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The Relative Effect of Pupil Absenteeism on Literacy and Numeracy in the Primary School

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INTRODUCTION

Within the Western world pupil absenteeism, namely absence from school for either or both justified and unjustified reasons, is a source of real concern, e.g. in Wales (Carroll 1977; Reid 2009), in parts of Northern Europe (Carroll 1995), and in the USA (Balfanz 2016). With respect to primary school absenteeism, it was pointed out by Reid (2004), Britain's leading expert on pupil absenteeism and one of the few researchers who has investigated the subject at both the secondary and primary school level, that there had been few publications on primary school pupil absenteeism before 2002. Furthermore, despite its obvious importance for child development, its effect on school attainments has received scant attention according to Gottfried (2010), Ready (2010) and Vagi, Collins and Clark (2017). As for its relative effect on literacy and numeracy, as will be reflected in the next section, it has probably received even less attention.

The theoretical basis for the effect of pupil absenteeism on attainments stems from the theories put forward by Carroll (1963) and Frederick and Walberg (1980). According to Carroll school learning is dependent on five factors, the fifth of which is the time allowed for learning. Frederick and Walberg developed Carroll's model of school learning by going on to postulate that time can be quantified in four ways, one of which is days of instruction. If school learning is dependent on days of instruction it follows that

school attendance would have a positive effect and missing school, a detrimental effect on attainments. Whether the effect is greater for numeracy than for literacy or vice versa is the subject of this article.

Prior research

In order to identify primary/elementary school studies which had: (i) investigated the relative effect of either school attendance or absence on literacy and numeracy; (ii) controlled for the effects of other relevant independent variables when investigating the effect; and (iii) been published in peer reviewed journals, a thorough search for relevant articles was made up to May, 2020 using the ERIC, PsycINFO, ASSIA and Humanities Index databases. However, as listed in Table 1 and briefly described in what follows, only twelve articles were identified. They were published during the period 1974 to 2017 and only one of them was based on UK data. Why so few articles? Perhaps partly because of an inherent problem in researching pupil absenteeism, namely that, relative to pupils with normal attendance, disproportionately more of those with attendance problems will be absent from school at the time(s) of data collection, with the result that potential researchers are possibly deterred from investigating pupil absenteeism.

Table 1 to be inserted about here please.

Wiley and Harnischfeger (1974) employed hierarchical regression analysis to determine the effect of the number of hours of instruction per year on the reading comprehension and mathematics test scores of 6th grade children and reported that, after initially controlling for three background factors, it had a significant effect which was greater on literacy than on numeracy. However, the findings of that study were challenged by Karweit (1976) who found using the Iowa Tests of Basic Skills that 3rd and 5th graders' average daily attendance had a negligible effect on their numeracy and only a very small effect on their literacy. In the

research by Lamdin (1996) the dependent variables were reading and mathematics CAT scores and the independent variables were three student and three school based variables. Using regression analysis Lamdin showed that, after controlling for the effects of the other independent variables, the attendance of 1st to 5th graders had a very significant effect on both attainments and one which was greater on reading. The study conducted by Sims (2008) made use of the fact that various states in the USA start the school year on different dates and therefore schools have less or more time to prepare students for state mandated annual testing. As a result of Wisconsin changing its start date in 2002 Sims was able to compare the effect of having different lengths of time before annual testing. Using regression analysis on 4th grade school test data for 1999/2001 and 2002-3 he was able to show, after controlling for school resources effects, that increasing by a week the amount of class time leading up to testing had a positive effect which was approximately three times greater for mathematics than for reading.

Of a series of five articles by Gottfried (2009, 2010, 2011, 2014, 2019) only those published in 2009 and 2014 have been included in Table 1 because, like the 2009 article, those published in 2010, 2011 and 2019:

- (i) were all based on: (a) data sets comprising five cohorts of 2nd to 4th graders during the period 1994/5 to 2000/1 which had been provided by the school district of Philadelphia; (b) very large samples; (c) the same dependent variables, namely pupils' SAT9 reading and mathematics scores; (d) many independent variables; and (e) the use of hierarchical regression analysis; and
- (ii) contained results which, not surprisingly, were in keeping with the 2009 findings.

In his 2009 article Gottfried reported that, after controlling for the effects of 13 student, 9 teacher, 4 classroom and 4 neighbourhood variables: (i) both excused and unexcused absence

had a significant detrimental effect on both reading and mathematics attainments; and (ii) unexcused absence in particular had a greater effect on the latter. Gottfried's 2014 article was in part about the effect on reading and mathematics attainments of moderate and strong forms of chronic absenteeism, namely missing respectively: (i) 11 to 19; and (ii) 20 or more days of schooling during the first half of the school year. His sample comprised kindergarten children in 2010-11 in the Early Childhood Longitudinal Study (ECLS) who were representative of all USA kindergarten pupils and whose literacy and numeracy had been assessed using ECLS tests. Employing regression analyses to control for the effects of nine student and twelve household variables he found that strong chronic absenteeism had the most powerful detrimental effect on both attainments, with the effect being slightly greater on numeracy.

The articles by Carroll (2010), Ready (2010) and Fitzpatrick, Grissmer and Hastedt (2011) were all based on cohort studies. Carroll utilised data from the National Child Development Study (NCDS) cohort which contained children born in England, Scotland and Wales in March 1958. After controlling for attainment at age 7, and the effects of social class and parity, Carroll found using analysis of covariance that, at age 11, being a Poor Attender, i.e. having an attendance rate of 80% or less at both 7 and 11 years of age, relative to that of being a Better Attender, had a detrimental effect on the children's performance on NCDS reading and mathematics tests and one which was greater for the latter. Like Gottfried (2014) both Ready and Fitzpatrick et al. employed ECLS data, though from an earlier cohort, namely those attending kindergarten in 1998/1999 and 1st grade in 1999/2000. Ready found using hierarchical linear modelling that, after controlling for socioeconomic status, single parent status and six child-based factors, chronic absenteeism had: (i) a negligible effect on numeracy during kindergarten; (ii) a negative effect on literacy during kindergarten; and (iii) a negative effect on both literacy and numeracy during first grade. Ready also calculated

that, with respect to the 1st grade sample, if the average absence for a 9.5-month school year was increased by one standard deviation, it would have the effect of reducing a child's development in numeracy and literacy by approximately 12 and 14% respectively. Taken together his results suggest that, at both levels of education, the effect of absence was marginally greater on literacy than on numeracy. Whereas in Ready' study ECLS test data were obtained for the same children when they were in kindergarten and 1st grade, in Fitzpatrick et al.'s research the children with 1st grade test data comprised 25% of those with kindergarten test data. In their study Fitzpatrick et al. were able to show using regression analysis to control for the effects of two child and four background factors that, at both kindergarten and 1st grade levels, school attendance between the autumn and spring had a significant effect on the children's performance on ECLS reading and mathematics tests, with the effect being slightly greater on literacy.

Morrissey, Hutchison and Winsler (2014) employed very large samples of 3rd and 4th graders from disadvantaged homes to examine the effect of total excused and non-excused absence (divided into five categories) on reading and mathematics assessed using the Florida Comprehensive Test. In order to control statistically for the effects on attainment of various child and family-based factors both random-effects (RE) and child-based fixed-effects (FE) regression models were employed. For each of the four most severe levels of absence the RE model showed absence to have a significant effect on both attainments, with the effect being greater on reading than on mathematics at all levels. However, the statistically more conservative FE model failed to show such effects. Aucejo and Romano (2016) examined the effects on 3rd to 5th grade students' reading and mathematics attainments of unexcused absence between the beginning of the school year and the day of annual testing. After controlling for the effects of various student, school, teacher and peer variables they found that absence had a detrimental effect on both literacy and numeracy, with the effect on

numeracy being nearly twice that on literacy. The study conducted by Hancock et al. (2017) involved all the pupils in Years 5, 7 and 9 in all Western Australian Government schools between 2008 and 2012. With respect to the performance of the Year 5 pupils on nationally constructed tests of reading, writing and numeracy the most significant finding was that, after controlling for level of socioeconomic disadvantage, parental education and five pupil-based variables, unauthorised absence of more than five days in semester one was found, using multivariate multi-level models of regression analysis, to have a detrimental effect on all three attainments with the effect being greatest on numeracy.

Purpose of the current study

As may be seen from the preceding paragraphs and Table 1 the picture which emerges is not a clear one. From the Effect column in Table 1 it may be seen that: (i) attendance seems to have had a more positive effect on literacy in four of the articles and on numeracy in one of them; and (ii) absence appears to have had a more detrimental effect on literacy in two of the articles and on numeracy in five of them. The words “seems” and “appears” are used because all the relative effects of either attendance or absence given in the final column of Table 1 were arrived at by visual comparison of the relevant statistic for literacy and numeracy. However, for the reasons which underpin statistical inference, as described, for example, in Siegel and Castellan (1988), visually based comparisons are inherently less reliable than statistically based ones. Consequently, there was clearly a need for research which employed statistics rather than visual inspection to make such comparisons. The study which will be presented after the following paragraph fulfils that need.

In 1979 the author was invited by one of Wales’s most populated counties to become the educational psychologist member of a steering committee established to investigate school non-attendance. The county’s director of education was particularly concerned about the problem because his county had one of the poorest attendance records in Wales which itself

had a pupil absenteeism problem that was greater than that in the other three countries in the UK (Carroll 1977). The author was subsequently asked in 1980 to conduct an investigation into the possible causes and effects of pupil absenteeism in the county's primary schools. Part of the data collected in that investigation were used to determine whether pupil absenteeism had a greater effect on numeracy than on literacy or vice versa. It is the findings of that research which are presented in this article. For reasons which will be given in the Discussion the findings merit consideration even though the original investigation was carried out forty years ago.

METHOD

Participants

In order to determine the effects of pupil absenteeism it was necessary to identify within the county referred to above a group containing pupils with an absenteeism problem and a second group containing pupils who did not have such a problem. This led to the formation of a Poor Attender (PA) group and a Better Attender (BA) group. The PAs ($n = 140$) comprised all the Year 6 pupils in the county with attendance rates of 80% or less in both Years 2 and 6 whereas the BAs ($n = 133$) comprised pupils with better attendance records who had been matched with PAs for gender, season of birth and school class. Gender was chosen because Fogelman and Richards (1974) had found that, at age 11, girls had poorer attendance records than boys. The pupils were matched for season of birth because, as a consequence of the school year in Wales starting in September, it was thought that those born in the summer months would on average have been the least socially mature and therefore possibly more at risk of missing school. Partial support for this supposition was subsequently provided in a study conducted by Carroll (1992a, 391) who found that "in the case of pupils with attendance rates of 80% or less, more of them are summer born and fewer, autumn born." As for school class, it had been shown by Stallings and Kaskowitz (1974) that elementary school

children taught in classes where the teacher's style was informal rather than direct had fewer absences. As a result of matching for school class, control was therefore provided for: (i) differences in teacher style and other class related factors; (ii) school, something which was later shown by Carroll (1992b) to have an effect on primary school attendance; and (iii) school neighbourhood effects. The ambitious attempt to control for the effects of so many variables was not quite achieved in that it was not possible to find BA matches for seven of the PAs. However, as a result of achieving BA matches for 95% of the PAs it would seem reasonable to conclude that it had been possible to control for the effects on attainments of five independent variables, namely gender, season of birth, school class, school and school neighbourhood. Furthermore, as a consequence of finding that the resulting BA group was representative of all Year 6 pupils ($n = 5,429$) in the county on nineteen relevant variables, details of which can be made available to an interested reader, the BAs may be considered to have constituted a "control" group of children which was typical of all Year 6 pupils in the county at the time of the investigation. That being so, the results of this study provide a meaningful basis for generalization purposes.

Measures

For each pupil information was obtained on two dependent variables, namely literacy and numeracy, and the following independent variables: gender, season of birth, school class, school attendance, parity and father's social class. With respect to the independent variables, data on the first three were required for the matching process whereas data on the last three were needed because they were to be the independent variables in two analyses of variance in which literacy and numeracy were to be the respective dependent variables. Social class and parity were chosen because, of thirteen independent variables, they were found by the National Children's Bureau (1972) to have had the greatest effect on literacy and, to a lesser extent, on numeracy at age eleven years in the National Child Development Study. In the two

analyses of variance the independent variables took the form of dichotomous variables, namely: paternal social class (social class I to IVm; social class V or unemployed father or no father), parity (fewer than three older siblings; more than two older siblings) and attendance group (Better Attender; Poor Attender). The dependent variables, literacy and numeracy, were measured using *T*-scores derived from the British Ability Scales (BAS) Word Reading scale and Basic Arithmetic scale respectively (Elliott, Murray and Pearson 1978). The BAS was selected for the following reasons: (i) it had recently been standardised on a British sample and therefore the resulting test scores would not have been affected by either time or nationality factors; (ii) its attainment scales were standardised on the same sample, thus making it more likely that any differences between the attendance groups would be due to differences in ability uncontaminated by differences in the standardization samples had different attainment tests been employed; (iii) the two attainment scales had satisfactory reliability and validity; and (iv) for successive age ranges, e.g. 11.0 to 11.4 years, it was possible using a table of discrepancies given in the BAS manual to determine for each participant whether the difference between her/his *T*-score on each of the two scales was significant at the 0.05 probability level. Therefore, in addition to a reading *T*-score and an arithmetic *T*-score, each pupil had a discrepancy score.

Procedure

Every Year 6 teacher in the county listed the name, gender, date of birth and attendance for the first half of 1979/80 of every pupil in her/his class. With respect to every pupil with a 1979/80 attendance of 80% or less each head teacher was asked to provide the possible attendance for the whole of 1975/76. From the resulting data it was possible to identify both the PAs and BAs. Each head teacher was then asked to provide for each PA and BA her/his: attendance for each of the years 1976/77 to 1978/79, parity and father's social class, and also whether she/he was in receipt of or eligible to receive free school meals.

During April/May 1980 the reading test was administered by each PA's/BA's Year 6 class teacher on an individual basis and the arithmetic test, by the head teacher on a very small group basis. As far as possible test administration was in keeping with the BAS instructions (Elliott et al. 1978) and in 1980 was approved by Professor Elliott, director of the BAS project at the time.

RESULTS

Attendance findings

For the whole of each of Years 2 to 5 and half of Year 6 and also for the 4.5 school years period the median percentage attendance record of the PAs: (i) ranged between 72.0 and 77.2; and (ii) was very significantly below that of the BAs (Mann -Whitney U test: z significant at the 0.001 level in each analysis). Furthermore, based on the fact that, for the 4.5-year period, the attendance rates of the PAs and BAs were 73.7% and 92.3% respectively, the PAs had therefore missed 2.5 school terms more than the BAs during the 4.5 school years.

Reading and arithmetic test scores findings

Two sets of analyses were conducted, namely those presented in Table 2 and those relating to ***Table 2 about here please***

the discrepancy scores. Table 2 contains the results of subjecting the reading and arithmetic test scores to analysis of variance. Because the data had been collected using social survey methods which gave rise to sub-groups of unequal size the model underpinning the analysis of variance was a fixed-effects one for a non-orthogonal design. From Table 2 it may be seen that, after controlling statistically for the effects of social class and parity, the mean reading T -score of the PA group was not significantly below that of the BA group whereas the mean arithmetic T -score of the PA group was below that of the BA group by a significant 3.23 points.

In the case of the analyses based on each pupil's discrepancy score, namely the difference between her/his reading and arithmetic *T*-scores, it was found that, as revealed by an examination of the list of discrepancies given in Elliot et al. (1978): (i) a significantly greater proportion of the PAs (16.8%) than BAs (5.8%) had an arithmetic score significantly below their reading score ($\chi^2 = 6.34$; $df = 1$; $p < 0.02$ for a two-tailed test); and (ii) there was no significant difference between the PAs and BAs with respect to having a reading score below their arithmetic score.

Given that:

- (i) for both sets of analyses it had been possible by the matching process to control for the effect of gender, season of birth, school class, school and school neighbourhood on each attainment;
- (ii) in the first set of analyses it had in addition been possible to control statistically for the effects of social class and parity on each attainment;
- (iii) in the first set of analyses it had been found that the PAs had a significantly lower score than the BAs on the arithmetic test but not on the reading test;
- (iv) a significantly greater proportion of the PAs than BAs had an arithmetic score significantly below their reading score; and
- (v) with respect to the proportions of PAs and BAs having a lower score on the reading test than on the arithmetic test, there was no significant difference between the two groups,

it may therefore be concluded that pupil absenteeism had a greater effect on numeracy than on literacy.

DISCUSSION

Study limitations and strengths

A potential criticism of the study is that it was carried out forty years ago. However, given that, in the literature review, only twelve relevant articles were identified and that, taken together, no consistent picture emerged from the articles, there was definitely a need for more research. Furthermore, given that two of the twelve articles listed in Table 1 were published in 1974 and 1976, a study conducted in 1980 would not necessarily be out of place, particularly in view of the fact that the studies described in the twelve articles differed in so many other ways, e.g. level of attendance/severity of absence investigated, location of the research, sample size, age of the participants, attainment tests used, number of independent variables, and method of statistical analysis employed.

A second possible limitation of the study is that Table 2 contains certain results which, for the following reasons, could be considered surprising:

1. with respect to the Attendance Group results which had been arrived at after controlling for the effects of gender, season of birth, school class, school, school neighbourhood, social class and parity: (i) the mean reading *T*-score of the PA group (46.92) was not significantly below that of the BA group (47.74), with both means being below the standardization sample mean of 50; and (ii) although the mean arithmetic *T*-score of the PA group (51.955) was significantly below that of the BA group (55.185), both means were above the standardization mean;
2. in 4.5 school years the PAs had missed 2.5 more terms of schooling than the BAs; and
3. taken together all twelve articles listed in Table 1 had to varying degrees shown that school attendance had a positive and absence, a detrimental effect on literacy and/or numeracy.

By way of explanation the following two reasons are offered to show why the results are not, in fact, so surprising.

1. Of the twelve articles described in the Introduction two contain findings which partially support those presented in Table 2. Karweit (1976) found that daily attendance had only a very slight effect on reading. Morrissey et al. (2014) reported that, when the more conservative method of regression analysis was used to determine the effect of absence, it failed to demonstrate that the four most severe levels of absence had a significant effect on attainments. Karweit's and Morrissey et al.'s findings as they relate to literacy are therefore to some extent in keeping with the literacy finding reported on in this study.
2. With respect to the findings in Table 2, namely that:
 - (i) the overall constant for reading was 6.24 *T*-scores below that for arithmetic; and
 - (ii) the mean reading scores of both the BAs and PAs were below the standardization sample mean of 50 and the mean arithmetic scores of both the BAs and PAs were above 50,

a possible explanation for these findings could be that, in the county in which the research was conducted, reading standards really were below arithmetic standards. Partial evidence for this explanation is to be found in the report of the National Children's Bureau (NCB) (1972) on the National Child Development Study (NCDS) cohort when aged eleven in 1969 which showed that Wales, relative to Southern England, Northern England and Scotland, had the lowest mean score for reading but the second highest score for mathematics, with its mean score for reading being below that for mathematic. In view of points (i) and (ii) above, together with the fact that the sample in this research was just eleven years younger than the NCDS cohort (which

contained children living in Wales), and would therefore have had some things in common with the cohort, it may be concluded that, as reflected in the findings contained in the NCB report and the results of this study, children in Wales really were better at mathematics/arithmetic than reading.

Even allowing for the fact that the previous two reasons provide only partial explanations for those results which were surprising, the overall findings of this study are important for the following two reasons.

1. The results which provided the basis for making generalization in seven of the articles listed in Table 1 were based on research conducted in three cities and four states (equivalent to a county but much larger). It follows, therefore, that the results reported on in this county-based study also provide a meaningful basis for generalization purposes.
2. Although the sample size in this research was smaller than any of those listed in Table 1, the sample comprised **all** the PAs in the county and a group of BAs which was representative of **all** the 5,429 11-year-olds in the county on nineteen relevant variables. Furthermore, contrary to the point made in the Introduction, namely that, with respect to conducting research on pupil absenteeism, disproportionately more of those with attendance problems would be absent at the time of data collection, this was not a problem in this study in that the difference between the proportions of PAs and BAs, namely 89% and 91% respectively, having both reading and arithmetic test results was statistically insignificant. Why the negligible difference? Because, prior to data collection, the head teachers (or their representatives) of all the primary schools in the county attended meetings to discuss the research and, at the meetings, expressed their full support for research which they considered to be very important. This situation compares markedly with the studies described in the articles listed in

Table 1. All of them were based on samples generated from data sets which had been compiled at either a city, state or national level for purposes other than investigating the effects of pupil absenteeism, e.g. monitoring standards across the years. Unfortunately, none of the twelve articles contains data relating to the proportions of potential participants in the different attendance/absence groups lacking literacy and/or numeracy test scores. Consequently, if scores were missing due to pupil absence, the effect of pupil absence on the results is unknown. However, Gottfried (2009, 2014), Ready (2010) and Aucejo and Romano (2016) reported that missing data had not affected the results of their respective studies. Surprisingly, none of them specified the reason(s) for the missing data and all of them failed to provide strong supporting evidence for their claims. The conclusions reached in the eight articles and, to some extent, in the four articles as well, must therefore be treated with caution since it is not possible to know whether the reported findings had been affected by disproportionate numbers of poor attenders lacking test data. That being so there was indeed a place for this study which, although conducted forty years ago, has compensating features.

Questions arising from the study

Given that this study provides support for the findings reported in five of the articles listed in Table 1, namely that pupil absenteeism had a greater effect on numeracy than on literacy, it is appropriate to ask the following questions: (i) what is the reason for the differential effect; (ii) what are the implications of the study's findings for the primary school teacher, namely the person who, for a poor attender in her/his class, has the task of mitigating the detrimental effects of missing school; and (iii) what are the implications of COVID-19 for this study's findings?

Reasons for the differential effect

With respect to the first question, a suggested explanation is presented in two of the twelve articles listed in Table 1, namely those by Gottfried (2009) and Aucejo and Romano (2016) who conjectured that the effect could be due to parents providing at home more help in reading, e.g. “children may learn reading and language in the home and may therefore recoup some loss from absences in these classes.” (Gottfried 2009, 411). The implication of this quotation would appear to be that the home would not provide comparable help in mathematics. To that explanation may be added the following two facts, the first of which is that the development of numeracy is to a considerable extent a hierarchical process (Piaget 1952) and that therefore missing school could result in a child failing to acquire higher order concepts as a result of having failed to acquire certain lower level ones. If it is the case that the development of numeracy, compared to the development of reading, is an even more hierarchical process, missing school would have a greater effect on numeracy than on literacy. The second fact is that less time is given to the teaching of numeracy than to literacy in the primary school, e.g. Campbell et al. (1991) found that, at Key Stage 1, twelve and eight hours per week were spent during the spring term on the teaching of English and mathematics respectively. Consequently, when a poor attender returns to school there would be less opportunity to compensate for the detrimental effects of missing school on numeracy than there would be in the case of literacy.

Implications of the study's findings for the primary school teacher

In order to consider the implications for the primary school teacher of the finding that missing school has a greater effect on numeracy than on literacy it is necessary to identify which of her/his competencies have particular relevance for dealing with the possible numeracy problems of a poor attender when he/she returns to school. Such information, presented below in the form of two key quotations, was found in two relevant Government publications,

namely the report “Better Numeracy in Primary Schools” (The Education and Training Inspectorate 2010) and the “School Inspection Handbook” (Ofsted 2019). The report was based on the results of inspections carried out in England in 2008/9 and contains descriptions of the most effective practice for developing children’s numeracy. One particularly relevant finding was the following:

In the most effective practice: the strengths and difficulties which individual children experience are diagnosed regularly and this profile is used to inform the children’s subsequent learning programmes; the progress of each child is very carefully tracked and monitored. (The Education and Training Inspectorate 2010, 10).

With respect to the Handbook, it was written for the benefit of school/academy inspectors in in England and contains the second of the key quotations:

Inspectors will consider what steps the school has taken to ensure that: there is flexibility in curriculum planning so that the school can address identified gaps in pupils’ mathematical knowledge that hinder their capacity to learn and apply new content. Those pupils behind age-related expectations are provided with the opportunities to learn the mathematical knowledge and skills necessary to catch up with their peers. (Ofsted 2019, 88).

Although this quotation refers to the school it would be reasonable to assume that the term ‘school’ encompasses class teachers. The teacher competencies implied in the two quotations, namely regularly monitoring each pupil’s numeracy development, identifying strengths and weaknesses, and developing a programme to rectify a weakness(es), are exactly those required of the teacher who is attempting to meet the numeracy needs of a pupil who has just returned to school after a long absence or a series of shorter ones. However, do all teachers feel sufficiently able to deal with the needs of a returning poor attender? Despite the fact that proficient teachers do have the relevant competencies for such a role, information contained in three articles by Reid suggests that teachers do have concerns about their role in relation to

dealing with school attendance problems. Details of those concerns will be given after a brief description of the relevant part of each of the three articles has been presented

In the first of the articles Reid (2004) reported on an investigation in which he interviewed small groups of head teachers and also small groups of class teachers from 192 primary schools in two contrasting local authorities, one of which was in the Midlands and the other, in the NW of England. Part of the interviews with the class teachers dealt with their views on school attendance issues. In the second of the articles Reid (2006) presented the findings of a unique study in which he had examined 200 Ofsted reports on a wide range of primary schools in England which had been inspected during 2003. One of those findings related to what emerged from the reports about the views of some teachers on school attendance matters. The third of Reid's articles was based on the National Behaviour and Attendance Review (NBAR) which took place during the period 2006 – 2008 and which he had chaired. The NBAR Group was set up by the Welsh Assembly Government, in part because Wales had a greater school attendance problem than other parts of Great Britain. As a consequence of its very thorough, multi-layered approach the Review Group generated and processed a huge amount of information which provided the basis for: (i) the NBAR Report (2008) which was submitted to the Welsh Assembly Government; and (ii) a number of articles in academic journals authored by Reid which included one entitled "The National Behaviour and Attendance Review in Wales: Findings and recommendations on school attendance" (Reid 2009). That article is the third of those to which initial reference was made above. Of particular relevance is the section within it on the teachers' views, as identified by practitioners from a variety of professional backgrounds, on various aspects of school attendance.

With respect to the concerns which primary school teachers have about dealing with school attendance problems, all three articles contained information relating to those concerns. The first article was in part based on the views of the teachers themselves whilst the second and

third articles reflected the opinions of school inspectors and practitioners respectively. The overall picture which emerged from the three articles was that primary school teachers find that dealing with school attendance problems is a challenging role for which they had received inadequate training and for which they are given insufficient support by agencies outside the school. However, in so far as the issues identified in the three articles did not include the previously described teacher competencies required to deal with the academic problems of a child returning to school after a significant absence, it may be supposed that the source(s) of the challenges come from elsewhere, namely those associated with the possible causes of absence. In a very relevant article “The causes of non-attendance: an empirical study”, Reid (2008, 351) presents a table entitled “Who is *really* the cause of pupils’ non-attendance and why?” which lists 23 causes of pupil non-attendance which had been identified by the 281 teachers and other professionals who had participated in his study. Given such a large number of causes there is clearly not the space here to consider further: (i) the extent to which the causes of non-attendance identified by Reid are the sources of the challenges experienced by primary school teachers; and (ii) what further training and outside assistance can be provided which will enable primary school teachers to deal more effectively with those challenges. The issues are, however, important and merit further research.

Implications of COVID-19 for this study’s findings

Due to COVID-19 by September 2020 most schools will have been closed for more than five months. During much of that period parents will have been expected to have educated their child/children at home. In relation to this study it is relevant to ask whether closure will have had a greater effect on the numeracy than on the literacy of primary school poor attenders. However, before answering that question it is necessary to determine what is known about the part which parents played in the education of their child/children at home before COVID-19 and what factors might have affected their ability to do so.

The part played by parents in the education of their child/children at home A thorough search of the ERIC and British Education Index databases surprisingly identified only three relevant empirical studies published since 1980 which had examined the contribution of parents to the education of their child/children when at home, namely those of Hartas (2011), Carmichael and MacDonald (2016) and Wilder (2017). Hartas based her investigation on the interviews of parents of 15,600 five-year-olds involved in the UK Millennium Cohort Study. Carmichael and MacDonald made use of parental interviews which had been conducted as part of an Australian longitudinal study of 2,624 eight-to-eleven-year-olds. Wilder distributed a questionnaire at the end of the school year to the parents of 173 five-to-nine-year-olds in Ohio.

Hartas and Carmichael and MacDonald found that, relative to wealthier parents, poorer parents did not talk as often to their children about their school-work, read less frequently to their children and did not provide as much help with homework. Hartas also reported that, whereas 61% of parent with a degree provided daily help with reading, the figure for parents lacking educational qualifications was 38%. Wilder's investigation revealed that, with respect to parents' confidence about their ability to provide assistance with mathematics homework, although that of the parents of children aged 6 to 8 years was relatively high, that of parents who lacked a college education and whose children were aged 8 to 9 was far lower.

Taken together these three studies indicate that children from poorer backgrounds with less educated parents receive less parental support with their education and that less educated parents of children aged eight or more years would find it more challenging to help with mathematics homework. If it can be shown that poor attenders are disadvantaged it will be reasonable to conclude on the basis of the above findings that they also would receive less parental support with their education.

Whether poor attenders are disadvantaged As the following findings reveal, a disproportionate number of those with school attendance problems have indeed experienced being disadvantaged in various ways.

- (i) In the author's investigation reported on in this article more PAs than BAs were in receipt of or eligible to receive free school meals (41 & 19%), came from families with three or more children (72 & 62%) and lacked a father figure (16 & 7%).
- (ii) In his analysis of National Child Development data (National Children's Bureau 1972) this author found that, with respect to eleven-year-old PAs and BAs (defined as per this study), in addition to more PAs than BAs receiving or being eligible to receive free school meals, coming from families containing three or more children and lacking a father figure, more PAs than BAs: (a) lived in an overcrowded home, namely one in which there were more than 1.5 persons per room (28 & 11%); and (b) shared a bedroom with more than one person (33 & 16%)/a bed (38 & 17%) (Carroll 2000). In terms of parental factors with implications for children's education, with respect to both parents having left school at the minimum school leaving age, this applied to 85 and 63% of the PAs and BAs. Furthermore, when aged seven years: (a) 29 and 16% of the mothers and 46 and 29% of the fathers of the PAs and BAs never or hardly ever read to their child; and (b) as rated by the head teacher, with respect to both parents showing little or no interest in their child's educational progress, this rating applied to 53 and 18% of the PAs' and BAs' parents (Carroll 1986).

What is clear is that poor school attendance is associated with various kinds of disadvantage and that most of those disadvantages would make it more difficult for the parent(s)/carer(s) to contribute to the education of their poor attender child/children.

The relative effect of school closure on the literacy and numeracy of poor attenders What then is the relative effect? As may be deduced from Table 2, relative to being a Better Attender with fewer than three siblings, being a Poor Attender with more than two siblings had the effect of reducing the reading and arithmetic scores by 3.76 and 8.84 (approximately 0.4 and 0.9 *sd*) *T*-scores. Given that result and the following findings:

- (a) compared to other children, those from poorer home backgrounds with less educated parents receive less parental support with their education;
- (b) the least well-educated parents of poor attenders aged seven or more years are more likely to lack the confidence to help with the mathematics education of their children; and
- (c) disproportionate numbers of poor attenders experience other disadvantages;

and given that the home-based causes of poor school attendance which were present before school closure will be there after school closure, it is probable that school closure due to COVID-19 will not only have had a greater effect on the numeracy than on the literacy of poor attenders but will also have exacerbated other problems.

Conclusions

With respect to articles which have investigated the relative effect on literacy and numeracy of either attendance or absence from primary/elementary school, this thirteenth article provides support for the five articles which appeared to show that absence had a more detrimental effect on numeracy and is unique in that the basis for the support is statistical. The implications of this finding for primary school teachers have to do with dealing with the numeracy problem and the causes of absence. Teachers are qualified to do the former but need further training and support for the latter. On return to school after COVID-19 the

challenge of dealing with the numeracy problem will be greater, particularly if more poor attenders return to school.

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