‘Happy birthday to you’; but not if it’s summertime

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For years, evidence of a birthdate effect has stared out of qualifications data for the United Kingdom; summer-born children appear to be strongly disadvantaged. Whilst those responsible for working on these data have, through mounting concern, periodically tried to bring public attention to this very serious issue, it has been neglected by agencies central to education and training policy. Following a flurry of press interest during 2007 and 2008, it has – justifiably – become a key part of the recommendations which may flow from the Rose Enquiry of the primary curriculum.

Researchers at Cambridge Assessment have had a long interest in the birthdate effect because it is so readily observable in the assessment data that they have worked with (Bell and Daniels, 1990; Massey, Elliott and Ross, 1996; Bell, Massey and Dexter, 1997; Alton and Massey, 1998). More recently, Cambridge Assessment decided to review the issue with the intention to advance the understanding of the extent and causes of the birthdate effect in the English education system (Sykes, Bell and Vidal Rodeiro, 2009). A number of hypotheses have been advanced for its cause – clarity in understanding this fully is a vital part of determining possible remedies. Although the review focuses on understanding the birthdate effect in England, it uses international comparisons as one means of throwing light on key factors.

This article outlines the findings of the review. There is robust evidence from around the world that, on average, the youngest children in their year group at school perform at a lower level than their older classmates (the ‘birthdate effect’). This is a general effect found across large groups of pupils. In the UK, where the school year starts on September 1st, the disadvantage is greatest for children born during the summer months (June, July, August). Individual summer-born pupils may be progressing well, but the strength of the effect for the group as a whole is an issue of very significant concern. Since the effect of being the youngest in the year group holds in other countries where the school year begins at other times in the calendar year, medical/seasonality hypotheses regarding pre-natal exposure to viral infections during the winter months for summer-born children can be ruled out as a major explanation of this effect.

As would be expected, given that one year is a smaller proportion of the total life of a sixteen year old than for a four year old, the birthdate effect is most pronounced during infant and primary school but the magnitude of the effect gradually and continually decreases through Key Stage (KS) 3, 4, and A-level. This pattern is particularly evident in research by the Institute of Fiscal Studies (Crawford, Dearden, and Meghir, 2007). The disadvantage for August-born children over September-born children in attainment dropped from an average of 25% at KS 1 to 12% at KS 2, to 9% at KS 3, to 6% at KS 4 and to 1% at A-level. Despite this decrease, the effect remains significant at GCSE, A-level and in respect of entry into higher education. Likewise, analysis of the results from all of the GCSE examinations taken by over half a million candidates born in England, Wales and Northern Ireland within the same academic year showed a consistent depression in grades achieved for students born from September through to August. In addition, the same pattern of depression was detected in the number of subjects undertaken. Despite decrease in magnitude, the birthdate effect persists until the end of higher education (Alton and Massey, 1998).

Data from 13 LEAs providing GCSE results (undertaken in 1990 to 1994) revealed that birthdate effects were still very evident when all subjects were considered. Summer-borns were the lowest attainers in 10 LEAs and Autumn-born children were the highest attainers in 9 of the Authorities. If gender was included in comparisons then summer-born boys had the greatest disadvantage and autumn-born girls had the greatest advantage. Significantly, it was noted that the difference between these 2 groups was about 1 grade at GCSE in each of 9 subjects taken (Sharp, 1995).

Similarly, the IFS researchers (Crawford, Dearden and Meghir, 2007) found that approximately 6% fewer August-born children reached the expected level of attainment in the three core subjects relative to September-born children (August-born girls 55%; August-born boys 44%; September-born girls 61%; September-born boys 50%). Moon (2003) concludes: ‘If all the pupils in this cohort who were born in the spring or summer terms were to perform at the level of the autumn-born pupils, it would mean that 213 pupils out of a total of 308 improving their GCSE results by an average of 1.5 grades’. The magnitude of the effect has important implications for pupils’ successes and for schools’ overall results.

If the birthdate effect is serious in mainstream education, then it can be argued that it is most serious for those who are struggling in the education system. A disproportionately high percentage of relatively young children in the school year also are referred for special educational needs and many of these appear to be misdiagnosed (Sharp, 1995). The birthdate effect may operate in teachers’ identification of children in need of special education. Teachers may not be making sufficient allowances for the level of attainment against specific curriculum outcomes of the younger members of their classes.

Beyond GCSE, education becomes more selective with choices being made about further participation. Unfortunately, the birthdate effect seems to have serious consequences. The percentage of GCSE students going on to take at least one A-level drops from 35% in September-born students to 30.0% for August-born students (Alton and Massey, 1998). Likewise, September-born students are 20% more likely to go to university than their August-born peers. The Higher Education Funding Council has concluded that ‘…if all English children had the same chance of going to university as those born in September then there would typically be around 12,000 extra young entrants per cohort, increasing young participation by 2 percentage points…’ (HEFCE, 2005).

Given the existence of this effect, it is necessary to identify the underlying cause. There are competing theories regarding birthdate

effects. One is the 'length of schooling' hypothesis – when school admissions are staggered over the year then the youngest have the least schooling. Another is the 'relative age' hypothesis – even with the same length of schooling, the youngest in a year group will be, on average, less mature – cognitively, socially and emotionally – than their older classmates, leading to unequal competition in all three domains that could impact negatively on the younger group. Although it is sometimes difficult to disentangle these two hypotheses, evidence tends to support the latter. Using a common start date does not solve the problem of this type of disadvantage (Daniels, Shorrocks-Taylor and Redfern, 2000).

Teacher expectancy effects may contribute to birthdate effects – teachers may not take children's relative levels of maturity into account when making assessments of their ability and may therefore label younger children as less able than their older peers.

Evidence from developmental psychology suggests that children between the ages of 4 and 5 may not be ready, developmentally, for formal education. Birthdate effects appear to be greatly reduced in countries where formal education begins at a later age. There needs to be a careful consideration of what is best for all children in the early years of schooling, based on solid evidence from psychological research.

The review described here is far more than a simple rehearsal of the findings of a series of relevant studies. It allows an understanding of the accumulation of evidence in respect of the birthdate effect and certain explanations of why it occurs to be discounted. Crucially, the review considers the whole of the education system and this reveals two critical issues. First, that the birthdate effect persists throughout education and training. Secondly, that a strong selection effect may be in operation at all stages – that is, summer-borns are not progressing onto certain routes and into certain levels of education. This effect is not obvious from individual studies limited to specific phases of education. It explains why the summer-borns who get through to the highest level of education are doing well: it is vital to recognise that disproportionately fewer summer-borns actually get to this level *at all*.

Although the existing research is illuminating in respect of the extent of the birthdate effect and of its causes, there is still a need to identify remedies. We believe that work on remedies is not yet sufficiently advanced; substantial, urgent work is required on the means of devising adequate approaches. Although this review was focussed primarily on UK research, it also noted the effect is present in other countries. However, as Bedard and Dhuey(2006) noted, the effect varies from country to country and there is scope for more international work to identify potential solutions to this problem.

From this review, and from the work of comprehensive reviews of the quality of primary and early years education, it is likely that adequate remedy will lie not only in development of a strategy regarding *when* formal schooling should start, but also – at least – in respect of: specific balance in respect of curriculum elements devoted to cognitive, emotional and social development; the training requirements of teaching and support staff; curriculum frameworks; inspection foci; pupil grouping strategy; management of differentiation; and the articulation between early years units and compulsory schooling.

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