Predictors of writing competence in 4- To 7-yearold children

Article *in* British Journal of Educational Psychology · October 2004

DOI: 10.1348/0007099041552323 · Source: PubMed

2 authors, including:

Sandra Dunsmuir
University College London
30 PUBLICATIONS **133** CITATIONS

British Journal of Educational Psychology (2004), 74, 461–483

www.bps.org.uk

Predictors of writing competence in 4- to 7-year-old children

Sandra Dunsmuir[1]* and Peter Blatchford[2]

[1] Department of Psychology, University College London, UK
[2] Institute of Education, University of London, UK

Background. This longitudinal study sought to improve understanding of the factors at home and school that influence children's attainment and progress in writing between the ages of 4 and 7 years.

Aims. (i) To investigate the relationship between home variables and writing development in preschool children; (ii) to determine associations between child characteristics and writing development (iii) to conduct an analysis of the areas of continuity and discontinuity between variables at home and at school, and influences on subsequent writing development.

Sample. Sixty children attending four urban primary schools participated in this study.

Method. Semi-structured interviews, questionnaires, observation schedules and standardized assessments were used. Writing samples were collected each term. Associations between measures and continuity over time were assessed using multiple regression analysis.

Results. Preschool variables that were found to be significantly associated with writing proficiency at school entry included mother's educational level, family size, parental assessment of writing and a measure of home writing. Child characteristics, skills and competencies were measured at school entry and those found to be significantly associated with writing at 7 years included season of birth, vocabulary score, pre-reading skills, handwriting and proficiency in writing name. The only preschool variable that maintained its significant relationship to writing at 7 years was home writing. Teacher assessments of pupil attitudes to writing were consistently found to be significantly associated with writing competence.

Conclusions. This comprehensive study explored the complex interaction of cognitive, affective and contextual processes involved in learning to write, and identified specific features of successful writers. Results are discussed in relation to educational policy and practice issues.

* *Correspondence should be addressed to Sandra Dunsmuir, University College London, Educational Psychology Group, Gower Street, London, WC1E 6BT, UK (e-mail: s.dunsmuir@ucl.ac.uk).*

Compared to the abundant literature available on the acquisition and development of oral language and also on reading, the literature on the development of writing in young children is sparse (Cameron, Hunt, & Linton, 1996). Although there has been detailed guidance provided to teachers about means of assisting children to develop early writing (DfEE, 2001) this advice is not supported by a solid research base. This paper aims to extend the existing literature by reporting a comprehensive investigation into the factors underpinning writing development in children below the age of 7. Three areas, linked to the research aims, will be addressed in turn. First, writing during the preschool period, second writing at school entry and third, writing during the first three years in school.

The first aim of the paper is to explore the relationship between home variables and writing development in preschool children. For most children, the home is where their earliest learning occurs. However, learning experiences in the home are difficult to identify and quantify, as much education is incidental, and includes features that constitute '... fleeting actions that take place at the margins of awareness' (Leichter, 1984, p. 38). Families differ significantly in the quantity and quality of their uses of print (Teale, 1986), the extent and form of parental teaching of writing (Farquhar, Blatchford, Burke, Plewis, & Tizard, 1985; Hall, 1989; Hannon & James, 1990) and the nature of the interactions that occur between parents and children around writing (Hannon, 1995; Harste, Woodward, & Burke, 1984). Hence, some children begin their school life with a much better grounding in early literacy experiences than others.

Longitudinal studies have shown that children's knowledge of literacy at school entry is a strong predictor of their success (Tizard, Blatchford, Burke, Farquhar, & Plewis, 1988; Wells, 1987). Kroll (1983) reported that children whose parents have a good understanding of literacy development and ensure their children have a good grounding in reading and writing, progressed well regardless of the methods and quality of teaching in school. Pupils from less supportive home backgrounds were more susceptible to the effects of inadequate teaching and even where literacy instruction was considered to be good, these pupils still did not progress as well as those from supportive homes.

The second aim of this paper is to determine associations between measures of writing and related skills (including child characteristics) at school entry and subsequent writing development. Blatchford (1991) reported a relationship between good handwriting skills at school entry and later writing ability and hypothesized that this underpinned a more general familiarity with written language, which successfully supported subsequent development. Similarly, Harvey and Henderson (1997) reported highly significant statistical correlations between children's handwriting during their first three years in school and competence in literacy and numeracy at 7 years of age. They considered that this may be due to an overall construct of 'intelligence' which is strongly related to performance in all school subjects.

Kellogg (1996) argued that for children beginning to write the physical demands of the task are substantial, and other cognitive processes will be suppressed whilst it is occurring. He stressed that it is only when automaticity with handwriting is achieved that mental capacity can be freed up for dealing with other aspects of the writing process, such as compositional demands. Hence, learning to write fluently has implications for the development of wider elements of the process (Jones & Christenson, 1999; Mojet, 1991). Many children find this difficult, and Laszlo (1986) reported that the perceptual-motor skills of approximately one third of all 5-year old

children are not sufficiently developed to produce writing of the size and quality that many adults expect.

Many researchers have considered the relationship between oral and written language (e.g., Ede & Williamson, 1980; Vygotsky, 1986). It is not easy to isolate writing from other language-based activities (such as talking, listening or reading) and there are many overlaps between these complex, interdependent processes. Goodman (1984) and other proponents of the psycholinguistic perspective have argued that development in writing is related to more general language development.

Several studies have demonstrated the relationship between home literacy experiences in the preschool period and oral and written language development (Sénéchal, LeFevre, Thomas, & Daley, 1998; Whitehurst & Lonigan, 1998). However, the literature is inconclusive about the nature of this relationship. Frijters, Barron, and Brunello (2000) argue that although literacy activities initiated by parents can have a direct influence on young children's oral language development, the more specific knowledge that children require to be able to make early written representations is mediated by their developing phonological system. Whitehurst and Lonigan (1998) contend that phonological skills and language skills are distinct domains, influenced by differing experiences and susceptible to varying influences at different times during development. Hagtvet (1993) reported that it is possible to predict the children who will be good readers and writers, as their oral and written language skills are well developed from early on and their performances over time are stable and predictable. The oral-written language relationship is more variable at the average and lower end, as children exhibit differing profiles, related to a range of potential difficulties that can vary over time. This study sought to explore further the relationships between oral and written language development in young children.

A third aim of this paper is to identify factors at school associated with the development of writing competence. Snow, Barnes, Chandler, Goodman, and Hemphill (1991) considered school factors that were associated with progress in writing and reported that the 5–7 year-old children in their longitudinal study who were most successful in learning to write were those who had been provided with regular extended writing experiences across a range of forms (e.g., narrative, expository). They made significantly greater progress than pupils in the majority of classrooms whose teachers provided fewer and narrower writing opportunities.

The debate surrounding the most appropriate means of teaching writing provided the background to this study, as variations in classroom practices as well as the amount of time spent engaged in writing are likely to have a direct influence on writing development. Other studies have indicated that the writing experiences of many pupils in British primary classrooms in the mid 1990s were 'fragmentary and discontinuous' (Webster, Beveridge, & Reed, 1996, p.147), and that there was little evidence of progression in teaching or an awareness by teachers of appropriate developmental expectations.

There have been several research studies that have investigated the role of affective and motivational factors in writing (Graham, Swartz, & MacArthur, 1993; Hayes, 1996; Mavrogenes & Bezruczko, 1993; Shook, Marrion, & Ollila, 1989) and its relationship with writing competence. Motivated writers enjoy the activity and gain intrinsic satisfaction on completion of a task. Pupils who are anxious about writing are more likely to state that they do not enjoy it and procrastinate. These individuals will have difficulty generating content and are more likely to avoid writing, displaying higher levels of off-task behaviour than motivated writers. The retrieval and application of

knowledge can also be inhibited by negative affect (Kellogg, 1994). Moreover, Mavrogenes and Bezruczko (1993) reported that teacher assessments of affective, motivational and behavioural factors were significantly correlated with writing ability.

This paper seeks to investigate the relationship between teacher assessment of children's attitudes about writing with their writing competence at the age of 7 years. The study was exploratory and sought to identify a subset of variables associated with pupil competence in writing. Data collection took place between 1993 and 1996. Since September 1998 then there has been a shift in literacy practices in British classrooms following the introduction of the National Literacy Strategy. Although the data will be discussed in relation to the earlier, less prescribed context in which writing occurred, the implications will be considered in relation to the National Literacy Strategy and other legislative initiatives.

The aims of the study were linked to the following, more specific research questions which were explored as pupils moved from the preschool period, through school until the age of 7 at the end of Key Stage 1 (defined as outcome):

(1) What is the relationship between preschool variables and writing at school entry?
(2) What is the relationship between preschool variables and writing at outcome?
(3) What is the relationship between child characteristics and writing at outcome?
(4) What is the relationship between writing at school entry and writing at outcome?
(5) What is the relationship between school variables and writing at outcome?

Method

Sample

The study design involved the identification of children before they started school, and this information was obtained from the head teachers of their prospective schools. The initial sample of 75 pupils was recruited from four schools, which were selected to provide variability and assist in the identification of significant effects. Table 1 summarizes descriptive information about the four project schools at the time of the study.

Table 1. Information about project schools and distribution of pupils

	Roll	Age group	Proportion of pupils with special educational needs	Proportion of pupils eligible for free school meals (an indicator of social and economic deprivation)	Proportion of pupils with English as an additional language	Number of pupils involved in the study
School 1	411	5–11 years	24%	9.4%	1.2%	17
School 2	231	5–7 years	29%	25.0%	1.4%	10
School 3	238	5–7 years	43%	32.0%	4.0%	21
School 4	330	5–11 years	19%	12.0%	2.0%	12

In order to recruit families, the researcher attended a meeting set up for new parents the term before pupils started school, and spoke about the study. Ninety-four per cent of parents approached agreed to take part in the study. During the course of the project there was 20% attrition, due to participant pupils leaving their schools for a variety of reasons. No participants withdrew from the study, hence no attrition bias was present. The sample had reduced to 60 pupils by the end of the study. Children were equally split by gender (30 male and 30 female). The pupils in the study did not all experience the same length of time in Key Stage 1 owing to the LEA policy on school admissions. At that time, pupils started school the term following their fifth birthday, on a termly basis. The mean age at school admission was 5 years 4 months (standard deviation = 1.5 months). Hence, a rolling recruitment programme was established with pupils from the four project schools selected at three points of school admission – Summer 1993 (24 pupils – 40% of sample), Autumn 1993 (21 pupils – 35% of sample) and Spring 1994 (15 pupils – 25% of sample).

Procedure

Factors at home and school that may influence writing development were organized into four main groups, which were time ordered to reflect the longitudinal design of the study (see Figure 1).

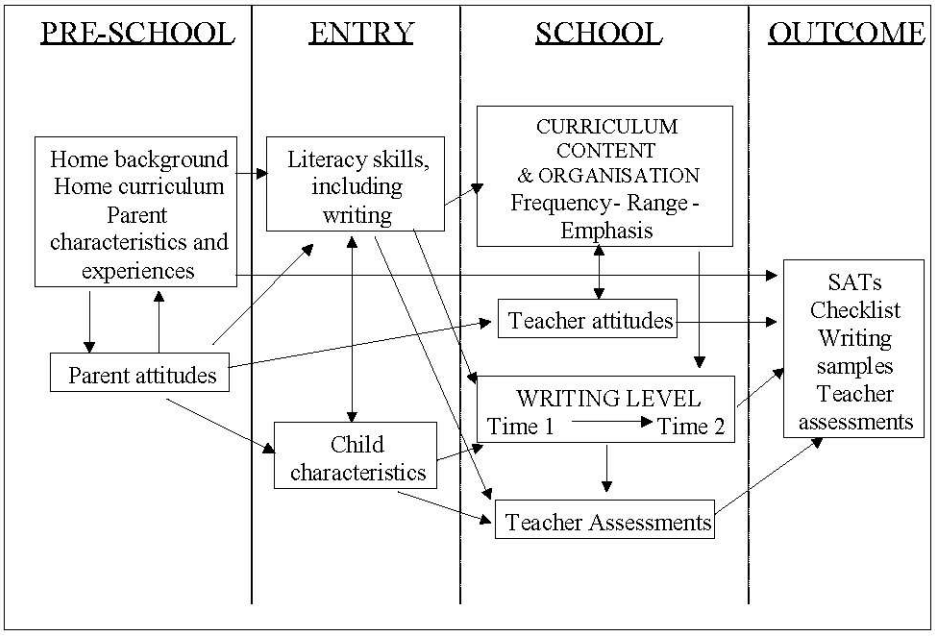

Figure 1. Main groups of variables and their relationships

Data gathered before the children started school

In order to gain information about home background, home curriculum and parent characteristics, experiences and attitudes, parents were interviewed at home, during the term before their children started school, by the first author. The format of the

interview was semi-structured, with a pre-determined set of questions being asked according to a standardized protocol. The aim was to collect general background information (SES, parental education, family grouping, preschool arrangements), information about writing materials available in the home, and parental views about the child's current level of writing development.

In order to sample the nature and frequency of writing in the term before children started school, parents were asked to keep a Diary Record for one week. This took the form of a categorized tick list, a task requiring minimal effort on the respondent's part and only requiring a basic level of literacy to complete.

Data gathered at school entry

Entry skills assessments were carried out during the pupils' first term in school to collect data relating to individual child characteristics and other writing and related skills.

Language measures

The British Picture Vocabulary Scale (BPVS – short form), the vocabulary subtest of the Wechsler Pre-school and Primary Scale of Intelligence – Revised (WPPSI-R) and the British Ability Scales (BAS) Verbal Fluency Subtest were selected as they represent widely used, well standardized and readily available measures of language.

In addition, children undertook the Dictated Story Task (Sulzby, 1985). They were asked to dictate a 'story about something that happened at play-time'. The first author wrote the children's dictated narratives down in large print and they were then presented with the text and asked to re-read it. Responses were scored according to Sulzby's Emergent Reading Ability Judgements Scale. Sulzby quotes inter-rater agreements of 96% when using this scoring scale, and because of its high reliability it was adopted without amendment. Content analysis of the dictated text was undertaken using an adapted version of the scoring system devised by Menig-Peterson and McCabe (1978) to analyse children's narratives. Four elements were scored: *who* was involved, *where* it happened, *what* occurred, and *how* events unfolded.

Knowledge about literacy

The Concepts about Print Test (Clay, 1979) includes items designed to test the child's knowledge of the front from the back of a book, understanding that print carries a message, familiarity with print directionality, understanding the difference between letters and words and knowledge of punctuation and capitalization.

The Letter Identification Test (Clay, 1979) involved presenting children with 54 letters (upper and lower case and two versions of a and g) on cards and asking them how many they could identify.

Measures of writing and related skills

The British Ability Scales (BAS) Copying Subtest was also administered at school entry. Pupils were required to copy a series of simple figures (such as a circle, a vertical line, a diamond), some letters that are commonly reversed (b/ d/ p/ j) and some more complex geometric designs.

The phrase 'on the ground' was printed on a strip of card, and pupils were asked to copy this onto a blank sheet of paper presented in landscape orientation. A score was awarded between 0 and 5. Pupils who refused to write or produced a scribble scored 0, and a 5 was awarded if all letters were appropriately and evenly spaced, correctly

formed and ordered, and upper and lower case letters differentiated. Test re-test reliabilities of 0.86 had been previously reported (Tizard *et al.*, 1988).

Children were asked to write their name, and a score between 0 and 5 awarded according to specific criteria. They were then asked to write down any other words known to them, and each word written down correctly obtained a score of 1. Clay (1979) reported test-retest reliability of 0.97 using this measure.

Data gathered during Key Stage 1

Writing samples produced by children were photocopied from their books once a term. These samples of pupils' continuous writing were used to make judgments about individual development within the different dimensions of writing (handwriting, spelling, punctuation, meaning, form, vocabulary, structure and organization). Scripts were rated and categorized against a series of hierarchically organised statements, organised by domain and linked to National Curriculum objectives. For example, the following statements were used for the handwriting assessment:

(1) Some control over the size, shape and orientation of the writing.
(2) Letters are usually clearly shaped and correctly orientated.
(3) Handwriting is legible, despite inconsistencies in orientation, size and use of upper and lower case letters.
(4) Handwriting is clear, with ascenders and descenders distinguished, and generally upper and lower case letters are not mixed within the word.
(5) Handwriting shows accurate and consistent letter formation.
(6) Handwriting is joined and legible.

A similar approach to writing assessment at Key Stage 1 has been devised by Fox (2000) who argues that the clarity, consistency and accuracy of assessments can be enhanced by use of such detailed and structured systems.

Teacher questionnaires

Over the course of the study all teachers of each pupil provided the following information:

(1) Assessments of performance as 'below average', 'average' or 'above average' in relation to their view of the norm for the age group across the whole population. Teacher judgments about performance in the following areas were sought: expressive language, receptive language, reading, writing, intelligence, teachability, concentration and enjoyment of writing, home support and teacher expectations.
(2) Teachers also filled out a questionnaire seeking information about their background, and the curriculum approach and emphasis adopted in the teaching of writing. Teachers were asked to estimate the frequency with which certain tasks and activities were likely to be undertaken by individual children. These included work cards/workbooks, descriptive writing, story writing, 'news' writing, handwriting, spelling, making cards, labelling pictures, and writing poems and plays. The data relating to time spent on various writing activities discriminated between respondents.

Data gathered at end of Key Stage 1

There are set points at which pupils are assessed within the National Curriculum in

England and Wales. The first of these takes place at the end of Key Stage 1, the academic year in which children reach their seventh birthday. Teachers are required to assess children's writing by making judgments about levels achieved in relation to performance descriptors. The results of the writing standard assessment tasks (SATs) were collected as one measure of writing attainment.

Results

Table 2 summarizes the descriptive data relating to the home background variables: it can be seen that with regard to maternal educational qualifications, only 12% of the sample were qualified above 'O' level standard, indicating an under-representation of more highly qualified mothers. Similarly, of the fathers of children in the study, nearly half (48%) had no educational qualifications at all, and just 13% had qualifications above 'O' level standard. Twenty per cent of the fathers in the study were unemployed, a high proportion for the locality which at that time had an unemployment rate of 6.6%. Over

Table 2. Descriptive data relating to home background variables

VARIABLE NAME	CATEGORIES	FREQUENCY	PERCENT
Maternal educational qualifications	No qualifications	18	30
	Up to 'O' level	35	58
	Up to degree level	7	12
Maternal occupation	Full-time employment	11	18
	Part-time employment	15	25
	Housewife	34	57
Family size	1 child	7	12
	2 children	31	52
	More than 2 children	22	37
Family position	1st child	24	40
	2nd child	23	38
	3rd child	9	15
	4th child	4	7
Paternal occupation	Semi and unskilled manual	10	17
	Intermediate & junior non-manual/ skilled manual	29	48
	Professional/employers & managers	18	30
Paternal educational qualifications	No qualifications	29	48
	Up to 'O' level	23	38
	Up to degree level	8	13
Paternal employment status	Unemployed	12	20
	Employed	47	78
	Missing	1	2
Type of pre-school	Playgroup	6	10
	Nursery	53	88
	None	1	2
Other child-care arrangements	None	44	73
	Some	16	27

Table 3. Descriptive data relating to home curriculum and parent views

VARIABLE NAME	CATEGORIES	FREQUENCY	PERCENT
Home writing activities	None	27	45
	Some	33	55
Number of materials	Low	12	20
	Middle	28	47
	High	20	33
Parental assessment of child's writing ability	Low	16	27
	Middle	24	40
	High	20	33
Parent models – frequency and nature	Simple, functional (e.g. lists, cheques, competitions)	34	57
	Frequent, communicative (eg letter writing)	17	28
	Complex, sustained (eg essays)	9	15
Questionnaire read to parents	No	37	62
	Yes	23	38

half of the mothers in the study (57%) were not in paid employment and described themselves as housewives.

The descriptive data relating to home curriculum and parent views are shown in Table 3. All households had some writing materials, and although these ranged from 1 to 20 items, most families had a good selection of equipment, with the mean number of items being 13. For the purposes of analysis these were categorized into three groups – low, middle and high. Most parents assessed their child's writing ability as average or above average (a total of 73% in the 'middle' and 'high' categories). The 'Parent models – frequency and nature' variable shows that only a small percentage (15%) of parents wrote in a complex, sustained manner.

Table 4 summarizes the measures used to assess the children at school entry. The mean score of 9.5 on the WPPSI-R vocabulary subtest is slightly lower than the national norm of 10 (Wechsler, 1990). Similarly, the mean percentile scores for the BPVS (43.8%) and BAS verbal fluency (30.4%) are below average. Overall, this suggests the sample of children studied had poorer language skills than we would expect to find in the British population as a whole.

The descriptive data suggest that most children in the study could only write between one and two words when they started school (mode = 1; median = 1.5), and that one of these words was likely to be their name (70% of children in the study were able to do this accurately). The mean percentile score on the BAS copying test was 42, once more below the standardization sample mean of 50 and a further indication of negatively skewed data.

Changes that occurred over time

Writing samples were scored using a set of criteria derived from the Key Stage 1 National Curriculum writing assessments, focusing upon the following aspects of writing: handwriting, spelling, punctuation, meaning, form, vocabulary, structure and organization. A second rater scored 20 of the 60 samples and levels of inter-rater

Table 4. Measures used to assess children at school entry

ASSESSMENT	AUTHOR	RANGE OF SCORES OBTAINED	MEAN	STANDARD DEVIATION
The British Picture Vocabulary Scale (BPVS)	Dunn, Dunn and Whetton (1982)	5–94	43.8	26.8
The Wechsler Pre-school and Primary Scale of Intelligence – Revised (WPPSI-R), vocabulary sub-test	Wechsler (1990)	5–15	9.5	2.0
The British Ability Scales (BAS) Verbal Fluency Subtest	Elliott, Murray and Pearson (1983b)	1–79	30.4	25
The British Ability Scales (BAS) Copying Subtest	Elliott, Murray and Pearson (1983b)	4–95	42	26.2
Copying phrase	Tizard et al. (1988)	1–5	3.8	0.9
Writing name	Tizard et al. (1988)	0–5	4.3	1.4
Test of Writing Vocabulary	Clay (1979)	0–9	2.2	1.9
Concepts about Print Test	Clay (1979)	1–17	10.2	3.3
Letter Identification Test	Clay (1979)	0–54	22.3	17.0
Dictated story task	Adapted from Sulzby (1985); content analysis scoring system adapted from Menig-Peterson & McCabe (1978)	1–12	6.2	2.4

agreement were computed using Cohen's kappa (Cohen, 1960). Kappa means and ranges are presented in Table 5. Writing samples were collected once each term during the pupils' time in Key Stage 1, and those gathered during the six data collection points in Year 1 and Year 2 were analysed. Time 1 represents the first data collection point

Table 5. Inter-rater agreement on writing sample assessments and numbers of pupils making progress between Time 1 and Time 2

	Kappa means	Kappa ranges	Number of categories progressed between Time 1 and Time 2				
			0	**1**	**2**	**3**	**4**
Handwriting	0.55	0.42–0.75	0	12	32	15	1
Spelling	0.49	0.38–1.00	8	31	20	1	0
Punctuation	0.56	0.23–0.69	12	21	22	5	0
Meaning	0.43	0.38–0.91	0	21	37	2	0
Form	0.26	0.27–0.44	9	37	13	1	0
Vocabulary	0.38	0.31–0.46	22	34	4	0	0
Structure	0.69	0.43–0.87	14	40	5	1	0
Organisation	0.88	0.76–1.00	10	36	14	0	0

(i.e., the pupil's first term in Year 1) and Time 2, the sixth and final point, at the end of Key Stage 1. Comparisons between the total scores obtained at Time 1 and Time 2 demonstrate the degree of progress made by all pupils across different aspects of the writing process. A score of 0 indicates that no progress was made. If the pupil was judged to have moved forward by one category between Time 1 and Time 2, they would achieve a score of one. It should be noted that the categories represent an arbitrary measure of progress and the relationship between categories is neither linear nor fixed. It can be seen that most pupils made progress in most aspects of writing. In some areas progress was slower (e.g., vocabulary, structure, organization) probably because pupils had not developed the higher level cognitive abilities necessary to fulfil the criteria.

School entry and outcome measures

Dependent variables were selected at two points in time – entry and outcome. Both were continuous variables. The dependent variable at entry combined information derived from the following assessments: British Ability Scales copying subtest, copying phrase, writing name, test of writing vocabulary, concepts about print test and the dictated story task. The scores were summed to create the 'Entry Writing' dependent variable (range = 5–29, mean = 18.6, standard deviation = 5.7). The dependent variable at outcome combined information about school based writing samples provided at the time of Key Stage 1 assessment. These included scores relating to handwriting, spelling, punctuation, meaning, form, vocabulary, structure and organization (range = 5–23, mean = 13.7, standard deviation = 3.9). The Spearman's rho correlation between the writing sample outcome scores and the Key Stage 1 writing SATs results was high (0.82, $p < .01$).

The relationship between home variables and writing development at school entry

Preschool factors were considered first. These were grouped conceptually and entered into a regression analysis to investigate the effect of each independent variable on the dependent variable (either writing at school entry or outcome) using the 'forced' (enter) method. The first set of variables that was entered into the analysis were the home background variables listed in Table 2. The model achieved statistical significance ($F = 4.84$, $p < .01$), and the R Square of .145 indicated that 14.5% of the variation in writing attainment at school entry can be explained by maternal educational qualifications and family size.

Home writing experiences associated with attainment at school entry

The next set of variables entered into the regression are listed in Table 3. Together these variables accounted for 49% of the variance in attainment in writing at school entry and the model is statistically significant ($F = 17.866$, $p < .001$). Variables that achieved statistical significance within this model were home writing activities (Beta = .3, $p < .003$) and parental assessment (Beta = .6, $p < .001$).

Association between all significant preschool variables and writing attainment at school entry

When all of the statistically significant variables from the preceding analyses were included together in a regression model, they accounted for 60% of the variance in attainment at school entry. The F value of 8.189 achieves a high level of statistical significance ($p < .001$).

Table 6. Association of selected home variables with attainment in writing at school entry

Variable	Category	B	Std. Error	Beta	t	Significance
Maternal educational qualifications	Low	0	–	–	–	–
	Middle	13.0	9.3	.15	1.4	.168
	High	10.4	14.7	.08	.71	.483
Family size	1 child	0	–	–	–	–
	2 children	−30.7	13.3	−.36	−2.3	.026
	More than 2 children	−27.1	13.4	−.307	−2.0	.050
Home writing activities	None	0	–	–	–	–
	Some	12.6	8.8	.15	1.4	.160
Parental assessment	Low	0	–	–	–	–
	Middle	−.62	10.0	−.01	−.062	.951
	High	52.4	10.3	.58	5.1	.001

The results (Table 6) show that when home factors are taken into account certain variables that had achieved statistical significance when entered into regression models with different sets of variables lost their associative power. For example, the maternal educational qualifications variable does not achieve statistical significance within this model because of its relationship with the other independent variables, and in particular, parental assessment. Hence, more highly qualified mothers are likely to assess their children's writing more highly.

Association between preschool variables and writing progress

The same sets of variables were regressed against the dependent variable at outcome, enabling exploration of factors that retain an effect on writing attainment after 2–3 years of schooling.

The relationship between home background variables and writing attainment at outcome

Once more, the range of home background variables listed in Table 2 were grouped conceptually and entered as independent variables into the regression analysis. The results indicated that together the home background variables accounted for 25.8% of the variance in attainment at outcome ($F = 3.762$, $p < .005$). The only home background variable that was statistically significant was home writing (Beta = .371, $p < .004$).

The relationship between writing and related skills at school entry (including child characteristics) and attainment in writing at outcome

The next group of variables that were examined were skills at school entry. The correlation between the concepts about print test and the letter identification test was high (r = .69, p < .01), so scores on these two tests were summed to create a new variable called Pre-reading skills. Internal consistency of this variable was lower than desirable (Cronbach's alpha = .39). However, there is evidence that Cronbach's alpha provides a lower bound of the true reliability (Dunn, 1989). Moreover, because of the conceptual justification for the combination (i.e., that both variables tap important underpinnings of literacy skills) it was decided to proceed.

Together the entry skills variables accounted for 34% of the variance in attainment at outcome (F = 3.838, p < .002). Statistically significant measures are detailed in Table 7.

Table 7. Association of significant entry skills with attainment in writing at outcome

Variable	B	Std. Error	Beta	t	Significance
Pre-reading skills	.007	.033	.373	2.283	.027
Write name	2.594	1.242	.306	2.089	.042

Association between child characteristics and attainment at outcome

The term child characteristics has been used to describe the following variables: gender, season of birth, WPPSI-R vocabulary score, BPVS and BAS verbal fluency subtest scores. Together child characteristics accounted for 35% of the variance in attainment at outcome (F = 4.206, p < .002).

There was a strong association between WPPSI-R vocabulary subtest scores and writing attainment (Beta = .577, p < .001). Also, within this model there is a non-significant trend towards children born in the summer months performing less well at outcome than those born earlier in the academic year.

School and teacher influences

The schools in the study differed on many criteria, including catchment area, intake and organization. Dummy variables relating to the schools were entered into the analysis in order to see if home factors and child characteristics retained their significance when school differences were taken into account. There was no significant difference between the mean scores of children in any of them. Furthermore, the regression analysis did not uncover any associations between curriculum organization, content, frequency and nature of writing experiences with writing at outcome.

Teachers were required to complete questionnaires that required them to assess pupils' skills and abilities. The correlation between teacher judgments of an individual pupil's receptive and expressive language was .94, and reading and writing were correlated at .78. Much weaker correlations of .29 were demonstrated between teacher ratings of expressive language and enjoyment of writing, and between the child's teachability and their enjoyment of writing. However, all correlations achieved statistical significance at the p < .05 level, and many at the p < .01 level. It was

decided to combine three of these teacher assessments variables: the child's ability to concentrate on a writing task, their enjoyment of writing and how 'teachable' the child was considered to be with regard to writing. The grounds for doing this were that there appear to be conceptual links between them, with all three tapping a common factor – the child's attitude to writing.

The significant intercorrelations between them provided further justification for the combination and the data are shown in Table 8. These three variables were added together into a new variable called Writing Attitude. The Cronbach's alpha of .71 indicates that there is good internal consistency.

Table 8. Spearman's rank correlation coefficients

	Concentration		Enjoyment		Teachability	
	Time 1	Time 2	Time 1	Time 2	Time 1	Time 2
Concentration	1.0	1.0	.49	.70	.53	.77
Enjoyment	.49	.70	1.0	1.0	.33	.58
Teachability	.53	.77	.33	.58	1.0	1.0

Teacher assessments at the start of Year 1 (Time 1) and their final term at Key Stage 1 (Time 2) were analysed. Overall, perhaps unsurprisingly, more variance was explained by teacher assessments at Time 2 (close to outcome) than at Time 1. The child's attitude to writing was significantly associated with outcome measures at Time 1, and the effect was strong and consistent, and maintained until Time 2. At Time 1 teacher assessments of the child's intelligence were not significantly associated with writing competence at 7 years, but by Time 2 they were.

Summary model

All significant variables were entered as a group into a final summary regression model and together they accounted for 41.7% of the variance in attainment at outcome as measured by outcome total scores ($F = 8.748$, $p < .001$). The results are shown in Table 9. A representation of the main effects in terms of standardized regression coefficients (beta weights) among independent and dependent variables in the summary model is shown in Figure 2. The relative effect sizes of the independent variables on the dependent variable can be assessed by directly comparing the beta weights. The summary model does not represent a causal model as such, but it provides information

Table 9. Association between all significant variables and writing at 7 years

Variable	B	Std. Error	Beta	*t*	Significance
Handwriting baseline	1.11	.542	.205	2.049	.046
Teacher assessment of attitude to writing at school entry	3.259	1.003	.368	3.249	.002
WPPSI vocabulary	.492	.222	.237	2.214	.032
Home writing	1.889	.730	.263	2.588	.013
Season of birth (spring)	−.156	.954	−.019	−.163	.871
Season of birth (summer)	−2.363	.837	−.327	−2.822	.007

on the relative weights and associations among identified factors in early writing development. Structural equation modelling was not considered appropriate due to the small sample size.

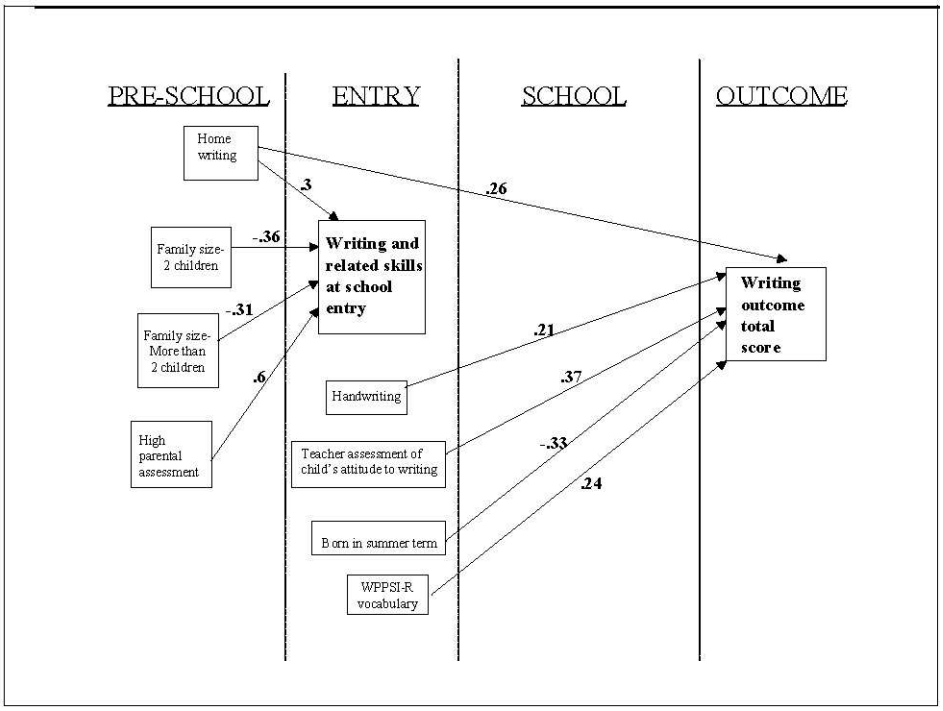

Figure 2. Significant variables and their effect sizes

Discussion

Home variables

Of home background variables, mother's educational level was significantly related to writing attainment at 5 years. Hence, children whose mothers who had qualifications at 'A' level (or equivalent) and above, wrote better at school entry. Since the primary caregivers of children in this study were almost exclusively their mothers, their influence is likely to be significant. This finding replicates findings from other studies that have reported a similar effect. For example, Tizard *et al.* (1988) found that mothers with higher educational qualifications were more likely to be oriented towards literacy and to show positive attitudes. Wells (1985) also reported a relationship between parental educational level and the emphasis on literacy in the home preschool. It may be that the mothers with higher educational qualifications were more aware of the conditions conducive to the development of literacy skills and be more likely to 'press for achievement' (Hess, Kashiwagi, Azuma, Price, & Dickson, 1980).

A second home background variable that was significantly related to writing at school entry was family size. Children with no siblings were more likely to achieve higher scores when assessed at entry than children from families of two or more

children. Other research documents the educational advantages of being an only child (Breland, 1974; Falbo & Poston, 1993) and it may be that this is the result of the higher level of adult attention and interaction awarded to children without brothers or sisters.

A third home background variable that was significantly and independently related to writing at 7 years was home writing. This was derived from the Diary Record (i.e., the observational record of writing skills/activities completed by parents during a one-week period in the term before children began school). Some parents completed the form, but many did not, for a variety of reasons. It could be argued that the completion of the form tapped a variable relating to parental commitment to, and engagement with, their child's writing. It may also be related to more general active levels of parental support with writing and communication that writing is a valued and rewarding activity. Tizard *et al.* (1988) also reported a significant association between the amount parents taught their children to read and write at home and subsequent literacy development.

Most preschool children are capable of some form of emergent writing (Hall, 1987) although some children will 'hide' these abilities (Sulzby, 1990). It is possible that those children who did not produce any writing during the observational week failed to write for reasons other than lack of ability (such as lack of meaningful context, motivation, drive, interest or opportunity) and that the home writing variable is tapping something deeper than writing capability. It may be that lack of positive acceptance and valuing of earlier writing attempts had led to suppression of the behaviour.

A significant association between parental provision of more frequent, communicative or complex, sustained models of writing and children's writing competence at either 5 or 7 years was not found. This is in contrast to the findings of Wells (1987) who reported that more proficient writers at 9 to 10 years of age were children whose parents wrote frequently and purposefully at home. This difference could have occurred for one of the following reasons: First, the skewed nature of the sample, and the reduced number of 'good' writers from highly literate families may have resulted in the effect not being sampled. Second, the association may not become evident until children become older, and produce more complex, sustained pieces of writing themselves. Third, the majority of parents (57%) reported that their writing was simple and functional (e.g., lists, cheques, notes), forms of writing that are highly visible to children. Those parents who reported engaging in more complex, sustained forms of writing presumably also wrote in this simple, functional manner. However, children may not have witnessed their parents producing the more extended pieces of writing as it is less likely to have taken place during the busy times of the day when they were around. In younger children any association may be more difficult to tap, although the importance of access to literacy in the home as widely reported is accepted (Snow *et al.*, 1991; Tizard *et al.*, 1988; Wells, 1985, 1987).

The variable that was strongly associated with writing at school entry was parental assessment. In particular, those parents whose assessment of their children's skill and motivation with writing was categorized as 'high' tended to have children who did better when assessed at school entry. Perhaps this seems unsurprising, but it does indicate that parental assessments of the more competent writers were accurate. It could be argued that this occurred because these were the parents who were more sensitive to their child's developmental level, who had more interest in and engaged with their children writing, and so were most likely to scaffold activities in an appropriate manner.

The analysis involved consideration of parental perceptions of their children's capacity and motivation with writing, and these data were defined within the model as

a parent factor. However, underlying the parental assessment variable are the child's abilities, and these exist independently of parental perceptions and could be defined as child factors. In fact, child factors were not considered during the preschool period, and had they been, the size of the parent effect may have been reduced.

Only one of the variables correlated with writing attainment at school entry retained its effect over the period of the child's time in Key Stage 1. The home writing variable continued to be significantly related to pupil progress, possibly because certain parents retained the active levels of support and engagement that they had established pre-school.

Child characteristics

The writing attainments at 7 years of age of the children born in the summer months (May – August) were lower than those of the children born at other times of the year. At the time this study was conducted pupils were admitted to school on a termly basis at statutory school age (i.e., the term after their fifth birthday). Hence, the summer born children were not only the youngest and least mature in the academic year, they had also experienced the least time in school. Furthermore, these pupils did not spend any time in the reception class and were required to start school in Year 1, with all the accompanying National Curriculum demands and expectations.

The educational disadvantage conferred by a summer birthday is well documented in the research literature. Many studies have demonstrated that summer born children have lower levels of academic achievement than their autumn and spring born contemporaries (Bell & Daniels, 1990; Fogelman & Gorbach, 1978; Pidgeon & Dodds, 1961). Significant age related differences have been reported at Key Stage 1 (Sharp, Hutchison, & Whetton, 1994; Shorrocks, 1993) and the effect continues into higher education, as significantly more autumn born individuals graduate from university (Russell & Startup, 1986). Shorrocks (1993) investigated whether length of time in school was the cause of the season of birth effect and concluded that it was not the sole factor, as even when time in school was taken into account, summer born children still performed less well. Other studies have looked at whether there is a 'Pygmalion' effect and whether teachers have lower expectations of the youngest children in their classes (Sharp, 1995) and if they make sufficient allowances for age differences between the children in their classes (Mortimore, Sammons, Stoll, Lewis, & Ecob, 1988). The consensus appears to be that a combination of these influences is operational.

Since this study was conducted, many more of the assessment measures introduced into schools have age-adjusted norms, ensuring that the raw performance scores on standardized tests obtained by summer born children are not directly compared with their older contemporaries. This may have raised teachers' awareness of age-related effects and increased the likelihood that judgments about performance will take account of birth date and developmental level.

Gray, Plante, Vance, and Henrickson (1999) have produced evidence that suggests that although vocabulary tests (such as the PPVT-III, the US counterpart of the BPVS) correlate well with each other, but are not useful in identifying children with specific language impairments. Within this study, correlations between the WPPSI-R vocabulary subtest and other language measures (BAS verbal fluency and BPVS) were statistically significant, although only the WPPSR-R vocabulary subtest was associated with writing attainments at outcome. This supports the argument that the WPPSI-R vocabulary subtest is tapping some additional information, and this is responsible for the strength

of the association. Kaufman (1994) postulated that in addition to language development and word knowledge the vocabulary subtest samples crystallised intelligence, learning ability and abstract thinking. Furthermore, it is the subtest of the WPPSI-R battery that is the most highly correlated with full scale IQ (r = 0.6) and along with the other verbal subtests is a significant predictor of future academic performance (Kaplan, 1996). However, in addition it may be that the vocabulary subtest taps some aspect of the social conventions of language use that are important for educational success. The significant relationship between the WPPSI-R vocabulary variable and literacy attainments replicates a finding reported by others (e.g., Tizard *et al*, 1988) and indicates that an interaction between early support with literacy and child characteristics is operative.

The writing process is closely related to other modes of language, and many authors have drawn parallels between writing and oral language (Donaldson, 1978; Graves, 1983; Vygotsky, 1986). Beard (1988) argued that children's oral language at school entry displayed many features of written language in terms of grammatical structures and linguistic conventions. However, this is not reflected in early writing and the expressive and receptive language measures at school entry in the present study (BAS Verbal Fluency, dictated story and BPVS) were not significantly associated with writing at 7 years. Kroll (1983) also reported that preschool oral language measures did not strongly correlate with writing in younger children. It may be that the relationship between writing and oral language is weak early on because the predominant focus of most children whilst writing at Key Stage 1 is skills related. Only by the end of Key Stage 2, when secretarial skills are sufficiently mastered, does it become possible for children to channel sufficient attention on to the compositional elements for oral competence to exert an influence on the content of writing.

A child characteristic that was not related to writing attainment at 7 years was gender, a finding that is not in line with other recent studies (Berninger *et. al.*, 1997; Ofsted, 1999, 2000, 2001), which have reported that girls outperform boys.

School factors

Children's ability to write their name at school entry was associated with writing attainment at outcome. Ferreiro (1984) reported that children's attempts to write their name will be the first 'stable string' of letters that they produce, and that learning to do this is highly significant. Since mandatory baseline assessment was introduced in September 1999, schools are required to assess whether children can write their name. The emphasis on the attainment of this skill by school entry has influenced the norms, as the number of 4-year-olds able to write their name at school entry increased from 10% to 25% between 1997 and 1998 (Performance Indicators in Primary Schools, 1999).

The pre-reading variable combining the pupils' knowledge of letters and their concepts about print was also related to writing at outcome. Several other studies have reported that the ability to identify letters is associated with more general success with the acquisition of early literacy skills (e.g., Muehl & DiNello, 1976; Tizard *et al.*, 1988). There is evidence that norms are becoming adjusted upwards as preschool children are increasingly being taught these skills, and in 1998 75% of 4-year-olds could recognize the first letter of their name compared to only 58% in 1997 (Performance Indicators in Primary Schools, 1999).

Similar upward shifts in literacy using three tests from Clay's diagnostic survey have been reported in New Zealand (McNaughton, 1995). In considering the reasons for this

increase, McNaughton suggests that New Zealand society has experienced social and cultural shifts that have been reflected in changing family practices. He does not elucidate the specific nature of the changes but argues that this illustrates the dynamic nature of child development.

This study suggested that a basic level of competence with handwriting is required before children are able to compose something that they can read back and which can be accessed by a wider audience. This is contrary to the position of those researchers who argue for a reduced emphasis on presentational requirements, advocating that children should be encouraged to focus on the compositional aspects of writing from the outset (Graves,1983; Teale & Sulzby, 1986). This finding concurs with other research indicating that the development of handwriting fluency appears to be significantly related to the development of compositional skill and fluency for children in the early stages of learning to write (Berninger *et al.*, 1992; Graham, Harris, & Fink, 2000; Swanson & Berninger, 1994). Recent studies in the UK have also demonstrated the association between transcription fluency and writing quality in older children (Connelly & Hurst, 2001). The results support the theoretical model proposed by Berninger, Abbott, Whitaker, Sylvester, and Nolen (1995), adapted from the Hayes and Flower (1980) model of writing which has been influential in the conceptualisation of the complex interaction of social and cognitive processes that occur during writing.

One of the school variables most strongly associated with writing at 7 years was the teacher assessment of the child's attitude to writing, both at school entry and in the final term in Key Stage 1. Indeed, teacher ratings on the writing attitude variable explained more variance than ratings on more direct measures such as writing or reading. This may not just be a reflection of the child's attitude as assessed by the teacher, but an indicator of a positive interaction between them around writing activities. One of the implications of this finding is that capturing a child's interest and enjoyment may be the key to promoting writing development, and educators need to be aware of the desirability of providing tasks that pupils perceive as purposeful and valuable.

The writing samples were used to assess pupils' writing competence across a range of criteria each term, and the reliability of the judgments made by two raters calculated using Cohen's kappa. All of the kappas were positive and the majority were statistically significant, an indicator that the agreements were on the whole, reliable. The best levels of agreement related to the organization criteria and this was reflected in kappas ranging from .76 to 1.0. However, some of the kappas were lower than desirable, and on certain criteria (e.g., form) they were unacceptably low, indicating that the two raters were not using the scoring scale in the same way. This may have occurred because the descriptive statements were interpreted slightly differently, or because some of the writing samples demonstrated evidence of more than one level. These statements were derived directly from the descriptors on which teachers base their SATs writing assessments and there is therefore a concern that this finding may indicate weak reliability in the root SATs measure.

In this paper, some of the factors that drive and influence writing development in young children have been discussed. The longitudinal design enabled the progress of a group of children to be tracked over time and future work would benefit from a similar approach, but should involve a larger sample size. There is a need for further research to look in more detail at some of the significant variables identified in this study. The implementation of the National Literacy Strategy has meant that classroom practices are now more standardized. This will enable future research studies to retain a naturalistic

emphasis, obtaining data that directly relate to children's experiences, but controlling more variables through quasi-experimental research designs. It will then be possible to consider questions relating to curriculum emphasis more effectively, e.g., the relationship between individual developmental profiles, learning styles, attitudes and aspects of the writing curriculum.

References

Beard, R. (1988). *Children's writing in the primary school*. London: Hodder & Stoughton.

Bell, J. F., & Daniels, S. (1990). Are summer-born children disadvantaged? The birthdate effect in education. *Oxford Review of Education, 16*(1), 67–80.

Berninger, V., Yates, C., Cartwright, A., Rutberg, J., Remy, E., & Abbott, R. (1992). Lower-level developmental skills in beginning writing. *Reading and Writing. An Interdisciplinary Journal, 4*(3), 257–280.

Berninger, V.W., Abbott, R.D., Whitaker, D., Sylvester, L., & Nolen, S.B. (1995). Integrating low- and high-level skills in instruction protocols for writing disabilities. *Learning Disabilities Quarterly, 18*, 293–309.

Berninger, V., Vaughan, K., Abbott, R., Abbott, S., Rogan, L., Brooks, A., Reed, E., & Graham, S. (1997). Treatment of handwriting problems in beginning writers: Transfer from handwriting to composition. *Journal of Educational Psychology, 89*(4), 652–666.

Blatchford, P. (1991). Children's writing at 7 years: Associations with handwriting on school entry and pre-school factors. *British Journal of Educational Psychology, 61*, 73–84.

Breland, H. M. (1974). Birth order, family configuration and verbal achievement. *Child Development, 45*, 1011–1019.

Cameron, C. A., Hunt, A. K., & Linton, M. J. (1996). Written expression as recontextualization: Children write in social time. *Educational Psychology Review, 8*(2), 125–150.

Clay, M. M. (1979). *The early detection of reading difficulties. A diagnostic survey with recovery procedures*. Auckland, NZ: Heinemann.

Cohen, J. (1960). A coefficient of agreement for nominal scales. *Educational and Psychological Measurement, 10*, 37–46.

Connelly, V., & Hurst, G. (2001). The influence on handwriting fluency on writing quality in later primary and early secondary education. *Handwriting Today, 2*, 5–57.

Department for Education and Employment (2001). *The National Literacy Strategy*. Developing early writing. DfEE Publications.

Donaldson, M. (1978). *Children's minds*. Glasgow: Fontana/Collins.

Dunn, G. (1989). *Design and analysis of reliability studies: The statistical evaluation of measurement errors*. London: Edward Arnold.

Dunn, L. M., Dunn, L. M., & Whetton, C. (1982). *British Picture Vocabulary Scale*. Windsor: NFER-Nelson.

Ede, J., & Williamson, J. (1980). *Talking, listening and learning*. London: Longman.

Elliott, C. D. (1983). *The British Ability Scales – Introductory handbook (Manual 1)*. Windsor: NFER-Nelson.

Elliott, C. D., Murray, D. J., & Pearson, L. S. (1983). *The British Ability Scales – Directions for administration and scoring (Manual 3)*. Windsor: NFER-Nelson.

Falbo, T., & Poston, D. L. (1993). The academic, personality and physical outcomes of only children in China. *Child Development, 64*(1), 18–35.

Farquhar, C., Blatchford, P., Burke, J., Plewis, I., & Tizard, B. (1985). A comparison of the views of parents and reception teachers. *Education 3–13, 13*, 17–22.

Ferreiro, E. (1984). The underlying logic of literacy development. In H. Goelman, A. Oberg, & F. Smith (Eds.), *Awakening to literacy* (pp. 154–173). London: Heinemann.

Fogelman, K., & Gorbach, P. (1978). Age of starting school and attainment at eleven. *Educational Research, 21*(1), 65–67.

Fox, R. (2000). Assessing writing at Key Stage 1: Some problems and suggested solutions. *Reading, 34*(1), 24–33.

Frijters, J.C., Barron, R.W., & Brunello, M. (2000). Direct and mediated influences of home literacy and literacy interest on prereaders' oral vocabulary and early written language skill. *Journal of Educational Psychology, 92*(3), 466–477.

Goodman, Y. (1984). The development of initial literacy. In H. Goelman, A. Oberg, & F. Smith (Eds.), *Awakening to literacy* (pp. 102–109). London: Heinemann.

Graham, S. Harris, K.R., & Fink, B. (2000). Is handwriting causally related to learning to write? Treatment of handwriting problems in beginning writers. *Journal of Educational Psychology, 92*(4), 620–633.

Graham, S., Schwartz, S., & MacArthur, C. (1993). Learning disabled and normally achieving students' knowledge of the writing and composing process, attitude towards writing, and self-efficacy. *Journal of Learning Disabilities, 26*, 237–249.

Graves, D. (1983). *Writing: Teachers and children at work*. London: Heinemann.

Gray, S., Plante, E., Vance, R., & Henrickson, M. (1999). The diagnostic accuracy of four vocabulary tests administered to preschool-age children. *Language, Speech and Hearing Services in Schools, 30*, 196–206.

Hagtvet, B. E. (1993). From oral to written language: A developmental and interventional perspective. *European Journal of Psychology of Education, 8*(3), 205–220.

Hall, N. (1987). *The emergence of literacy*. London: Hodder & Stoughton.

Hall, N. (1989). Parents, schools and 'writing'. *Links, 14*(3), 9–12.

Hannon, P. (1995). *Literacy, home and school: Research and practice in teaching literacy with parents*. London: Falmer Press.

Hannon, P., & James, S. (1990). Parents' and teachers' perspectives on preschool literacy development. *British Educational Research Journal, 16*, 259–272.

Harste, J. C., Woodward, V. A., & Burke, C. L. (1984). *Language stories and literacy lessons*. Portsmouth, NH: Heinemann Educational Books.

Harvey, C., & Henderson, S. (1997). Children's handwriting in the first three years of school: Consistency over time and its relationship to academic achievement. *Handwriting Review, 11*, 8–25.

Hayes, J. R. (1996). A new framework for understanding cognition and affect in writing. In C. M. Levy & S. Ransdell (Eds.), *The science of writing: Theories, methods, individual differences and applications* (pp. 1–27). Mahwah, NJ: Lawrence Erlbaum Associates.

Hayes, J.R., & Flower, L.S. (1980). Identifying the organization of writing processes. In L. Gregg & R. Steinberg (Eds.), *Cognitive processes in writing* (pp. 3–30). Hillsdale, NJ: Lawrence Erlbaum Associates.

Hess, R.D., Kashiwagi, K., Azuma, H., Price, G.G., & Dickson, W.P. (1980). Maternal expectations for early mastery and the development of cognitive and social competence of preschool children in Japan and the United States. *International Journal of Psychology, 15*, 259–271.

Jones, D., & Christenson, C.A. (1999). Relationship between automaticity in handwriting and students' ability to generate written text. *Journal of Educational Psychology, 91*(1), 44–49.

Kaplan, C. (1996). Predictive validity of the WPPSI-R. A four year follow-up study. *Psychology in the Schools, 33*, 211–220.

Kaufman, A. S. (1994). *Intelligent testing with the WISC-III*. Wiley: Interscience.

Kellogg, R. T. (1994). *The psychology of writing*. Oxford: Oxford University Press.

Kellogg, R. T. (1996). A model of working memory in writing. In C. M. Levy & S. Ransdell (Eds.), *The science of writing: Theories, methods, individual differences and applications* (pp. 57–71). Mahwah, NJ: Lawrence Erlbaum Associates.

Kroll, B. M. (1983). Antecedents of individual differences in children's writing attainment. In B. M. Kroll & G. Wells (Eds.), *Explorations in the development of writing* (pp. 95–118). Chichester: John Wiley & Sons.

Laszlo, J. (1986). Development of perceptual motor abilities in children 5 years to adults. In C. Pratt, A. Garton, W. Tunmer, & A. Nesdale (Eds.), *Research issues in child development* (pp. 137–144). Sydney, NSW: Allen & Unwin.

Leichter, H. J. (1984). Families as evironments for literacy. In H. Goelman, A. Oberg, & F. Smith (Eds.), *Awakening to literacy* (pp. 38–50). London: Heinemann.

Mavrogenes, N. A., & Bezruczko, N. (1993). Influences on writing development. *Journal of Educational Research, 86*(4), 237–245.

McNaughton, S. (1995). *Patterns of emergent literacy*. Oxford: Oxford University Press.

Menig-Peterson, C. L., & McCabe, A. (1978). Children's orientation of a listener to the context of their narratives. *Developmental Psychology, 14*, 582–592.

Mojet, J. W. (1991). Characteristics of the developing handwriting skill in elementary education. In J. Wann, A. M. Wing, & N. Sovik (Eds.), *Development of graphic skills: Research, perspectives and educational implications* (pp. 53–75). New York: Academic Press.

Mortimore, P., Sammons, P., Stoll, L., Lewis, D., & Ecob, R. (1988). *School matters: The junior years*. Wells: Open Books.

Muehl, S., & DiNello, M.C. (1976). Early first-grade skills related to subsequent reading performance: A seven-year follow-up study. *Journal of Reading Behavior, 8*, 67–81.

Office for Standards in Education (1999). *The National Literacy Strategy: An evaluation of the first year of the National Literacy Strategy*. London: OFSTED Publications Centre.

Office for Standards in Education (2000). *The National Literacy Strategy: The second year*. London: OFSTED Publications Centre.

Office for Standards in Education (2001). *The National Literacy Strategy: The third year*. London: OFSTED Publications Centre.

Performance Indicators in Primary Schools (1999). *Technical Report 1999*. University of Durham: Curriculum Evaluation and Management Centre.

Pidgeon, D. A., & Dodds, E. M. (1961). Length of schooling and its effect on performance in the junior school. *Educational Research, 3*(3), 214–221.

Russell, R. J. H., & Startup, M. J. (1986). Month of birth and academic achievement. *Personality and Individual Differences, 7*(6), 839–846.

Sénéchal, M., LeFevre, J.A., Thomas, E.M., & Daley, K.E. (1998). Differential effects of home literacy experiences on the development of oral and written language. *Reading Research Quarterly, 33*, 96–116.

Sharp, C., Hutchison, D., & Whetton, C. (1994). How do season of birth and length of schooling affect children's attainment at Key Stage 1? *Educational Research, 36*(2), 107–121.

Sharp, C. (1995). *School entry and the impact of season of birth on attainment*. Windsor: NFER.

Shook, S. E., Marrion, L. V., & Ollila, L. O. (1989). Primary children's concepts about writing. *Journal of Educational Research, 82*(3), 133–138.

Shorrocks, D. (1993). *Testing and assessing 6 and 7 year olds. The evaluation of the 1992 Key Stage 1 National Curriculum Assessment, Final report*. London: NUT.

Snow, C.E., Barnes, W.S., Chandler, J., Goodman, I.F., & Hemphill, L. (1991). *Unfulfilled expectations: Home and school influences on literacy*. London: Harvard University Press.

Sulzby, E. (1985). Kindergarteners as writers and readers. In M. Farr (Ed.), *Advances in writing research: Volume One. Children's early writing development* (pp. 127–200). Norwood, NJ: Ablex.

Sulzby, E. (1990). Assessment of emergent writing and children's language while writing. In L. M. Morrow & J. K. Smith (Eds.), *Assessment for instruction in early literacy* (pp. 83–109). Englewood Cliffs, NJ: Prentice Hall.

Swanson, H. L., & Berninger, V. W. (1996). Individual differences in children's working memory and writing skill. *Journal of Experimental Child Psychology, 63*, 358–385.

Teale, W.H. (1986). Home background and young children's literacy development. In W. H. Teale & E. Sulzby (Eds.), *Emergent literacy: Writing and reading* (pp. 173–206). Norwood, NJ: Ablex.

Teale, W. H., & Sulzby, E. (Eds.) (1986). *Emergent literacy: Writing and reading*. Norwood, NJ: Ablex.

Tizard, B., Blatchford, P., Burke, J., Farquhar, C., & Plewis, I. (1988). *Young children at school in the inner city*. London: Lawrence Erlbaum Associates.

Vygotsky, L. (1986). *Thought and language* (3rd ed.). Cambridge, MA: MIT Press.

Webster, A., Beveridge, M., & Reed, M. (1996). *Managing the literacy curriculum: How schools can become communities of readers and writers*. London & New York: Routledge.

Wechsler, D. (1990). *Wechsler Preschool and Primary Scale of Intelligence – Revised (Manual)*. San Diego, CA: The Psychological Corporation/Harcourt Brace Jovanovich.

Wells, G. (1985). *Language, learning and education*. Windsor: NFER-Nelson.

Wells, G. (1987). *The meaning makers: Children learning language and using language to learn*. London: Hodder & Stoughton.

Whitehurst, G.J., & Lonigan,, C.J. (1998). Child development and emergent literacy. *Developmental Psychology, 69*, 848–872.

Received 1 March, 2002; revised version received 30 June, 2003