ible confusions, e.g. 'possable' for "possible". Another example of the category to be coded here would be 'necissary' for "necessary".

ie (28) Errors where i and e are transposed.

Appendix C: Illustrative coding sheet

(see pages 38 and 39).

N.B (1) The coding sheet was originally A3 size and has been photo-reduced for reproduction in this report.

(2) The errors shown did not all occur in one script: they have been collected together for illustrative purposes.

NFER SPELLING PROJECT

OCTOBER/NOVEMBER 1991

Survey No.	
Task No.	
Marker No.	
Pupil No.	
Content & Org.	
Approp. & Style	

Marksheet

Error No.	I	O	S	T	GS	Real	Hom	Vis Conf	Slips of pen	Sil	Acc/ Pron	Dubl	'e'	-ble	ie
01															
02	1						1					1			
03	1					1				1			1		
04		1										1			
05		1					1			1					
06			1				1							1	
07				1											1
08				1											
09					1	1					1				
10			1								1				
11					1										
12			1												
13					1									1	

NFER SPELLING PROJECT

OCTOBER/NOVEMBER 1991

Survey No.	
Task No.	
Marker No.	
Pupil No.	

Logsheet

Error No.	Error	Intended Word
01	ancident	(accident/incident?)
02	untill	until
03	bite	bit
04	triped	tripped
05	bruses	bruises
06	egnore	ignore
07	freinds	friends
08	drak	dark
09	shore	sure
10	oncal	uncle
11	oncal	uncle
12	fella	follow
13	fella	follow

nfer

How well do 11- and 15-year-olds spell?

This report is based on a study of 1500 scripts collected during Assessment of Performance Unit Language Monitoring surveys between 1979 and 1988. Two general writing tasks (one narrative, one argumentative) were studied.

The most significant conclusions were:

- Over half the scripts contained only one error or none in the first 10 lines.
- Girls were better spellers than boys.
- There was considerable improvement between age 11 and age 15.
- Even at 15, there was a small minority of pupils who had severe problems with spelling.
- Many of the errors involved misapplication of phonic or 'sounding-out' strategies.
- There was no evidence of change in the spelling performance of 15-year-olds between 1980 and 1983.
- The spelling performance of 11-year-olds in 1988 was better than that of 11-year-olds in 1979 on the two general writing tasks studied.

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