Mixed method research into the variability of ADHD symptoms in educational settings

Linda Wheeler


Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most widely studied childhood disorders, attracting attention and debate from professionals in many disciplines, including education, psychology, sociology and medicine. International estimates of prevalence rates vary widely but it has been suggested that in the UK between 3% and 9% of school-aged children and young people are affected by ADHD (NICE, 2008). The three core characteristics of ADHD are inattention, impulsivity and hyperactivity. Symptoms should occur in more than one setting (e.g. home and school) and diagnosis is made by a qualified clinician using the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV) diagnostic criteria (APA, 2000). These consist of nine ‘inattentive’, six ‘hyperactive’ and three ‘impulsive’ criteria. An accurate assessment requires evidence of pervasiveness and should be based on detailed information from parents, teachers, educational psychologists and other professionals.

Studies suggest that approximately 60% to 70% of children with ADHD have comorbid or co-existing conditions of various types. These may include learning difficulties, fine motor control and handwriting difficulties, dyscalculia, time management, poor self-esteem and
problems with relationships. Over 50% of children with ADHD experience emotional difficulties and the same number display social skills problems (Cooper and Bilton, 2002). Professionals from various agencies may need to become involved in supporting pupils’ learning, social, behavioural and emotional needs. A variety of interventions may be used, but where medication is included as part of a multi-modal management approach, it is essential that all concerned parties are involved in monitoring the effects of medication, both positive and negative, and that regular reviews take place.

Survey findings from related research undertaken by the author suggest that there can be variability in multi-professional working in the identification and management of ADHD in different local authorities and also in schools within the same local authority. School staff in one local authority reported that they had not been asked by clinicians to complete a questionnaire or behaviour checklist before diagnosis for 44% of pupils diagnosed, and/or after diagnosis for 51% of pupils diagnosed (Wheeler, 2007; Wheeler et al., 2008).

Children with ADHD ‘struggle in environments that demand restraint, goal-directed actions, single-mindedness of purpose, self-regulation, and, above all, delayed gratification’ (Barkley in DuPaul and Stoner 2003, p. ix – x). Consequently one of the major areas where ADHD behaviours can present problems is in the school setting. In the current context of inclusive education, most mainstream classrooms are likely to have at least one pupil who has a diagnosis of ADHD or who displays characteristics associated with the disorder. Recent UK government proposals for developing inclusive practice have included
increased emphasis on the development of a flexible curriculum and more effective multi-
professional involvements (DfES 2003, 2004; House of Commons, 2006; DCSF, 2007). It is 
essential that teachers are aware of the implications of the disorder in the school setting 
and that they have access to relevant training, information, research and proactive 
intervention strategies, both during initial teacher training and as part of continuing 
professional development (Cooper and Bilton 2002; Wheeler et al., 2008, 2009). At the 
time of writing, proposed government reforms for special educational needs include a 
greater emphasis not only on agencies working together more effectively but also on 
improvements in teacher training so that schools will have the flexibility to support the 
needs of all pupils (DfE, 2011).

It has been suggested that educational approaches should ‘reframe ADHD as a particular 
cognitive style, rather than a deficit’ (Cooper 2005, p.130). Research has found that some 
pupils with ADHD are able to sustain attention when working on a computer (Shaw and 
Lewis, 2005), when watching a television or video (Selikowitz, 2004) or when engaged in a 
novel activity or situation (APA, 2000). Lessons involving the use of active or kinaesthetic 
learning approaches allow pupils with ADHD to achieve more than those which use 
reflective and abstract methods (Daniel and Cooper, 1999; Cooper, 2005). Some 
researchers claim that pupils with ADHD may display more creativity than their peers and 
can be extremely inventive (Cooper and Bilton, 2002). There have been suggestions that 
physical exercise increases dopamine levels in the brain, thus having a similar effect to 
that achieved by the taking of stimulant medication (Ratey, 2004). Regular activity breaks
between cognitive tasks can increase on-task behaviour and concentration (Cooper and Bilton, 2002).

Recently in some local authorities nurture groups have been set up in mainstream schools as an early intervention for children with social and emotional difficulties (Bennathan and Boxall, 2000). There is evidence that some individuals with ADHD may benefit from this type of setting, which combines the features of a caring, homely environment with those of a standard classroom and where the emphasis is on emotionally supportive and empathic relationships between adults and children.

**Background to the research**

This paper derives from a larger mixed method research project which adopted an educational perspective and was in two parts which ran concurrently: a questionnaire survey sent to all schools in a local authority (LA) in England and six individual case studies undertaken over a two-year period in different schools in the same local authority (Wheeler, 2007). The main aims of the larger project were:

1. to survey the incidence of pupils with ADHD in all schools within the LA;
2. to explore and evaluate current educational ADHD identification and assessment procedures;
3. to develop two practical ADHD classroom observation techniques; and

4. to explore the variability of the symptoms of ADHD shown by individual boys in mainstream primary schools.

By focusing on selected findings from the case study research, this paper discusses the importance of mixed method research in educational settings and highlights the practical uses of quantifying behaviours using systematic observation techniques (see aim 3 above). In exploring the situational and temporal variability of the symptoms of ADHD displayed by individual boys in school settings (aim 4), the findings are discussed with reference to the importance of: increased curricular and pedagogical flexibility; and more effective multi-professional involvements.

Methodology

A mixed method case study approach involved the gathering of descriptive data and unique quantitative information in six detailed case studies. Pupils were identified using a purposive sampling design. Efforts were made to choose individuals covering as wide a spread of ages as possible within key stages 1 and 2 in schools of different sizes and in diverse parts of the LA. Boys were identified at different stages in the assessment process for ADHD.

After obtaining the relevant permissions, each case study was conducted using the same format. Two boys were studied over each school term in an academic year and again over
the corresponding term the following year, for purposes of consistency in comparison. This offered opportunities to observe any variability in ADHD symptoms over the transition from one school year to the next. In each case study for both years of the research period the researcher/author spent one day each week throughout the term in school. Attempts were made to cover every day of the week so as to include observation in as many curricular contexts as possible. Anonymity was ensured throughout the research and analysis period by the use of pseudonyms. Although in individual schools the teaching staff knew the focus of the research, the pupils were unaware that one particular child was being studied. Comprehensive records were maintained throughout the period of data gathering and analysis in order to provide a chain of quantitative and qualitative evidence concerning the ADHD symptom variability in each individual pupil’s behaviour.

**Systematic observation**

By modifying existing instruments, two classroom observation schedules were devised by the author and used extensively over two years (Wheeler, 2007). Basing the coding system for both schedules on all 18 DSM-IV criteria for ADHD (APA, 2000) ensured that the categories used had been professionally validated.

The Fixed Interval Sampling (FIS) technique involved close observation of the target pupil, usually over the course of a lesson, and the recording of his predominant behaviour over 15-second periods. It was possible to use FIS in almost any setting over periods of varying
duration. When using the Instantaneous Time Sampling (ITS) technique, a ‘snapshot’ of the behaviour displayed by both the target and a comparison pupil was recorded at 30-second intervals. At the beginning of each case study, the class teacher was asked to identify a same-sex classmate as ‘typical’ or ‘average’ as a comparison (DuPaul and Stoner, 2003). Observations were carried out over 10-minute periods (providing a ‘score’ out of 20), but often three 10-minute periods were recorded in one lesson, in order to identify any patterns of behaviour.

Recording periods using both techniques usually began after the first few minutes of each lesson which were deemed to be ‘settling down periods’. There were inevitably occasions when it was not possible to observe in every curriculum area. In such circumstances, strenuous efforts were made to observe in one or more similar curricular areas. For example, art and Design and Technology (DT) were considered comparable, as were the humanities [Religious Education (RE), history and geography]. A decision was made early in the research to use the term ‘No ADHD’ (0) for recordings when there was no evidence of ADHD behaviours, rather than using the term ‘on task’. This was because there had been several instances when a target pupil had appeared to be ‘on task’, but it was discovered either on closer observation or on later inspection of his work that he had in fact been engaged on some other activity, for example, drawing a picture instead of carrying out a writing task.
As a single researcher carried out the observations, it was necessary for inter-rater reliability of the schedules to be established. This involved the recording of observations of videotaped extracts of children’s classroom behaviour by three observers on different occasions, resulting in an inter-rater reliability figure of 97%. The reliability of the research findings was enhanced by the longitudinal element of the case study. Consistency of observation data was achieved by the repeated use of systematic observation schedules on different days and times and in different curricular settings. During the six case studies 207 hours 55 minutes of FIS observation (49,900 recordings) and 75 hours 40 minutes of ITS observation (9,080 recordings for both the target pupils and the non-ADHD pupils) were undertaken over a two-year period.

Data analysis

Information from both FIS and ITS observations was used to calculate the proportion of time spent by each target pupil in displaying ADHD behaviour, and also the time spent not displaying ADHD behaviour. Analysis of ITS findings also offered opportunities for comparison with the behaviour of a non-ADHD pupil and identification of variability in the target pupils’ performance in different parts of lessons. When analysing the data from both FIS and ITS techniques, three behaviour columns headed ‘No ADHD’ (0), ‘Inattention’ (1 – 9) and ‘Hyperactive/ Impulsive’ (10 – 18) were used. This was because diagnosis of ADHD using DSM-IV diagnostic criteria demands six or more symptoms of inattention and/or six or more symptoms of hyperactivity-impulsivity (APA, 2000).
Detailed cross-case analyses of the findings from all six case studies provided further insight into three main areas:

- exploring contextual variables associated with ADHD symptoms, both across settings and over time;
- improving multi-professional identification, assessment and management procedures for ADHD; and
- observing other learning difficulties associated with the National Curriculum and ADHD.

Other data-gathering methods

Field notes were maintained (a) during periods of informal or unstructured observation, particularly in the early stages of each case study when there was a need to become familiar with school and classroom routines; (b) in between periods of systematic observation to record qualitative information regarding background details; (c) to add further descriptions of contexts when observation schedules were used; (d) to note details of interviews with relevant school staff; and (e) to record particulars from school documents which were examined at school or photocopied with permission. Throughout the case studies, opportunities were taken for informal conversational interviews with school staff when convenient (Patton, 2002). The researcher was able to gather documented information and informed comments on each target pupil’s behaviour and associated difficulties, classroom interventions and details regarding ADHD diagnosis and
medication effects. It was also possible to collect anecdotal evidence of relevant events that occurred on days other than those when observations took place.

Findings (1)

Carl

Carl had been diagnosed with ADHD at six years of age and had been prescribed medication. Aged nine years at the beginning of the case study, he had particular difficulties with numeracy, reading, handwriting, and social relationships. The extracts in Tables 1 and 2, taken from detailed analyses of observations of Carl, have been selected in order to illustrate points for discussion regarding situational variability of ADHD symptoms. Contextual and curricular settings and approaches which may help teachers to enhance on task behaviour are identified, focusing on: the delivery and organisation of the curriculum; teaching and learning styles; grouping and support in the classroom; and associated difficulties.
**Fixed Interval Sampling (FIS)**

### Table 1. Extracts from Fixed Interval Sampling Analysis - Carl

<table>
<thead>
<tr>
<th>Date, time, duration of recording period</th>
<th>Number of 15-second observation recordings</th>
<th>Context</th>
<th>No ADHD</th>
<th>ADHD behaviours</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Wed 25 Sep 11:00 – 60 mins</td>
<td>240</td>
<td>Literacy – Y5 group, n = 4, in withdrawal area – 6 varied activities, mainly oral</td>
<td>88%</td>
<td>7% 5%</td>
</tr>
<tr>
<td>(ii) Mon 30 Sep 09:17 – 50 mins</td>
<td>200</td>
<td>Numeracy – Y5 group, n = 4, withdrawal area with TA. Number bonds to 10; addition/subtraction games</td>
<td>35%</td>
<td>21% 44%</td>
</tr>
<tr>
<td>(iii) Thu 4 Dec 13:54 – 35 mins</td>
<td>140</td>
<td>DT – half Y6 class, n = 12, outside main classroom, with Y6 teacher. Modifying model of chassis, adding motor</td>
<td>88%</td>
<td>9% 3%</td>
</tr>
<tr>
<td>(iv) Fri 14 Nov 13:37 – 16 mins</td>
<td>64</td>
<td>ICT – (Y6) working with a partner on a laptop - multimedia task</td>
<td>84%</td>
<td>11% 5%</td>
</tr>
</tbody>
</table>

Table 1 provides details of selected lessons where FIS observation was undertaken. In some cases qualitative background information from the field notes supplements the observational data.

(i) During this Year 5 group literacy lesson, 88% ‘No ADHD’ behaviours were recorded for Carl. This was a well-planned lesson, taken by the special educational needs co-ordinator (SENCO) who worked with the (inexperienced) teaching assistant (TA) to offer support and suggestions for future working with the group. The lesson consisted of six short, varied activities which held the children’s interest. There was a minimum of writing involved and this helped Carl who was always happy to offer ideas orally in the group, but less confident in his writing abilities. Throughout the lesson, either the SENCO or the TA kept Carl on task, offering individual support for most of the time.
(ii) In this Y5 group numeracy lesson Carl displayed 21% ‘inattentive’ behaviours and 44% ‘hyperactive-impulsive’ behaviours, his highest recording overall. This was the first lesson on a Monday morning. The field notes include comments from the TA and SENCO regarding problems with Carl’s behaviour on Monday mornings, following a weekend at home. There are also numerous references to Carl’s repeated complaints that he ‘did not like maths’ and that he was ‘no good’ at maths. Many of the observation results show that he did not perform well in these lessons.

(iii) There were 88% recordings for ‘No ADHD’ behaviours during a DT lesson taken by the teacher of the parallel Year 6 class. Carl worked in a group of 12 children outside the main classroom area with the teacher, while a TA oversaw the rest of the class in a writing activity in the classroom. The teacher was able to offer plenty of support and encouragement to Carl in modifying a model of a chassis, which he had started to make the previous week. He carefully supervised Carl, who demonstrated creativity in using three wheels on his chassis, unlike the majority of others who used four wheels. Carl had made a useful suggestion as to the best place to fix a motor to a model and the teacher asked him to explain this to the rest of the group. The following week, the teacher suggested that Carl should be awarded a merit badge from the Headteacher for his work in DT. By drawing attention to Carl’s good work and ideas the teacher helped to boost Carl’s self-esteem and enabled his peers to see that Carl could make a positive contribution to classroom activities (Cooper and Bilton, 2002).
(iv) This short observation period during an Information and Communication Technology (ICT) lesson took place in an area outside the main Y6 classroom where Carl worked with another pupil on a laptop computer and achieved 84% ‘No ADHD’ behaviours. The class teacher had paired him with a more able boy who offered peer support by reading out the instructions on the screen during the multimedia Internet activity. Carl enjoyed working on the computer and co-operated well with his partner.

*Instantaneous Time Sampling (ITS)*

Table 2 provides extracts from lessons where ITS observation was undertaken. These are deliberately selected to demonstrate variability not only in Carl’s behaviour in different parts of lessons, but also between Carl and a non-ADHD pupil.

<table>
<thead>
<tr>
<th>Date, time at which 10-minute recording period began, (recordings made at 30-second intervals), part of lesson</th>
<th>Lesson</th>
<th>Recordings out of 20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Target pupil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No ADHD</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inatt</td>
</tr>
<tr>
<td>(v) Thu 20 Nov</td>
<td>Science – Y6 class, then groups</td>
<td>5</td>
</tr>
<tr>
<td>11:30 – Start</td>
<td>Write up yesterday’s experiment</td>
<td>16</td>
</tr>
<tr>
<td>11:50 – Middle</td>
<td>Writing, T introduces experiment</td>
<td>20</td>
</tr>
<tr>
<td>12:02 – End</td>
<td>Experiments – separating solids</td>
<td></td>
</tr>
</tbody>
</table>

(vi) Tue 15 Oct

| 14:03 – Start | Science – Y5 class | 6 | 5 | 9 | 16 | 3 | 1 |
| 14:27 – Middle | Devise tables – ‘changes’ | 6 | 7 | 7 | 15 | 3 | 2 |
| 14:40 – End | Class discussion – share ideas | 5 | 9 | 6 | 14 | 4 | 2 |

(vii) Mon 15 Sep

| 13:36 – Start | History – 2 xY6 classes | 16 | 1 | 3 | 20 | 0 | 0 |
| 13:57 – Middle | Watch video – ‘The Victorians’ | 3 | 8 | 9 | 11 | 6 | 3 |
| 14:28 – End | Class brainstorming session | 5 | 12 | 3 | 13 | 7 | 0 |

(viii) Mon 25 Nov

| 14:00 – Start | Art – Y5 group, n = 5 in art area | 18 | 1 | 1 | 19 | 1 | 0 |
| 14:24 – Middle | Apply hot wax to Batik | 17 | 3 | 0 | 16 | 4 | 0 |
| 14:44 – End | Draw design on piece of material | 18 | 2 | 0 | 19 | 1 | 0 |
| | Reapply hot wax |  |  |  |  |  |  |
(v) Science was one of Carl’s favourite lessons. During this Y6 lesson the class worked in groups of four and a TA was in the classroom offering support to Carl and another boy. The first recording period included a brief recap and writing up of the experiment undertaken the previous day. Carl needed a lot of support to maintain his attention, scoring 12/20 recordings for ‘inattentive’ behaviours, compared to Ian’s 6/20. In the middle recording period when the teacher (T) was preparing the class for the experiments, Carl achieved 16/20 ‘No ADHD’ behaviours compared to Ian’s 18/20. The TA occasionally asked Carl a direct question to bring him back on task. She was also able to write down Carl’s ideas to save time. She discussed his ideas with him and encouraged him to share them with the rest of the group. Whilst undertaking the experiments in the group Carl was totally focused and matched Ian’s score of 20 ‘No ADHD’ behaviours.

(vi) In addition to practical science activities, Carl also enjoyed drawing, was usually happy to contribute to class discussions and often had good ideas to put forward. During the first observation period in this Y5 science lesson, following the teacher’s introduction, the children were required to show in tabular form ‘how we change as we grow up’. Carl was allowed to use pictures rather than writing. His score for ‘No ADHD’ behaviours was 6/20, compared to Ian’s 16. The second observation period was undertaken during a class discussion when the children were sharing ideas. Again Carl scored only 6 ‘No ADHD’ behaviours, compared with Ian’s 15, with 7 for both ‘inattentive’ and ‘hyperactive-impulsive’ behaviours. During the final period the task was to draw a cross-section of one
of several pieces of fruit. Carl’s score for ‘No ADHD’ behaviours was 5 and Ian’s was 14. The field notes record that on this particular day it rained nearly all day. This meant that there was no opportunity for the children to run around in the playground. Carl’s scores for ‘No ADHD’ behaviours were low for all lessons that day. Even in a science lesson that he would normally have enjoyed he was unable to sustain attention.

(vii) The first observation period in this history lesson was carried out when the two Year 6 classes joined up to watch a video in the neighbouring classroom. It can be seen that having a television screen on which to focus enabled Carl to score 16/20 ‘No ADHD’ behaviours, compared to Ian’s 20. This was despite the fact that the room was quite crowded and some children were sitting on the floor. The two later observation periods during the same history lesson were undertaken when the children had returned to their own classroom for follow up work. They show that Carl did not concentrate as well as when he was watching the video, scoring 3/20 and 5/20 ‘No ADHD’ behaviours.

(viii) Carl enjoyed creative activities and was pleased to be one of the first chosen by the class teacher to work in a small group with a TA and a parent helper in the art area during this art lesson on Batik. After giving the class a talk on the safety aspects of using hot wax, the teacher had trusted Carl to be sensible and safety conscious. She gave him the responsibility of going to another classroom to ask for some paint overalls, which also provided him with a legitimate opportunity to physically move around before focusing on the activity. This interesting and unusual activity involving fabric printing particularly held
his attention and his scores for ‘No ADHD’ behaviours throughout the lesson (18, 17 and 18/20) compared favourably with those of Ian.

**Findings (2)**

Although the original purpose of identifying variability in ADHD symptoms was to determine contextual and curricular settings and approaches which may reduce ADHD behaviour, other practical applications were discovered during the case study period. The following examples taken from several case studies demonstrate how observational data could be used alongside qualitative information in facilitating the gathering of evidence in multi-professional assessment procedures and in monitoring the efficacy or otherwise of interventions.

**Carl**

During the first year of the case study one of the targets on Carl’s Individual Education Plan (IEP) was: “To maintain 70% ‘on task’ behaviour during literacy lessons”. Over the course of the term, using FIS observation, it was possible for the researcher to calculate that, over the eight literacy lessons when observations took place, Carl achieved an average of 69% ‘No ADHD’ behaviour, 17% ‘inattention’ behaviour and 14% ‘hyperactive-impulsive’ behaviour. These findings were discussed with the SENCO and class teacher.

Although these findings could not be used in isolation, when added to other informal observations made by teaching staff during the term it was possible to see that Carl had
more or less achieved one of his IEP targets. Some of the other case study findings in which Carl displayed a higher proportion of ADHD behaviours were included by the SENCO in applications for a Statutory Assessment which led to a Statement of SEN being issued the following year.

Adam

The SEN identification and assessment procedure adopted by schools can be a useful framework within which ADHD assessment can take place. Information from the first year’s observations of Adam’s behaviour was shared with the SENCO who included it with evidence forwarded to the community paediatrician who diagnosed ADHD and prescribed medication at the beginning of the second year of the case study. The comparisons made of variability over time are therefore not only between Adam’s recorded behaviours in the first and second year of the case study (when he was in Y3 and Y4), but also between those before and after starting to take medication.
Figure 1 shows that, across all FIS observations, the proportion of lessons Adam spent displaying ‘hyperactive-impulsive’ behaviours decreased significantly from 10% in the first year of the case study to 4% in the second year. Recordings for ‘inattention’ fell from 25% to 23% and ‘No ADHD’ behaviours increased from 65% in the first year to 73% the following year. His IEP review approximately a month after diagnosis of ADHD reported:

- *Since starting taking Ritalin has been quieter and less impulsive in school.*
- *Ability to concentrate and remain on task varies, but on the whole is improving.*
- *When reminded is able to wait his turn to answer questions.*

**Edward**

Edward, aged 7 years at the beginning if the case study, had been diagnosed with ADHD and prescribed Ritalin at the age of five years and had shown gradual improvement in his behaviour. Three years later teaching staff reported a noticeable deterioration in his behaviour which posed management problems for the school. An increase in Edward’s
medication dose half way through the spring term brought about a vast improvement in his concentration and behaviour. As this was the term in which the second year of the case study was undertaken it was possible for the researcher to observe first-hand the changes in Edward’s behaviour.

Analysis of the FIS observations (shown in Figure 2) found that during the second year of the case study Edward’s overall recorded figure for ‘hyperactive-impulsive’ behaviours in observed lessons during the period prior to the increased medication was 24%, decreasing dramatically to 6% after the increase. ‘Inattentive’ behaviours reduced from 32% to 31% and consequently there was an increase in ‘No ADHD’ behaviours from 44% to 63%.

**Freddy**

Freddy had a complex range of learning difficulties and challenging behaviours. Although he had not received a formal diagnosis of ADHD by the end of the research period, case study evidence found that Freddy frequently displayed many of the ADHD behaviours (and
34% more than a peer comparison). During the first year of the case study Freddy attended mainstream school and benefited from spending four mornings per week in a nurture group which had recently been introduced in the school. He remained on the main Y4 class register and joined his peers for the rest of the week, often with individual SSA support.

**Figure 3. FIS recordings in nurture group and main Y4 class setting – Freddy**

As can be seen in Figure 3 a lower proportion of ADHD behaviours was observed in the nurture group than in the Y4 class group. Freddy displayed 11% ‘hyperactive-impulsive’ and 22% ‘inattentive’ behaviours in the nurture group, and 19% ‘hyperactive-impulsive’ and 25% ‘inattention’ behaviours in the main class group. This led to correspondingly higher recordings for ‘No ADHD’ behaviours in the nurture group (67%, compared to 56% in the main class group).
Discussion

This was a small-scale study and there are acknowledged limitations to the findings. The aim was not to make generalisations but to gather unique quantitative data and descriptive qualitative information on situational and temporal variability in ADHD symptoms in school settings. The use of a mixed method case study research strategy has provided triangulation and contributed to establishing the validity and reliability of the data presented.

The following discussion is based on the practical applications of practice-based research involving systematic observation techniques. Findings discussed in section (1) could lead to increased curricular and pedagogical flexibility, whereas those in section (2) could prove to be useful in improving multi-professional assessment and management of pupils who display ADHD characteristics and associated difficulties.

Discussion of findings (1) – Identification of contextual and curricular settings and approaches which may help teachers to enhance on task behaviour

Delivery and organisation of the curriculum

It has been suggested that the inhibitory performance of pupils with ADHD might be context dependent and that areas in which they perform as well as typically developing pupils include using computers and watching a television or video. This could explain the findings in extract (iv) in which observation recordings of ADHD behaviours for Carl in an
ICT lesson were relatively low. Extract (vii) demonstrates that he was more focused on the video than on later classroom activities. More use of computer-based tasks in the classroom for pupils with ADHD might offer opportunities for improvements in their academic performance, appropriate on task performance and behaviour (Shaw and Lewis, 2005). In numeracy lessons such as extract (ii) Carl might benefit from the introduction of a computer activity.

The addition of novel approaches might have helped focus Carl’s attention in numeracy as well as in unstructured lessons where pupils with ADHD often experience particular difficulties (Zentall, 1993). The inclusion of periods of structured physical activity at regular intervals throughout the school day could produce positive outcomes for pupils with ADHD (Cooper and Bilton, 2002). This could be particularly useful, for example, on ‘wet play’ days (see extract vi) when all children miss out on opportunities for physical activity in the playground.

**Teaching and learning styles**

There is often a focus on reflective and abstract teaching and learning in primary schools, rather than on the concrete and active styles favoured by pupils with ADHD (Cooper, 2005). Creative activities such as art, DT and practical science lessons in which Carl displayed fewer ADHD behaviours relied on active experimentation using kinaesthetic teaching and learning approaches. The present findings agree with Daniel and Cooper (1999) who reported that students displayed lower levels of dysfunctional behaviour in
lessons involving sensory and kinaesthetic skills. In addition, as Carl’s DT lesson (iii) demonstrates, ‘creative students can often be a valuable resource to the classroom teacher in their ability to offer divergent ways of looking at things or novel approaches to problems’ (Cooper and Bilton 2002, p.69). These lessons may also help in improving fine motor control. It is important that pupils with ADHD are not taken out of art and DT lessons for extra tuition in core subjects as this could undermine the positive reinforcement offered by creative activities (O’Regan, 2002).

**Grouping and support**

There is a need for more flexibility in pupil grouping in the classroom. The DT lesson described in extract (iii) is an example of a successful grouping strategy. By splitting the class, the teacher was able to offer more support to Carl when he needed it. Ability grouping in some curricular areas may increase pupils’ attainment. The literacy lesson (i) (with a pupil: adult ratio of 4:2) is a good example of how a small group setting helped Carl to achieve low recordings of ADHD behaviours. However, as is the case with many pupils with ADHD who experience some form of dyscalculia, Carl had particular difficulties with mathematical concepts. Extract (ii) shows that he did not perform well in a numeracy lesson even in a small group with plenty of support.

One-to-one support may increase on task behaviour in pupils with ADHD (APA, 2000). The TA in the science lesson in extract (v) asked Carl questions to re-focus him and keep him on task. She also acted as a scribe for him as he would have had difficulty in getting down
his ideas quickly enough. As the lesson progressed she gradually withdrew her support as he was more able to focus on the experimental activity. One of the reasons Carl displayed more ADHD behaviours in the science lesson in extract (vi) may have been that there was no TA support during the afternoon lesson. There are occasions when successful pairing of pupils can provide opportunities for increased co-operative working and improved social interaction with peers. The teacher needs to take care in the choice of partner, but as extract (iv) shows, this strategy can work well. By reading on-screen instructions, Carl’s partner offered him the support he needed to be able to perform well and to achieve low numbers of ADHD behaviour recordings.

Discussion of findings (2)

a) Gathering evidence in assessment processes

Schools are required to gather evidence of an individual’s learning difficulties or challenging behaviour in all assessment processes, whether they are seeking provision or support under the SEN Code of Practice procedures, or they are intending to put a student forward for possible diagnosis of a disorder such as ADHD. When an Individual Education Plan (IEP) has been drawn up, quantitative evidence can be used to supplement anecdotal or qualitative assessment details provided by teaching staff as highlighted in the case of Carl (Wheeler, 2010).

As mentioned earlier, a multi-professional approach to the assessment of ADHD is essential. Some questionnaires and rating scales employed by clinicians to gather
information from schools (and parents) often tend to use Likert-type scales. These involve the respondent indicating frequency of behaviours by, for example, circling items: 0 (never or rarely) to 3 (very often). Anecdotal evidence may also be supplied by teachers and parents, but this may be subject to bias or inaccuracy. More use of systematic observation techniques providing detailed quantitative evidence on behaviour could be used to supplement other data during the identification and assessment of ADHD. During the case study research, information from the first year’s observations of Adam’s behaviour was shared with the SENCO who included it with evidence forwarded to the community paediatrician who went on to diagnose ADHD.

b) Monitoring the effects of interventions

‘After parents, teachers are the people most of us spend most of our time with between the ages of 5 and 16’ (Hughes and Cooper, 2007, p.70). Teachers are in the best position to compare the child’s academic progress and behaviour with his or her peers (Cooper and Bilton, 2002). They can also play an important role in monitoring the positive and negative effects of medication and other interventions in the school setting.

Hughes and Cooper (2007) stress the importance of schools identifying tools with which to monitor behaviour change in students with ADHD. By examining observational data on the variability of ADHD behaviours over time as well as across settings the cases of Adam and Edward demonstrate that FIS in particular can be used for this purpose. In each case it was
possible to use the observation findings to supplement the anecdotal evidence from school staff regarding changes in behaviour.

Quantitative data gathered on Freddy’s behaviour was used to supplement qualitative reports when comparing his performance in the nurture group and the main Y4 class group. Coincidentally, at the time of the first year of the case study, the school were in the process of applying for further funding for the continuation of the nurture group. Following a request from the SENCO, the researcher was able to provide a report detailing relevant research findings to be included in the funding application.

Conclusions

Information obtained from analyses of findings from practice-based research, both from individual cases and across cases, has proved to be useful in:

• Identifying school settings and contexts which may alleviate the manifestations of ADHD symptoms and enhance on task behaviour;

• Gathering evidence in identification and assessment procedures; and

• Monitoring of the efficacy of interventions.
It is important to be aware of the uniqueness of individual pupils who display ADHD characteristics. Interventions which help one pupil may not be of benefit to another pupil. Approaches adopted in one setting might not produce the same effects on subsequent occasions or in different settings.

In order to explore and understand more about the impact of ADHD on teaching and learning and to provide effective inclusive education for all pupils, there is a need for further research to be undertaken into the variability of ADHD symptoms across school settings. This, together with appropriate training in ADHD for educational practitioners, both at the initial teacher training stage and as part of continuing professional development, may lead to increased pedagogical and curricular flexibility in schools as well as improvements in multi-professional approaches to identification and management of ADHD and could make some contribution towards current UK government policy on inclusion being turned into practice (DfES, 2003, 2004; DfE, 2011).

Note

Further details of the observation schedules may be obtained from the author.

References


*This document was added to the Education-line collection on 8 November 2011*