Lessons Britain Won't Learn

David and Clare Mills  June 2000

The Authors

David Mills is an independent television producer who previously worked for the BBC, Thames and Granada Television for whom he made over 60 editions of World in Action. He has specialised in education for 15 years.

Clare Mills LRCSLT is a speech therapist. Until 1996 she worked in the speech and language units at Mitchell Brook Primary School, Brent. Besides extensive classroom work with five to seven year olds her role involved monitoring children in pre-school, reception, year 1 and year 2 classes throughout Brent.

David and Clare Mills are currently working on a series about early years for the BBC and PBS. In making these programmes they are collaborating with leading academics on both sides of the Atlantic. In 1998 they made a Channel 4 documentary based on the Report they had written in 1997 for David Reynold's task force on mathematics' teaching. Both contrasted early years practice in Britain with that in more successful education systems.
Contents:

1. Old Problems - New Solutions page 3
2. Developments up to 1990 page 4
3. New Understanding - developments since 1990 page 6
   3a The British Contribution - identifying an apparently more effective approach.
   - the "central European model" of pre-school/kindergarten education page 6
   - the "central European model" of primary school education page 7
   - comparison with the British/US approach page 8
3b The American Contribution - an explanation as to why the "central European" approach may be more effective page 10
3c New Problems - making everything more urgent. page 14
4. Why is British Policy at Odds with the Evidence? page 17
5. Policy Implications page 18

References page 19
1. Old Problems - New Solutions

Britain's long standing educational problems need no rehearsing here. What is not understood however is the extent to which the nature of these problems and their likely solution are now coming into focus. Nor is it understood the extent to which this has been achieved by academics pursuing the cause of Britain's poor comparative record in mathematics. Academics who have followed their research into some very unlikely corners of education, not least, foreign kindergartens and British nurseries. In doing so they have transformed our understanding of British education. A new understanding is emerging - based partly on new US research as well - which offers the prospect of far reaching improvements.

At the heart of all this is a new understanding about early years education. Until 1990 the available evidence made British early years education a confused backwater about which it was difficult to say anything very useful. Since then the new evidence - uncovered largely by those interested in mathematical education - has transformed any evaluation of its likely potential: their work suggests this is the area of education on which all else depends. The transformation in understanding is startling but - for a complex of reasons - has been all but ignored by the British Department of Education and by agencies concerned with education, particularly Ofsted. Until this changes, improvement in British education will, at best, be fitful and partial: leaving the bottom 30-40% of children ever further behind.

The following paper briefly describes the new evidence, offers suggestions as to why it has not been acted upon and sets out the policy implications that it raises.

The paper is based on five years research by its authors David and Clare Mills for television programmes and books they are preparing.
2. Developments up to 1990

To understand the startling developments over the past ten years, it is necessary to first understand the confused backwater which made up early years provision in Britain in the 80s.

Both Switzerland and Hungary claim to have been the birthplace of the kindergarten education: Switzerland in 1825 and Hungary in 1828. There is no doubt however that the real development occurred within the Austria-Hungarian Empire. This became the model for Russian provision in the 1860s and Japanese provision in the 1880s. When the Japanese reinvigorated kindergarten education in the 70s they once again took enormous interest in Hungarian methods. In 1971 a glossy Japanese translation of the Hungarian kindergarten handbook was published and many of its key recommendations incorporated into Japanese practice.

What has emerged from the 175 years of kindergarten and primary school development in these countries might be roughly described as the "central European model". From a British perspective, the central thrust of its early years provision seemed, until the 90s, to be a rather obscure obsession with sensory perception and a very late start to formal learning (six/seven). British Montessori, Steiner and Waldorf nurseries demonstrate variations of this model as it probably existed in the early 20th century. There had been a lot of development since in the "central European model" but there is little evidence that this was known in Britain, let alone understood, prior to the 1990s.

Elsewhere in continental Europe and also in the United States, while the structure was imitated, the content was not: it remained loose and extremely varied.

In Britain neither structure nor content were copied and early nursery provision was a downward extension of school education. Between the 20s and 40s this changed and nursery provision became identified with child care. After the war provision was reduced as it became increasingly felt that the best place for young children was with their mothers. Although as education secretary Margaret Thatcher promoted some expansion, she failed to win much political support for this and during the 70s and 80s increasing demand was largely met through an extension of the playgroup movement.

This was despite the fact that from the early 60s there was a growing pressure for "compensatory" early years provision. This was based on accumulating evidence that on a wide range of measures, from delinquency to height, children from deprived homes performed much less well than others. Also largely American research from the 40s began to demonstrate the importance of learned, rather than genetically determined behaviour.

In 1965 the massive US Head Start programme was set up after Jerome Bruner, then at Harvard, and Urie Bronfenbrenner urged the Johnston Administration to trial compensatory early years provision. In Britain, in 1967, the Plowden Report recommended nursery provision in areas of deprivation - a recommendation that led to some expansion in inner city areas.
But even with Margaret Thatcher's support little was done. What expansion there was came largely from local authorities. In 1991 Kenneth Clarke, then Education Secretary, said nursery accommodation for all children "is not a realistic prospect" and that if a mother wanted to go to work it was her responsibility "to sort out her own arrangements". Remarkably, given the evidence in 1991, this was not an altogether unreasonable view. There are three reasons for this:

1. the evidence on which the calls for compensatory early years provision was based was far from complete: the correlation between low socio-economic status and poorer outcomes did not prove a causal connection between early environment and subsequent performance: the correlation might well have reflected irreversible genetic inheritance or cumulative structural, material deprivation: in either case, narrowly focused compensatory early years intervention would have been, largely, an irrelevance.

2. nor was there any convincing evidence in 1991 that such intervention achieved very much; disastrously in 1965 the Johnson Administration had rejected Bruner and Bronfenbrenner's request for experimental trials in favour of the immediate, widespread introduction of compensatory intervention under the Head Start programme. The multitude of often ill conceived and fragmented schemes that resulted proved a considerable disappointment and in 1991, would not have justified any large scale investment in such intervention in Britain especially as it was by then known that any early cognitive gains (in effect, IQ) resulting from early intervention soon disappeared when children started school.

it was not until 1993 that the first significant finding emerged supporting early intervention; this was the High-Scope Perry Preschool Project longitudinal study and was significant because the project had been one of the most comprehensive of the early intervention programmes: yet even this showed that while the children involved showed improved earnings, home ownership and stability in later life, long term cognitive improvements had been minimal.

Yet even by 1993, when Kenneth Clark made his statement, new evidence was emerging which would fundamentally change any evaluation of the potential importance of early years provision.
3. New Understanding - developments in the 1990s

During the 90s two highly complementary but quite separate intellectual developments, one in Britain and one in the US, transformed understanding about the potential importance of early years' provision. British academics identified an approach - not just to early years but to education itself - which appeared far more effective than that followed in Britain. American, neuro-scientists and biologist identified why this should be the case. A third development, in both countries, made the need for fresh thinking and the trail of a new approach ever more urgent.

3a. The British Contribution - identifying an apparently more effective approach.a

In the 90s several academics looking for clues to Britain's poor educational performance in mathematics investigated education systems identified by comparative research as particularly successful.

To some extent initial interest focused on the structure of secondary education (successful countries invariably offer pupils different but always rigorous pathways through secondary education). It was soon realised however that Britain's comparative disadvantage was apparent by the end of primary school, so that whatever contribution secondary education made, it could not be the root problem.

Interest then turned to the pedagogy of primary schools. Huge differences were discovered in the way mathematics was taught. It was found that successful countries invariably used interactive whole class teaching rather than the individualised teaching then current in British schools.

The teaching of mathematics through interactive whole class teaching was trialled in British schools - notably in Barking and Dagenham - with some success, but nothing like the success achieved with near identical methods in Hungary, German Switzerland, Flemish Belgium or the Pacific Rim. This led the academics involved - while still urging the adoption of interactive whole class teaching - to begin looking at what was happening in these countries before primary school.

It emerged that a pre-school kindergarten cycle - remarkably similar in all the successful countries but dramatically different to anything in Britain - was considered everywhere an essential pre-requisite for the pedagogy employed - so effectively - in primary schools.

This led to the first real understanding in Britain of the traditional 'central European' model of early years provision and of its likely crucial role in facilitating the approach to primary school education which had played such a crucial role in promoting the educational success of these countries.

---

a this research is described in "Britain's Early Years Disaster", David and Clare Mills (1997) and summarised in Channel 4 Dispatches "Two Much Too Young" (1998).
The "central European model"
of pre-school/kindergarten education

In the 'central European' model, kindergartens provide a quite separate and distinct pre-school cycle of education which does not educate children, but prepares them for education. It is concerned with developing intellect rather than academic knowledge.

Above all, its purpose is to compress the large pre-existing socio-economic differences children bring to the educational process - so that it can pass on to primary schools far more homogeneous groups of children who can be taught together.

To make this possible, two things have traditionally been seen as essential:

- that the pre-school cycle must extend until children are at least six (seven in some countries) and that even then, perhaps as many as 20-30% will need an extra year.

- that children should not be taught formal literacy or numeracy until all begin together in the first year of primary school.

Everywhere, the "central European" model of pre-school/kindergarten concentrates first on teaching children to regulate their emotions and attention and develop their listening, memory and social skills. It is believed that while advantaged children learn much of this at home, disadvantaged children do not - with disastrous consequences for themselves and often, those around them. Such skills are considered a necessary pre-requisite for real development of oral language and any effective intellectual development.

Once these skills are in place kindergartens begin forcing intellectual development. This involves above all building up impressive oral language skills and through these, conceptual and mathematical understanding.

Gross and fine motor skills (the latter as a preparation for writing) are developed but traditionally there have been no letters or written numerals.

Middle class support for this is secured with a sleight of hand - a successful trade off between the interests of middle class children and others. Although the former do not move ahead and away from other children in a "linear" direction, they are stretched "laterally". Pre-school is made valuable for them because they are used as role models, leaders and even teachers of weaker children. In doing so they acquire social, leadership and intellectual skills - clearly visible to parents - which will serve them well in later life. Indeed, it might be argued that they are being prepared for the elite positions they will eventually take up.

Middle class children enjoy another advantage too. However advantaged, a significant minority nevertheless experience problems of one sort or another. Although the slower start and "compensatory" education are primarily intended for less privileged children, it is also available for middle class children. As a result problems such as dyslexia - as understood in the UK or US - simply do not figure in these systems.
Two other brief points should be made. First, although ruthless and focused in its aim of forcing the intellectual development of disadvantaged children - this is done almost entirely through play. Secondly, it is seen as essential that in kindergarten such children should never feel that they are failing. The intention is to bring them forward without their ever knowing they were behind.

It is revealing that British school based speech and language units have developed a remarkably similar curriculum to that found in the 'central European' model. Significantly, British health professionals and educationalists involved with special needs have developed techniques to help backward children that are deemed useful for all children elsewhere, albeit at a younger age². The rationale for this is clear. Backward children need to be helped through the same developmental steps that normal children take. Elsewhere child development has remained at the core of mainstream education. In Britain it has slipped away from education and become the province of health and of those involved in the pathology of development.

The "central European" model of primary school education.

Much of the pre-school/kindergarten approach is carried through to primary school.

Teaching is based on a "collective" or "whole group" approach. In this, once again, advantaged children do not move ahead and away from others. They work on the same topics as the rest of the class (although invariably, they are expected to tackle more difficult questions about it). They are also expected to help, even teach, slower pupils.

Once again this approach rests on a sleight of hand. While class work appears to move at a pace set by slower children, the reality is very different. Slower children are expected to work harder than others - and if necessary, much harder - to keep up with what is in fact an accelerating and challenging pace. The class will not - can not - move on without them, but they are under a lot of pressure not to hold others up. And they are well rewarded for not doing so. They do not fall behind and know that they are in a real sense keeping up with the fastest and most able pupils.

It is a use of group and peer pressure to motivate all children to move at a pace acceptable to the more advantaged and their parents. And it works. The startling success of the approach has been identified in one study after another. For example the percentage of ten/eleven year olds with reading difficulties would typically be 3-8% depending on the number of second language immigrants involved in the sample. This compares with 30-40% in Britain and America³.

Less advantaged pupils are less likely to become disaffected with education and when this does occur, it comes later, by which time such pupils have reached significantly higher levels of attainment than their equivalents in Britain or the US.

Surprisingly perhaps, more able/advantaged pupils do not suffer. Comparative studies show them clearly ahead of British or American children at 18. There is some evidence that these children overtake their British and US peers within three to five years of starting school. Weaker children overtake their US and UK peers within one to two years⁴.⁵.
**Comparison with the British/US approach to early years.**

In British and US early years provision the core belief is that children should move at their own, individual pace. In effect this *always* means facilitating the faster progress of the more privileged and able. It also *always* means encouraging children to begin formal literacy and numeracy as soon as possible. It is considered inevitable that more privileged or more able children will move ahead of their less advantaged peers. This belief is now buttressed by British Government policy which insists on the early introduction of formal literacy for those ready for it.

As a result, children entering early years provision in Britain or America find the large pre-existing differences which already divide them quickly accentuated and reinforced. Extensive research shows very clearly this has two very damaging effects:

- young children, who have an accurate perception of their own strengths and weaknesses quickly sense failure and try to avoid the cause of that failure: it means that many children who feel themselves falling behind begin withdrawing from the educational process.

- by accentuating and reinforcing differences between children, early years provision creates groups of children with widely varying attainment and attitudes. This makes teaching difficult and seriously undermines any attempt to introduce more successful "whole class” teaching techniques. Both these factors play a major role in creating the long tail of underachievement which is the hallmark of both the British and American education.

In the US where, as in Britain, formal literacy has been introduced ever earlier, the outcome has been so obviously damaging to significant numbers of children that in one State or another, almost every conceivable device has been used to try to mitigate the harm being done (eg. encouraging socio-economically deprived children to start school later, repetition of the final year of kindergarten etc). Nothing has worked. Once behind, children stay behind.

This has convinced many leading academics that it is the "individualistic" approach itself which is at fault. They believe that even by the time children leave US kindergarten, it has caused many of them to suffer what is, in effect, irreversible harm.

*This evidence should in itself, have been enough to persuade Britain to re-examine early years' policies and trial the potentially more effective "central European" model. This has not happened even though quite independently, other evidence has emerged which provides a powerful intellectual underpinning for this approach.*
3b. The American Contribution - an explanation as to why the "central European" approach may be more effective.

During the 90s there has been in America what can be described accurately as an explosion of understanding about brain development, both in animals and humans: understanding that provides a telling and persuasive intellectual argument for the 'central European' pre-school cycle.

It suggests intellect is largely determined by environment: particularly the care received in the first three/four years of life. It reveals too - with growing clarity - the critical importance of early intervention when such care is inadequate.

For decades prior to the 90s it was known that the brain development of many animals - particularly the visual cortex - was highly dependent on environmental stimulation. If at critical points in development the necessary stimulation failed then relevant brain development was damaged or inappropriate. Perhaps the classic illustration of this was the 1963 demonstration that kittens who had one eye covered during the first three months of life remained permanently blind in that eye.

During the 90s it became clear that the central mechanism for this was the proliferation of synapses (connections between brain cells) in young animals and their equally rapid elimination if not used, a process called "neural sculpting". In this way the brain allows mechanisms to develop for specific purposes. If the purpose is not present, no mechanism will develop.

It was found too that in animals there are critical periods not just for sensori-motor skills but for emotional, cognitive and even social development as well.

For example brief human "handling" of new born rats was found to enhance their ability to deal with stress, reduce ageing and improve cognitive function late in life. Early fostering of hyperactive rhesus monkeys by experienced and caring mothers transforms their life chances. Unfostered they are unlikely to survive to adulthood and remain virtual outcasts. Fostered they become indistinguishable from other monkeys and even more likely to become high status troop leaders.

Besides synapse proliferation and elimination a wide range of other physiological mechanisms - particularly the endocrine and immune systems - are modified by early experience and play a role in bringing about such outcomes. Recently the process has been described as "biological embedding".

While the new research demonstrates that cognitive functioning in animals can be determined by environmental influences early in life, it also shows that some of the mechanisms involved operate well into adult life.

For example, while both young and adult rats allowed to exercise on a tread mill develop new blood vessels in their brains which became denser and more muscular (better able to cope with the continuous motor activity involved in long periods of exercise) the same rats rewarded with food for master ing a complex maze developed not just new blood vessels but new synapses as well. Their brains had become not just more muscular, but more intelligent.
During the 90s research has shown that there are identical processes in humans. It has emerged that in the first three years of life there is a massive expansion of synapses in human brains and an almost equally massive elimination. More than half of the cells in the retina die before a child is one year old. Over one third of the neurons in the cerebral cortex are eliminated in the first three years of postnatal life\textsuperscript{14}.

It has emerged too that just as in animals there are critical periods for the development of human sensori-motor systems. Short periods of early visual deprivation imposed on one eye have devastating effects on later vision. Audio deprivation can also have profound effects. For example in the first 6-7 months babies can hear (and in their "babbling" phase often make) every conceivable human sound. But thereafter they quickly lose not just the ability to make sounds they do not hear - but even to recognise them. This explains why the Japanese are unable to tell the difference between "rake" or "lake" or more famously, "rice" and "lice". There is no equivalent of the English 'r' and 'l' sounds in Japanese so Japanese babies do not hear these sounds and their brains do not develop mechanism to identify them\textsuperscript{15}.

Similarly it has been found that just as in animals there are critical periods in early childhood for the development of emotional, social and intellectual behaviour - although these are more accurately described as "sensitive" rather than "critical" periods. Again the endocrine and immune systems are involved as well as synapse proliferation and elimination. For example early experience of stress can have profound and lasting consequences. Babies whose mothers are depressed are much more likely - at 36 months - to be withdrawn, aggressive, disobedient and have behavioural problems such as crying and sleep disturbances as well as changed brain activity and high level of stress hormones\textsuperscript{16}. Early exposure to stress can also lead to decreased levels of serotonin (which modulates brain impulses) in children which is the single most accurate predictor of later violence or suicide\textsuperscript{17}.

Early environmental experience can also have a profound effect on subsequent intellectual development. Language development between 14 and 26 months, which strongly predicts subsequent educational attainment, is dependent on the amount of language heard\textsuperscript{18}. Extended mathematical understanding (eg. that three drum beats can stand for three of anything) should normally develop between 30-48 months but is highly dependent on environment. In one study, while 75% of middle class five year olds could judge the relative magnitude of two single digit numbers and perform simple addition, in the same community, only 7% of working class children could. These differences, which were highly predictive of subsequent school attainment, were environmentally, not genetically determined. The children involved had no difficulty grasping the concepts when exposed to them\textsuperscript{19}.

The role of early environment on subsequent intellectual development, educational attainment and wider social performance has now been repeatedly demonstrated in longitudinal studies.

Perhaps the best known of these intervention studies is the Carolina Abededarian Project in which, starting at around 4 months, high risk children were given day care which set out to develop oral language and pre-literacy skills. At 18 months the cognitive scores of children in the trial began moving ahead of the control group. By 42 months, while trial children had IQ scores in the normal range, around 100, average IQ scores of children in the control group were almost 20 points lower. And in the control group - but not the trial group - children of particularly low-IQ mothers became borderline mentally retarded\textsuperscript{20}.
However the increase in IQ did not bring trial children to the level of socio-economically advantaged children (average 107). And though a positive impact remained nine years after the intervention, at age 15, gains had fallen significantly during the school years. Measures of educational outcome however, particularly reading/mathematics test scores and continuation in school remained much more positive for these children\(^21\).

Many other intervention studies have revealed a similar pattern. They continually reaffirm the crucial importance of a mother's level of education (almost invariably a proxy for socio-economic status) in determining IQ and educational outcomes.

In trying to explain socio-economic differences in intellectual development, recent research has focused on the role of "regulatory" systems (the ability to control emotion, attention and social behaviour). This is because while up to the age of 18-24 months tests of infant intelligence neither predict later intelligence nor show socio-economic differences, tests of emotional control, attention and social skills do both\(^22\). This has led some American researchers to conclude that a child's ability to control his or her emotions, attend to others and interact with them is an essential pre-requisite for normal intellectual development.

They believe that the development of such skills is rooted in neuro-physiological processes which develop - or fail to develop - as a result of interaction with carers in the first 24 months of life: they believe that it is the quality of this interaction which is the most powerful predictor of subsequent cognitive/intellectual development.

Jack Shonkoff - chairman of the US National Academy of Sciences Committee on Integrating the Science of Early Childhood Development\(^b\) - has written:

"the central importance of nurturing, responsive and stable relationships for healthy emotional and cognitive development in the early years is well established... there is no question that something important is happening in the brains of infants who are well cared for that is different from what is going on in the brains of infants who are abused or neglected".

Clyde Hertzman - a director of a prestigious Canadian inter-disciplinary team set up to investigate the new evidence puts it this way:

"an un-stimulating, emotionally and physically un-supportive environment will affect the sculpting and neurochemistry of the central nervous system in adverse ways, leading to cognitive and socio-emotional delays. The problems that children so affected will display early in school will lead them to experience much more acute and chronic stress than others, which will have both physiological and life path consequences."

The Canadian investigation has led it to conclude that the differential care of young children is the root cause of the socio-economic gradients found in educational outcomes. It has found that in education, the shallower these gradients are, the higher performance is at every level of ability. They have found this applies both between and within countries\(^22\).

\(^b\) a Federal multi-disciplinary committee established in 1998 to review the new evidence about early childhood: it will report late in 2000.
However important early environmental experience may be to human development, the same research has established that, just as with some animals, the human brain continues to respond to environmental stimulation well into adult life. For example, recent autopsies have shown that the brains of university graduates who had remained mentally active have up to 40% more synapses than high school drop outs and significantly more than mentally inactive graduates.\(^\text{23}\)

The new evidence has led academics in north America to argue for:

- early intervention policies which seek to compress differences between children before entry to formal education
- pre-school programmes which concentrate on developing emotional control, the ability to pay attention and to interact with others as a necessary pre-requisite for subsequent cognitive development
- pre-school programmes which then move on to conceptual/linguistic competencies susceptible to short-term environmental influence yet essential for the easy mastery of formal literacy and numeracy.
- school programmes which carry forward pre-school intervention programmes and provide long term support for disadvantaged children.\(^\text{22}\)

None of the American academics involved in this research who were interviewed for this paper have any understanding of the "central European" model of kindergarten and primary school provision: nor that these demands exactly describe that system.

This in itself should have been sufficient to ensure a British trial of the 'central European' model took place. Yet there was another development in the 90s which makes the argument for such a trial, intellectually, overwhelming. A development which frightens academics on both sides of the Atlantic.
New Problems

For perhaps a decade, those caring for children with speech and language problems in Britain have been saying that they thought the number of children experiencing such problems was increasing. If true, it was alarming, because these problems are invariably a symptom of underlying intellectual impairment. (And often - the new US evidence suggests - the result of poor parental care in the first 24 months of life).

Recent findings suggest not only are the fears true, but that the situation is worse than expected. It suggests that a significant and increasing number of British children are experiencing varying degrees of intellectual damage in early childhood. It is known that the difficulties they suffer, quickly escalate within the education system.

Evidence

This comes from many different sources and is convincing. It includes:

- a study of eleven NHS trusts over ten years: this reveals a real increase in not only the incidence of speech and language problems children are suffering but also in their severity.

- a study investigating the listening skills of year old babies (an effective predictor of subsequent speech and language delay) in a number of English and Scottish locations over the past fifteen years: it found increasing numbers of children suffering listening and attention problems in *every* location where the tests were repeated.

- a study, still in progress, investigating the speech and language development of three and a half year olds in a white working class area of Sheffield:
  - ninety per cent of the children so far tested have performed at significantly below the level expected of such children
  - tests have shown high levels of intellectual delay/impairment
  - it means in the area being studied, a significant number of children are entering nurseries and being exposed to formal literacy, even though they only have the speech, language and intellectual skills of two year olds.

- an Anglo-Italian comparison of oral language skills in 1200 matched children in Manchester and Rome, drawn from every socio-economic group:
  - the oral skills among the Manchester children, across the board, were so poor, they are described as "terrifying"
  - the Manchester children were almost one year behind their Rome peers.

Although the evidence shows children from lower socio-economic groups are at much higher risk, the evidence also reinforces powerful anecdotal claims that an increasing number of those from the middle class are also suffering intellectual impairment in early childhood.

Causes
Since the 70s it has been known that mothers have an enormous influence on their children's intellectual development with the length of the mother's education alone proving the best predictor of a child's future educational attainment. Earlier research identified ways mothers were thought to directly encourage their babies' intellectual growth. It identified, for example, the importance of mother-baby play in developing the "referencing" of objects and the understanding of their "permanence" and - crucial for language - the understanding that one object can "represent" another.

Today the latest US research suggests that mothers - or other carers - first help babies learn to control their emotions and ability to pay attention - and that it is this which then enables intellectual development to take place. For example it identifies the importance of the "mother's register" - the accentuated rhythm and pitch used by mothers in every culture when talking to babies - in developing listening and attention skills.

Whatever the exact mechanisms may be, what is frightening academics in both Britain and America is that the traditional family environment which encouraged the necessary parental/carer behaviour - has gone. The new one militates against it. Numerous factors are involved. They range from changes in family structure and employment to eating habits and push chairs. All have an impact on parental/carer behaviour and through this on children's intellectual development.

The difference between the experience of different children is frightening. One recent American study found:

- by the time they were four, children of professional parents had, on average, heard 45 million adult words. Children with parents on welfare, only 13 million.
- while children of professionals had been encouraged 560,000 times more than they had been discouraged (eg. "don't do that"/"stop that"). The children on welfare had been discouraged 125,000 times more than encouraged. Children of blue collar workers were closer to the latter than the former.
- that there was a strong correlation between exposure to language and IQ. At age 3 the highest IQ of children talked to most reached 150. The lowest IQ of children talked to least fell to 75. The higher IQ levels attained by the age of three remained stable when the children were re-tested at age 9.

Throughout America there is growing alarm about the consequences of changing parental behaviour. In 1996, reviewing the trends of over a quarter of a century which he had studied in detail, Cornell's Urie Bronfenbrenner wrote:

"Today they have reached a critical stage that is much more difficult to reverse. The main reason is that forces of disarray, increasingly being generated in the larger society, have been producing growing chaos in the lives of children and youth."

One of the world's leading authorities on child development, Daniel Keating of the University of Toronto wrote in 1999:

"During periods of profound social change, such as the present, some sectors of society are at high risk of encountering a decline of social support and hence an inadequate nurturing of developmental needs. Families with young children are often the most vulnerable. Although economically poor families are at the highest risk for this form of family insecurity, the changes we are currently experiencing are so widespread that negative consequences are occurring even for the children of families that are moderately secure economically. In particular, labour market policies that do not recognize the extensive demands placed on families with young children, combined with the dearth of good, affordable child care, create a situation in which adequate nurturing of the next generation cannot be assured."
Recent developments in education in Britain and America - which have imposed more formal learning on young children - are thought to have intensified the impact of these changes. Numerous studies have shown that children who enter the education system behind others fall ever further behind as they progress through the school system.

The position is worse in Britain than America. Demands US academics like Barbara Bowman, chair of the Federal Committee on Early Years Pedagogy, feel inappropriate for 5-year-olds are already being made on British 4-year-olds. The insistence that they should be taught to read simple sentences and write letters and numerals is, for almost all of them, detrimental, but for a significant minority, disastrous.

British and American academics say it is changes, primarily in the family environment, but also in education, which are causing the present problem. While some children do have substantial genetic weakness or neurological damage which explains their difficulties - most do not. The problems these children suffer are unnecessary: they are induced purely by the family and social environment they experience and then intensified by early schooling.

There is thus worrying evidence that more children are suffering intellectual damage early in life, something likely to intensify Britain's already long tail of underachievement.

Impressive new American evidence suggests the best way of tackling this - and other long standing problems - is the adoption of an approach that highly regarded British academics have already identified as likely to promote high educational performance.

A pressing question then, is why this has not been enough to persuade Britain to properly trial the approach?.
4. Why is British policy so much at odds with the evidence?

Any explanation for this can only be speculative but it is likely the following have all played an important role.

(i) The failure of traditional British early years provision

It is difficult to overstate the importance of this failure. Until very recently early years provision in Britain was a chaotic hotchpot without shape or direction. Its aims were vague and means for achieving them, even vaguer. Development was been at the whim of local organisers. Obscure and unproven beliefs about "experiential" learning, although often repeated, hid a reality which helped few children and left many actually worse off.28

Traditional organisations involved with early years are right to argue that present policies are damaging children but there is no evidence they have developed any credible alternative. Government ministers are right to argue that it would be unthinkable to hand responsibility back to them. The tragedy though is that the vacuum they allowed to develop has now been filled by individuals who know even less about child development than they do.

(ii) From Opposition to Government

The unanimous view of academics investigating successful education systems that interactive, "whole class" school teaching, based on impressive use of oral language by both teachers and students, was in some way associated with superior educational outcomes at all ability levels was correct and timely. It came when the present Government was in opposition and formulating policy. It is to its credit - and also to that of the last Government - that both have adopted the policy and pursued it with vigour.

Yet it was a preliminary finding. The same academics subsequently discovered that something very important was happening in successful educational systems before children started school and that it was this which made interactive whole class teaching not just successful but possible. Yet this discovery came when the present Government was close to taking power. It was not the time to be changing policies. The new evidence was hardly heard. And nor, given the way it was expressed, is this altogether surprising.

1 for a fuller and reference description of traditional British coverage see Chapter 3 Britain's Early Years Disaster, Part 1
5. Policy Implications

The implications are clear. Carrying them out, immensely difficult.

Urgent attention needs to be given to the possibility of introducing into Britain a trial pre-school cycle, running from three to six, similar to the "central European" model: a trial of earlier provision for infants considered at risk should also be considered.

To design the trial, a multi-disciplinary team, featuring education and health professionals should be formed. This should identify best practice abroad and plan how this can best be incorporated into the trial. Speech and language therapists as well as the specialist teachers and educational psychologists who work with them should be centrally involved.

The team should also identify best kindergarten teacher training abroad and use this in planning a new experimental training programme intended to produce the first generation of pre-school teachers capable of replicating the trial if it succeeds. It is likely that only institutions currently training speech and language therapists and specialist teachers who work with them, would have the skills to deliver such a training course.

The trial should be located in a deprived area - such as parts of Sheffield - where any intervention would be better than what is currently happening. Sheffield already has expertise in trying to set up such a trial. This should be incorporated in the new plans. Sheffield also has excellent training courses for specialist speech and language teachers.

If the trial of the new early years cycle succeeds, it will be essential to pay those trained to replicate it, the same rate of pay as senior secondary school teachers. (This is currently policy in Flemish Belgium where it is now believed the role of such teachers is more difficult and more critical than those in secondary schools).

As the pre-school trial proceeds, a new trial "year-one" should be designed for six year olds to take children forward from the pre-school cycle; this should be along the lines of "year one" in the "central European" model. The intention would be to add "pull" from the school system to the "push" of pre-school cycle, just as found elsewhere. Barking and Dagenham, which has pioneered, as far as it has been able, the adoption of the "central European" model in Britain should be centrally involved in the design and experimental implementation of this new "year one".

(Although some curriculum change would be necessary, delivering it would be relatively easy; DfEE policies are already helping teachers teach in the way required).

In turn a new trial year-two/three/four/five should be designed to take children to the end of Key Stage 2.

Rigorous assessment, to see whether children moving along the new route out perform control group children at the end of the various key stages will be essential.
6. An epilogue

Given the evidence, the extent of the change that appears necessary in Britain is daunting. It can not be done quickly. Nor should this be tried. To do so would be to repeat a fundamental failing in British education, the refusal to properly test innovation before imposing it.

Yet the failure of the British Government so far to even consider a trial of the 'central European' approach - a trial which would try to replicate in Britain the 'push' of good pre-school provision with the 'pull' of collaborative whole group primary education found elsewhere - is in the light of the evidence, incomprehensible.

If this refusal continues, the efforts of British academics investigating Britain's poor performance in mathematics, which has told us so much about our education system, may end up telling us just as much about our political system.

References:

3 authors own research
4 National Centre for Education Statistics (99) Highlights from TIMSS NCES 1999-081
8 Kotulak, R. (99) Inside the Brain Kansas City Andrews McMeel Publishing
10 McEwen B.S. & Stellar E. (93) Stress and the individual: Mechanisms leading to disease. Archives of Internal Medicine, 1563, 2093-2101
15 Gopnik, A., Meltzoff, A., & Kuhl, P. (99) The Scientist in the Crib New York: Morrow


29 Case R. & Griffin, S. (91) Rightstart: An early intervention programme. Report to the James S. McDonnell Foundation, St. Louis, MO

30 Horacek et al, (87) Predicting school failure and assessing early intervention with high risk children. American Academy of Child Adolescence Psychiatry, 26 758-763


33 Jacobs, B. UCLA in preparation, quoted in Kotulak, R. (99) Inside the Brain Kansas City Andrews McMeel Publishing pg 17


